Tucker and Elk Draw Project Area 1 Unit 1 Scope of Work

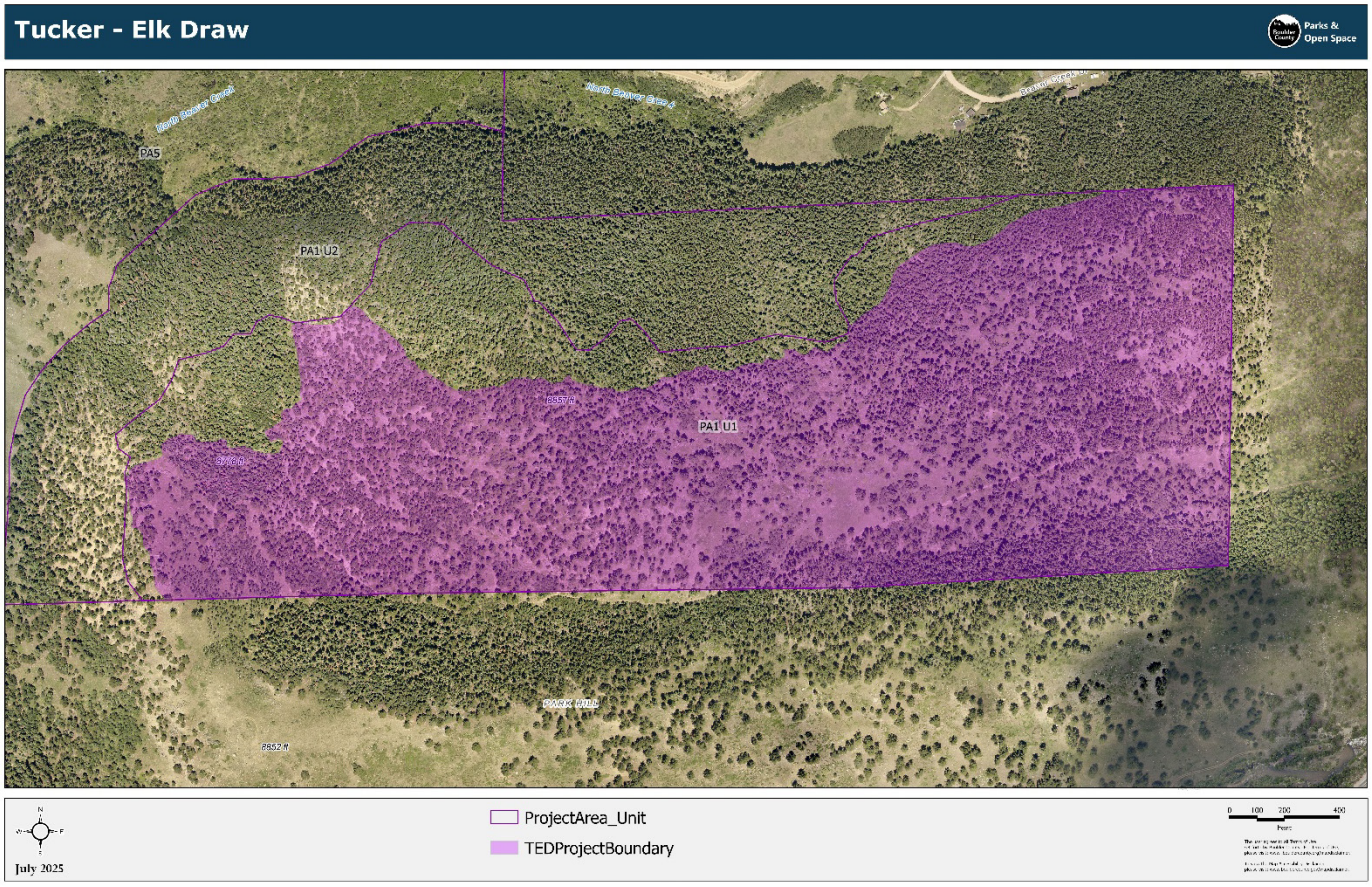


Figure 1: Tucker – Elk Draw map showing project area, units, and the forestry treatment boundary.

Project Area Background

The 323-acre Tucker property was purchased by Boulder County (BC) in 2020. The 40-acre Elk Draw property was donated to Boulder County early in 2024 by Colorado Open Lands (COL) a non-profit land trust. Elk Draw lies directly east of Tucker and together these two properties create a continuous county managed area of 363 acres. These two properties will be referred to collectively as TED (Tucker-Elk Draw) in this and associated documents.

The US Forest Service (USFS) owns a 40-acre parcel to the east of Elk Draw. East of this Forest Service (FS) parcel is the County-owned Mariposa Passage property, a small 2.4-acre parcel, which the County purchased in 2024 to provide administrative access for Boulder County Parks and Open Space (BCPOS) from 1st Street in Nederland to the Elk Draw and Tucker properties via an access road that crosses the Forest Service parcel and enters TED. The TED property has limited legal public access and no authorized trails but does see recreational use by neighbors and local residents. The property is open to passive recreation, but unauthorized trail building is prohibited. Some newly emerging unauthorized trails have been obscured and restored to deter

usage. No new trails may be constructed on the property without first going through an established management planning process.

Project Area 1 encompasses Park Hill, ending where it meets the wet meadow to the west. Unit 1 was defined as the relatively moderate terrain on top of Park Hill and occupies 104 acres. Unit 2 encompasses the steeper side slopes of Park Hill and ends where the forest abuts the wetland area. Unit 2 is approximately 40 acres. See Figure 1. A total of 30 plots were randomly distributed in Unit 1 and 12 plots were distributed in Unit 2. The prescriptions described here are only within Unit 1.

Unit 1 (top of Park Hill) is very diverse. Most of the area is covered by mixed-conifer consisting primarily of ponderosa pine (*Pinus ponderosa*), Douglas-fir (*Pseudotsuga menziesii*), subalpine fir (*Abies lasiocarpa*), lodgepole pine (*Pinus contorta*), limber pine (*Pinus flexilis*), and aspen (*Populus tremuloides*), with some Engelmann spruce (*Picea engelmannii*) and blue spruce (*Picea pungens*). The dominant overstory species across most of the plots are ponderosa pine (27.69%) and Douglas-fir (25.70%). The remaining half of the overstory consists of subalpine fir (20.07%), lodgepole pine (14.59%), quaking aspen (10.28%), limber pine (1.00%), Engelmann spruce (0.50%), and blue spruce (0.17%). See Figure 2.

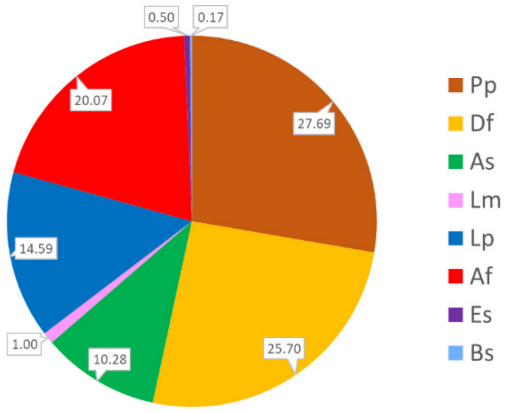


Figure 2: Tucker – Elk Draw Project Area 1 Unit 1 Species Distribution

Species	Species Code
Ponderosa pine	PP
Douglas-fir	DF
Quaking aspen	AS
Lodgepole pine	LP
Limber pine	LM
Subalpine fir	AF
Engelmann spruce	ES
Blue spruce	BS

The basal area ranges from 30 to 260 ft2/acre, with an average of 153.32 ft2/acre. Of the trees sampled, the diameter at breast height (DBH) ranges from 0.2 to 28.2 inches, with an average diameter of 8.56 inches and a quadratic mean diameter of 5.56. The average height of sampled trees is 32.17 feet, ranging from 4.5 to 69 feet. The crown ratio (percent of the tree's total height that has live crown, value 1-9) is an average of 5.60. The percent of closed canopy cover is 70.36%, ranging from 15.5 to 95.75%. Most of the trees sampled were living; the tree kind (scale from 1-3, 1- live, 2 -dying, and 3- standing dead) average is 1.3. Ninety-one (15.09%) out of the 603 trees sampled were dead. Most of the dead trees sampled were Douglas-fir (5.31%) and aspen (4.64%); the remainders were lodgepole pine (1.99%), subalpine fir (1.99%), and ponderosa pine (1.16%). Of the 62 aspen trees sampled, 45.16% were dead. DBH for the dead trees ranged from 0.2 inches to 21.5 inches, with an average DBH of 6.88 inches. There were also 6 trees (1.00% of the total trees) with a rating of 2; two lodgepole pine, two Douglas-fir, an aspen, and a subalpine fir. The average vigor (scale from 1-4, 1 being healthy dominant form and 4 being suppressed form) is 2.50.

Treatment Rationale

The primary goal of forest management at Tucker Ranch and Elk Draw is fire mitigation with the additional goal of forest resilience. The area has experienced fire in the past as evidenced by numerous fire scars and will experience fire again in the future. Treatments on the property will aim to foster an ecosystem that is able to accept fire in a less catastrophic way.

The east portion of Tucker and Elk Draw will have an increased emphasis on fire mitigation and fuels reduction due to the proximity to the Town of Nederland. The Boulder County property boundary is within 0.25 miles of the Nederland town limits, but there are additional homes and structures closer than this. Based on satellite imagery, approximately 24 buildings are within 0.25 miles of Elk Draw and the east portion of Tucker occupying Park Hill. Fire in this area would also likely produce firebrands that could be carried into Nederland on the prevailing westerly winds. Decreasing fire behavior would help to mitigate the production of these firebrands. See Appendix 3 for fire modeling results.

The purpose of the treatment is not to stop a fire, nor does this treatment guarantee any specific outcomes in all situations and fire weather conditions. This is not to say that treatments are ineffective, it is to acknowledge the complexity and unpredictability of wildland fire and to ensure that management outcomes are not misinterpreted as providing complete protection from the negative impacts of wildfire on the community. It is anticipated that up to the level of moderate fire conditions, fire personnel may be able to engage directly with a fire within the treatment area. If extreme fire conditions are present and fire personnel cannot directly engage the fire, treating this area increases the opportunity for, and effectiveness of, aerial suppression efforts such as water and retardant drops. These mitigation efforts and suppression actions, when combined with home hardening and defensible space work on private property, can mitigate fire behavior, potentially allowing more time for response and evacuations. This treatment extends beyond individual property interests, aiming to promote conditions which would increase the ability of the ecosystem to rebound after fire.

Park Hill is a forested ridgetop that leads directly into town and is designated as Wildland Urban Interface (WUI) in the Nederland and Timberline Fire Protection District Community Wildfire Protection Plan (CWPP) 2024 Update. The CWPP also identifies the Tucker Ranch area as a first priority project, specifying a desire to “reduce the risk of intense, rapidly spreading wildfire directly west of the most densely populated area in these districts” as well as “protecting key drinking water infrastructure, watershed health, and a known elk migration corridor” (CWPP, 2024, p152). The area of interest delineated in the CWPP encompasses the entirety of the Boulder County Tucker Ranch property as well as some US Forest Service and private lands. The US Forest Service 40-acre parcel to the east of Elk Draw is an important component to the Town of Nederland’s fire mitigation goals. Future treatment of this parcel is under strong consideration.

In addition to fuel reduction, treatment of Elk Draw and this area of Tucker Ranch has the objective of improving forest resilience to climate change and disturbances, such as fire and insect/disease outbreaks. TED falls within the upper montane life zone, with some north facing slopes and mesic areas containing characteristics of the subalpine life zone. There is evidence of past fire across the whole area with fire scars on many live trees as well as charred snags and

logs, indicating that low-moderate or mixed-severity fire impacted the area, although it was not uncommon for ponderosa pine/mixed-conifer forests in the upper montane to experience high or moderate severity stand-replacing fires. These events could reduce basal area of the effected stand by 20-70% and typically occurred in 50+ year intervals (Battaglia, 2018; Brown et al., 1999; Schoennagel et al., 2011; Sherriff et al., 2014). The historic fire return interval for the upper montane ecotone in the Colorado Front Range is between 20-60 years (Battaglia et al., 2018) or 40-100 years (Veblen and Donnegan, 2006). A Historical Range of Variability Assessment for Caribou Ranch Open Space (Brown and Carpenter, 2001), less than 1.5 miles to the north, found three widespread inter-stand fires in the past 340 years, with fire intervals of 52 years and 153 years. It has now been 166 years since that last widespread fire in 1859. This indicates that the Caribou Ranch area has likely missed at least one fire cycle for this ecotone and has seen an increase of stand density as a result.

While historic fire regimes and historic ranges of variability in stand volume are useful references, they may not always be applicable when considering the impacts of climate change and the goals of long-term resilience (Millar et al. 2007). With climate change impacts communities can expect more extreme fire weather conditions leading to elevated fire frequency, scale, and severity. Decreasing stand volume, creating more heterogeneity in stand structure, and favoring more fire-resistant trees can help promote the area's resilience to fire. Within the lodgepole pine stands, small patch cuts would introduce more age class diversity to promote resilience to insect and disease issues. Enhancing existing aspen stands and protecting specific features such as limber pine and legacy trees, also increases overall diversity in forest composition, which is key to resilience.

TED also has high ecological value within the larger landscape. The North Beaver Creek Colorado Natural Heritage Program Potential Conservation Area (L4_PCA-North Beaver Creek_7-11-2024.pdf) overlaps some of Park Hill. This larger Potential Conservation Area is listed as having high biodiversity significance due to the presence of mature forests, wetlands, vulnerable willow carrs, and a valuable wildlife corridor for large mammals like elk. This planned treatment will have no impact on the wetland itself, but in the event of fire, decreased fire severity on Park Hill could result in less erosion and sedimentation into waterways.

The Indian Peak Environmental Conservation Area (ECA) also spans some of the TED area. The area description states "Conservation efforts in this area have focused on protecting key ecological components at the lower edge of the ECA: montane parklands and habitat connectors to lower elevations. In the mid-1980s, Lee and Virginia Evans donated a conservation easement on the 650-acre Arapaho Ranch, a montane parkland with important wetlands, grasslands, and transitional elk range, to Colorado Open Lands." (bccp-eca-descriptions-2013.pdf (bouldercounty.gov)). The TED project lies directly north of the Arapaho Ranch conservation

easement with plans to implement cross-boundary forestry work. Improved resilience of the Tucker-Elk Draw forests would increase the impact and value of the Indian Peaks ECA

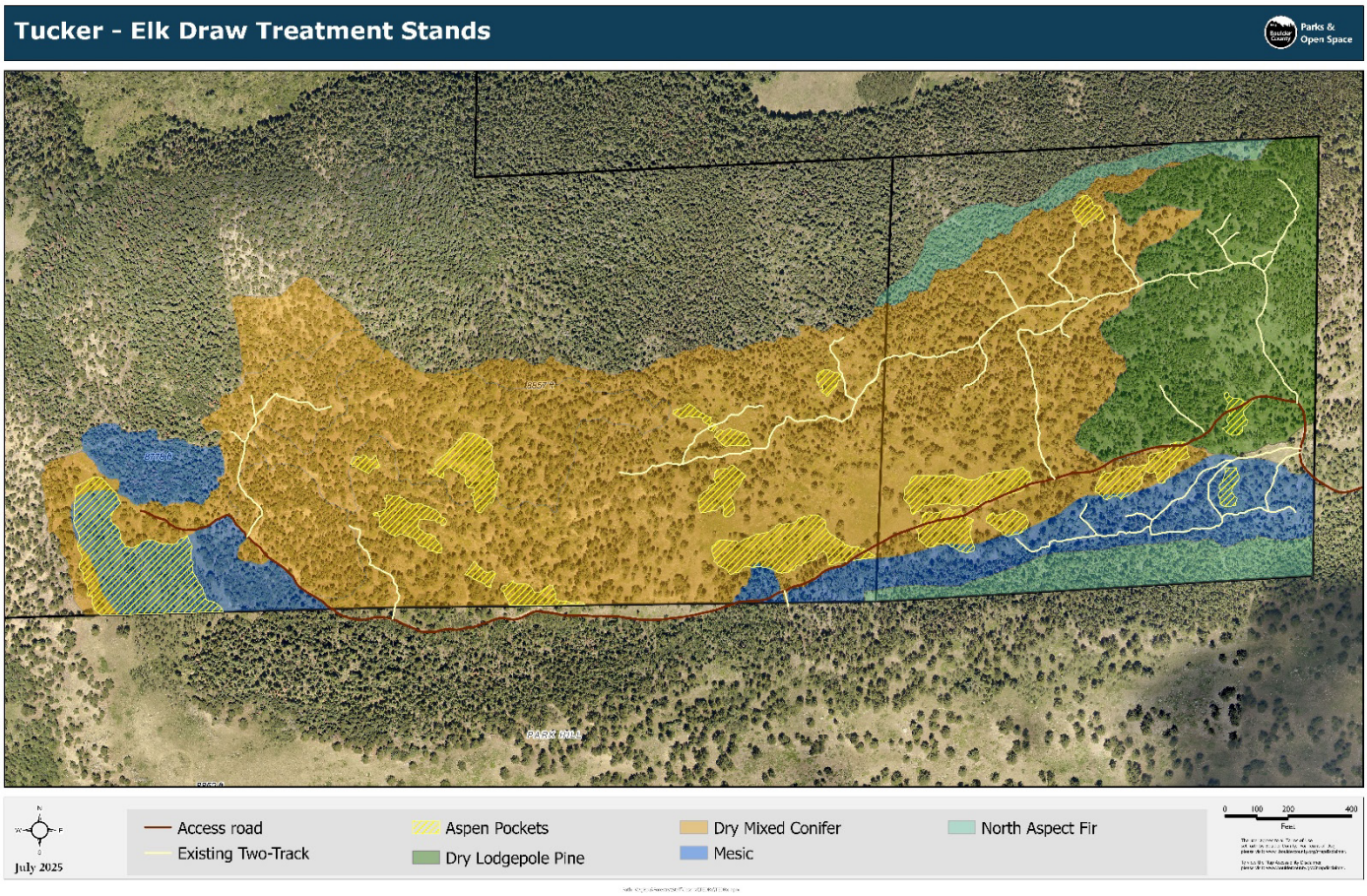


Figure 3: Tucker – Elk Draw map showing various stands within the treatment area.

Recommended Treatment

Desired forest conditions consist broadly of a forest that allows for low-moderate severity fire to occur under normal fire weather conditions and is resilient to disturbance and a changing climate. The desired forest will have diversity in age, size class, spatial arrangement, and species composition of trees. See Figure 3.

The primary objective of treatment at TED is fuels reduction and fire mitigation for the Town of Nederland and the homes in the surrounding WUI. This will be achieved by reducing overstory density, decreasing basal area (BA) and trees per acre (TPA), and increasing spatial heterogeneity. Removing ladder fuels and creating space between groups of trees will help decrease fire behavior under normal fire weather conditions. Additionally, opening up the canopy will enhance understory vegetation, both in species richness and cover, leading to more grasses, forbs, and shrubs that provide food sources to wildlife and quickly regrow after a fire, which helps to stabilize the soil post fire.

Within the dry lodgepole pine dominated stands on the east side of Elk Draw there are areas that were thinned by a previous owner and have since experienced windthrow. This would be a good site for small patch cuts to remove some of the blowdown, introduce more age class diversity, and create breaks in the canopy. As lodgepole regeneration returns in these patch cuts, it will be thinned while saplings are young in order to decrease density and improve wind firmness. Both the project-wide thinning and the lodgepole patch cuts fulfill the joint objectives of fuels reduction and forest resilience by enhancing a mosaic structure in the forest. Following operations, some newly opened areas may be used as a site for planting rust-resistant limber pine seedlings as part of the County's limber pine conservation efforts.

As part of the forest resilience goal, promoting species diversity is an additional objective of this treatment. There are many aspen stands dispersed throughout the property. Some are well established, but many are suppressed due to competition with conifers and browsing pressure from wildlife. Removing conifers that are overtopping or becoming established in aspen stands will encourage their success. Cutting a small proportion of aspen can induce increased suckering. With enough new growth some saplings will stand a better chance of growing above browse height.

Limber pine (*Pinus flexilis)* is a priority species of special concern within Boulder County. It is important to maintain and promote this species due to its ecological significance and the numerous threats it faces. These factors contributed to the development of the Boulder County Limber Pine Species Conservation Plan which guides current and future conservation actions. Limber pine is a poor competitor in the forest and can easily be suppressed by nearby trees that grow more quickly and vigorously. There are many mature limber pine on the property that may be invigorated by removing competing conifers that are becoming established underneath as ladder fuels. Limber pine regeneration would also benefit from competition removal whenever possible. In addition, areas of this property could be suitable for planting limber pine seedlings after treatment as a key component of the County's limber pine conservation strategy.

The entirety of Unit 1 (totaling approximately 104 acres) was originally proposed for treatment within this project. As a result of public feedback and input from the internal Forestry Interdisciplinary Team, the project area was revised to approximately 87 acres of which about 12.6 acres are reserve area that will not be treated. As a result of this input approximately 74.4 acres of the original 104 acres will be treated.

Forestry Prescriptions

See Appendix 1 for all prescription polygons displayed on one map.

Dry Mixed-Conifer Prescription

Across the dry mixed-conifer stands which occupy most of the unit the thinning prescription will focus on removal of smaller diameter trees and increased spacing between the crowns of tree groups and/or individual trees. Since fire mitigation is a primary goal of this treatment, especially on Elk Draw, retained trees should be grouped with space between crown groups to deter the potential of a running crown fire. Ladder fuels should also be removed beneath retained trees on the eastern portion of the property closest to town. On the western portion of Park Hill less emphasis can be placed on fire mitigation and more vertical complexity may be retained. High

quality standing dead trees (snags) should be retained for wildlife value unless they pose a hazard to operations.

Within the larger dry mixed-confer stand there is an area on the western side that contains a significant proportion of ponderosa pine trees that exhibit characteristics of legacy trees, which indicates that many of these trees are over 200 years old. Within this area primary emphasis will be placed on preserving individual older trees by removing ladder fuels and increasing canopy spacing. With so few areas like this left in the County, it is important to help these trees to be as resilient to fire as possible. See Figure 4.

There is also a distinct area of uniform, secondary growth, homogenous ponderosa pine, likely regenerated in the wake of past cutting and/or fire. This area will fall under the same prescription as the rest of the dry mixed-conifer stand but is identified on the map because it will require a different marking strategy to break up the homogeneity.

At the northwest edge of the treatment area is an area of open grown mature ponderosa and legacy ponderosa that have some regen becoming established below them. If funding remains at the end of the project this area may be a target for hand cutting only to remove the ladder fuels within this area.

Basal area across the dry mixed-conifer stand (which excludes data plots in the dense fir and mesic areas) will decrease from approximately 142.3 ft2/ac to approximately 100.6 ft2/ac for this treatment. See Figure 5. TPA will decrease from approximately 683.79 to approximately 389.1, with a 46.2% reduction in trees per acre for DBH classes 0-8 and 28.2% reduction in trees per acre for DBH classes 8-16. The modeled crown cover would be reduced from 57% to 45%, a decrease of 12% cover. This percent of forest cover reduction is much smaller than the percent TPA reduction because many of the trees removed are smaller understory trees that have overlapping canopies with larger overstory trees. No limber pine, Engelmann spruce, or blue spruce will be cut.

- Remove 66% LP 0-8” DBH
- Remove 66% DF 0-8" DBH
- Remove 66% AF 0-3" DBH
- Remove 50% PP 0-8” DBH
- Remove 50% LP 8-16” DBH
- Remove 25% PP and DF 8-16” DBH

- Remove 5-10% AF 3-16” DBH (removal of subalpine fir is not a primary goal, but there is the option of removal in some limited situations, for example beneath a legacy tree)

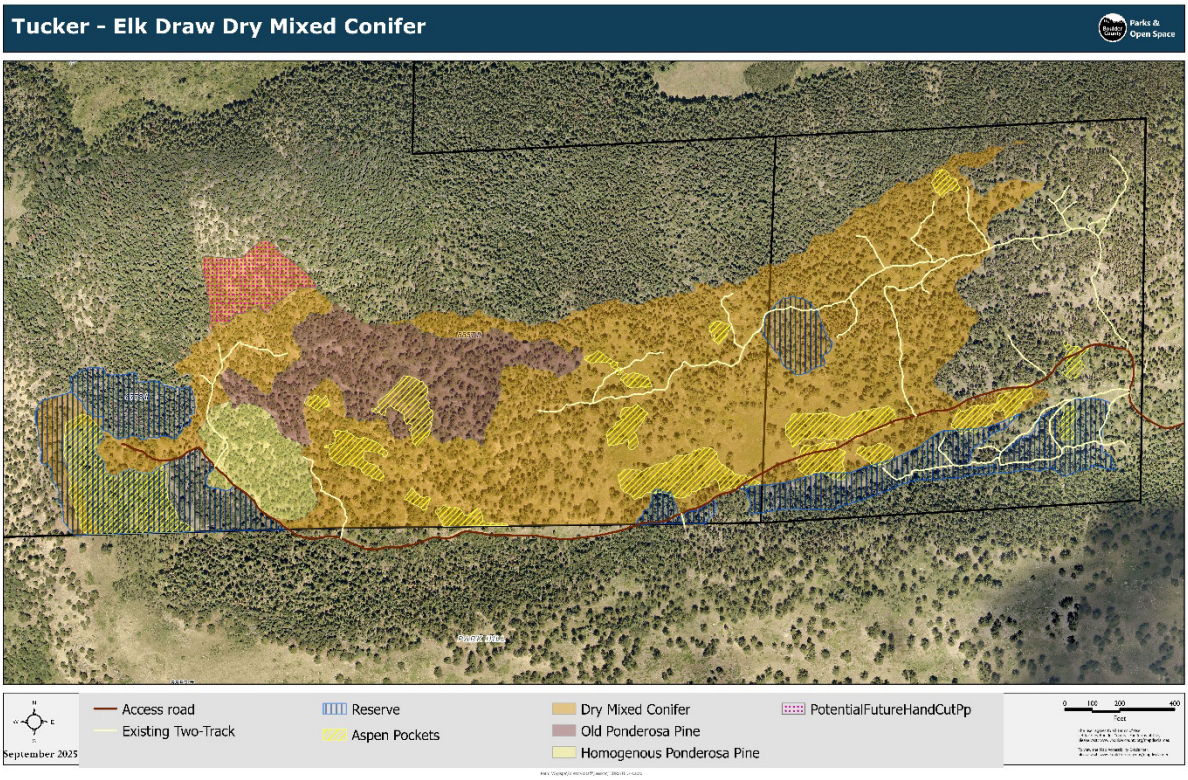


Figure 4: Tucker – Elk Draw map showing the dry mixed-conifer stand with overlapping polygons for other features.

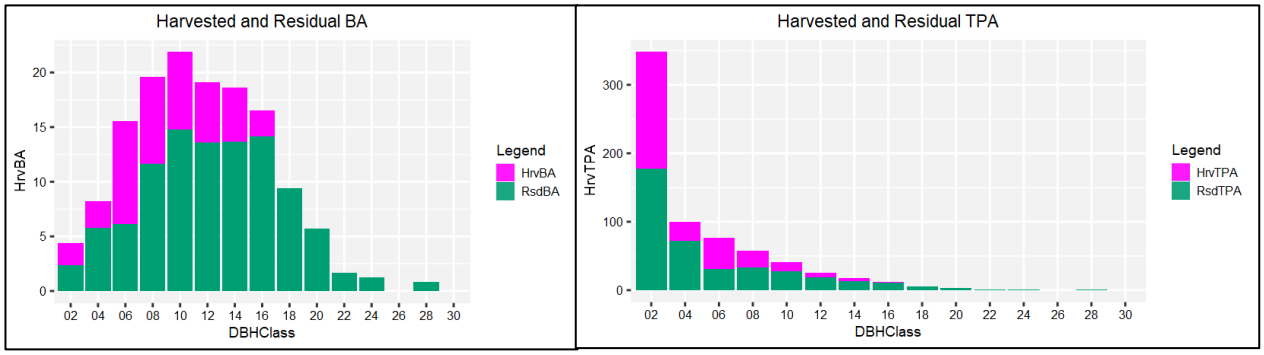


Figure 5: Graph on the left shows the removed basal area in pink and the residual basal area in green broken out by DBH class. The graph on the right shows removed trees per acre in pink and residual trees per acre in green, broken out by DBH class.

Lodgepole Patch Cut Prescription

A small series of patch cuts totaling approximately 3 acres will be implemented in the eastern portion of Elk Draw where previous lodgepole thinning has resulted in residual wind throw. See Figure 6. Some of the downed woody debris may be removed from this defined area after consultation with wildlife staff to determine an appropriate balance between wildlife needs and surface fuels reduction. It is estimated that approximately two thirds of the existing blowdown will be removed along the eastern portion of the dry lodge pole area. Coarse woody debris is important for wildlife so efforts will be made to retain sufficient material in defined areas that will be located to pose a minimal risk of contributing to fire severity. This patch cut will introduce a new age class, reduce dead and down fuel, and create a break in the canopy. Patch cuts will be maintained in subsequent years by thinning new regeneration.

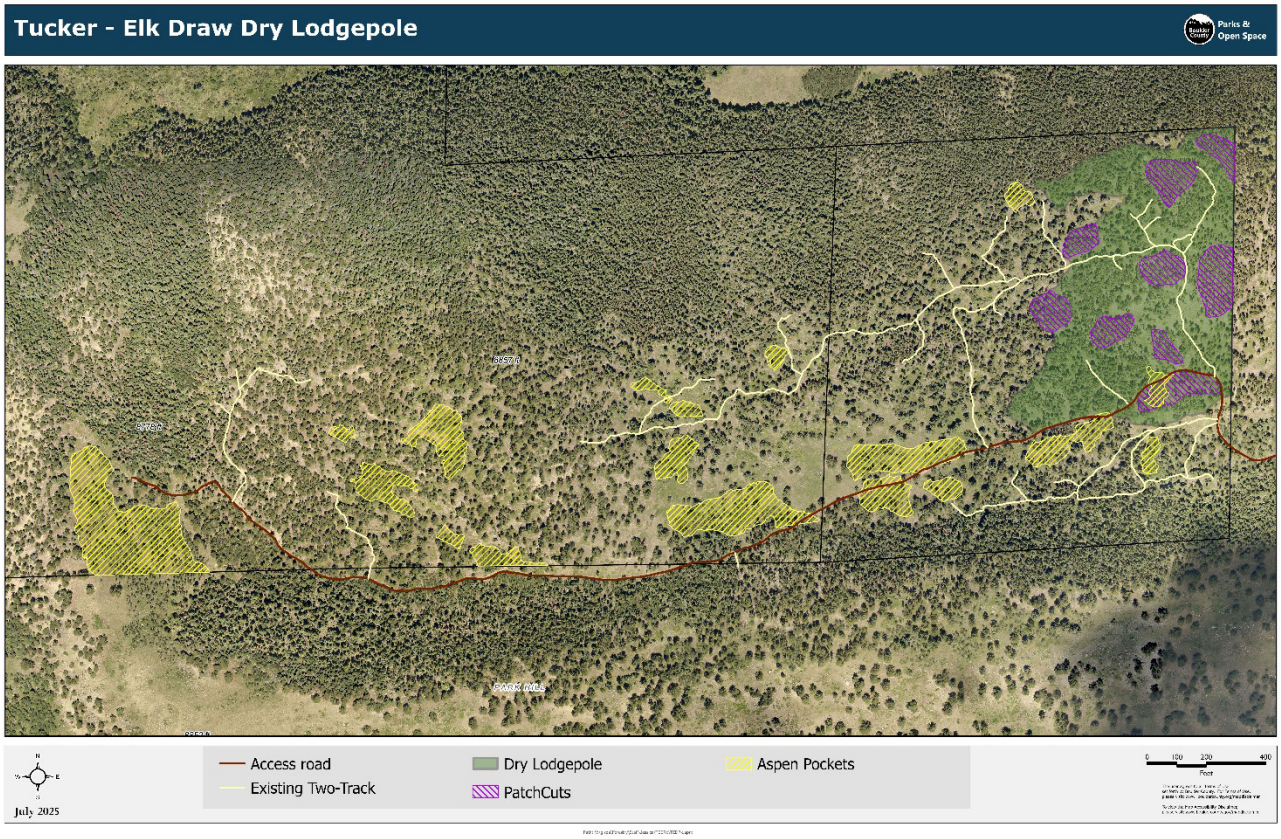


Figure 6: Tucker – Elk Draw map showing the dry lodgepole pine stand with overlapping patch cut and aspen polygons.

Mesic Stand Prescription

Dense Douglas-fir and subalpine fir dominated stands exist in some defined areas of the project area, such as low sheltered areas that hold more moisture. These mesic areas will be retained with the exception of a few openings that will be created to provide a break in canopy for fire mitigation purposes and aspen stand enhancement. See Figure 7. These openings, totaling approximately 1.62 acres of the total ~11.87, will be located along existing old roadbeds in areas that are already fairly open. No equipment will be permitted in this area, and all work will be hand cut and pile.

North Aspect Fir Stand Prescription

Dense Douglas-fir and subalpine fir dominated stands exist in some defined areas of the project, such as north aspects. The small north slope located south of the mesic area and adjacent to the Arapaho Ranch boundary contains a mixed overstory with dense regeneration of mostly Douglas-fir and subalpine fir. This dense regeneration likely resulted from prior overstory removal. While this area has value as wildlife cover, it is also a very dense band of regeneration leading to the east. Removal of some small diameter trees within a few defined areas of this stand will break up fuel continuity and remove ladder fuels. The cumulative area of these hand cut and pile areas is approximately 1.16 acres.

Basal area within the small, treated portions of this dense fir stand will decrease from approximately 173.3 ft^2/ac to approximately 134.9 ft^2/ac. TPA will decrease from approximately 2642.7 to approximately 851.9, See Figure 8.

- Remove 75% AF, DF, and LP 0-5” DBH
- Remove 25% AF, DF, and LP 5-8" DBH

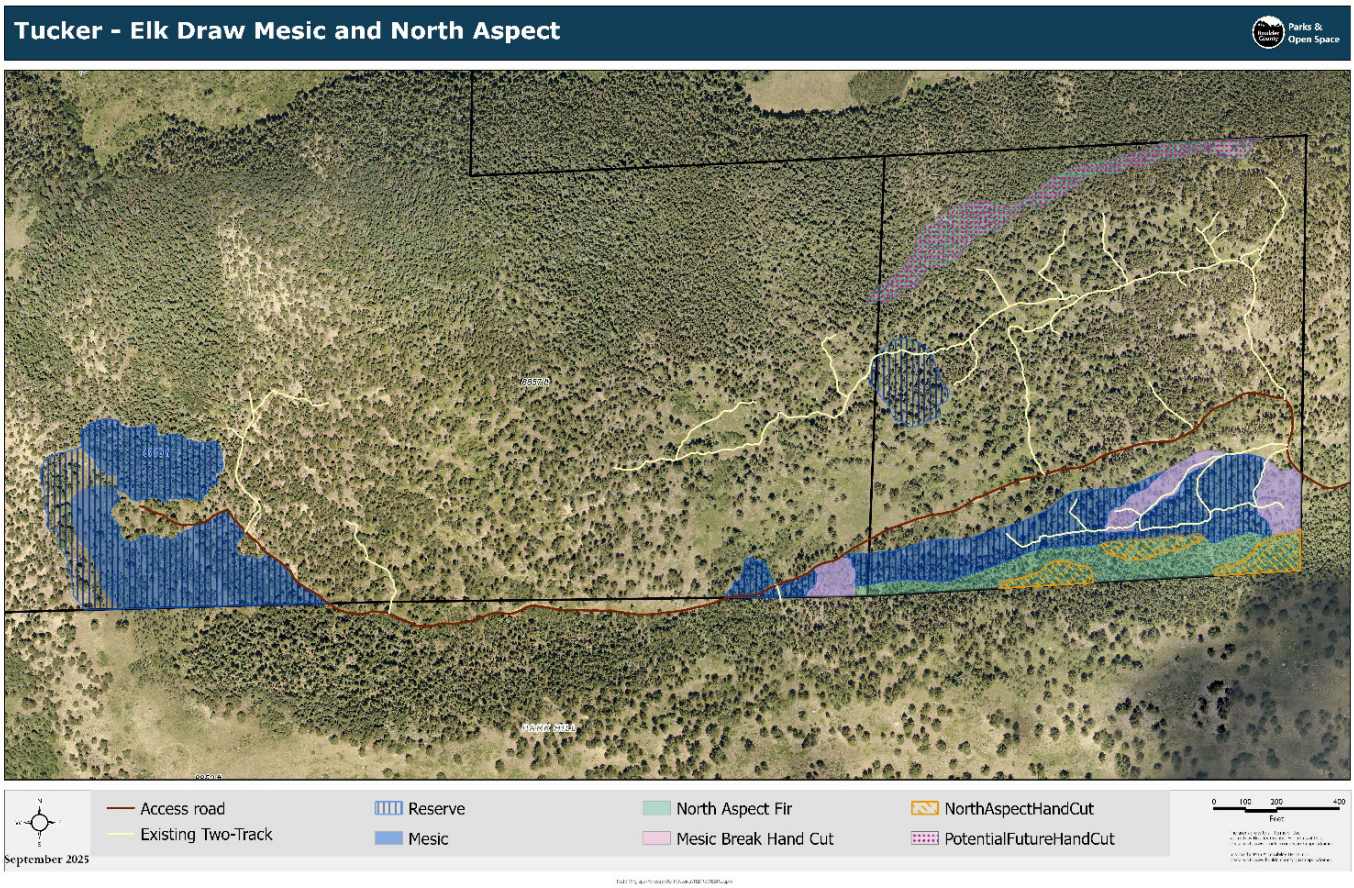


Figure 7: Tucker – Elk Draw map showing mesic areas and hand cut and pile areas on north slopes with overlapping polygons for other features.

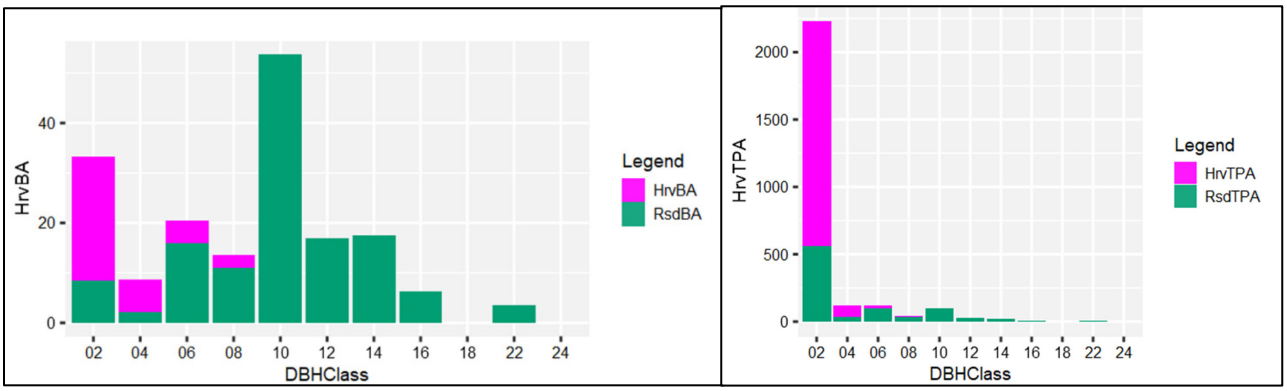


Figure 8: Graph on the left shows the removed basal area in pink and the residual basal area in green broken out by DBH class. The graph on the right shows removed trees per acre in pink and residual trees per acre in green, broken out by DBH class.

While not currently a top priority, if excess funding remains additional acreage along the north aspect of Park Hill is identified as a potential area for hand cut and pile to expand fuel reduction efforts closer to town. Work would be with manual saw crews hand cutting on gentle to moderate slopes. The specific hand cut areas would focus on releasing suppressed aspen and enhancing limber pine and legacy trees. See Figure 7.

Aspen Enhancement Prescription

Numerous aspen stands exist across the property but are seeing minimal regeneration or expansion due to browsing pressure and conifer competition. Most conifers <16" DBH (except limber pine and legacy trees) will be removed from within aspen stands and from within 50 feet of the aspen stand edge, except in areas where aspen stands abut exclusion areas. In addition, up to 10% of aspen DBH <10" will be removed to induce suckering. Existing aspen stems may be removed both to enhance suckering and facilitate operations.

Limber Pine Enhancement Prescription

Limber pine is a Boulder County priority species of concern due to its ecological value and the multiple threats impacting the species. Limber pine is a poor competitor and can easily be overtopped and outcompeted by neighboring trees. TED has a significant proportion of limber pine and care should be taken to promote the tree's success. Ladder fuels should be removed from beneath established limber pines, and trees overtopping or crowding limber pine regeneration should be removed when reasonable. No legacy trees will be removed for this purpose.

Treatment Narrative

A combination of mechanical and handcut/pile operations will be used on this project. Manual chainsaw work will occur in areas that are sensitive, difficult to access for equipment, or do not have larger tree removal. The manual hand cutting will occur in late summer to avoid critical wildlife timing. Approval will be obtained from wildlife staff before operations begin. Due to the hand cutting occurring after the mechanical operations, the operator will also clean up any remaining slash generated from the winter operations.

Due to the use of mechanical equipment for this project, special care will be taken to minimize surface disturbance. Mechanical treatment will only occur during winter when the ground is frozen, dry, or when adequate snowpack is present. Exceptions to this will only be made in consultation with Boulder County Forestry Staff. The mechanical work is expected to occur in the winter of 2025/26, but if there is a warm winter or snowpack is insufficient the operations will be halted and resumed the following winter when conditions are preferable. Winter operations will be conducted during periods when vegetation is dormant and wildlife activity is at its lowest, minimizing ecological disturbance. Additionally, frozen soils and sufficient snowpack provide favorable conditions for equipment access, significantly reducing surface disturbance and soil compaction.
Forwarding of material will only be permitted on the existing road, remnant two tracks, and new

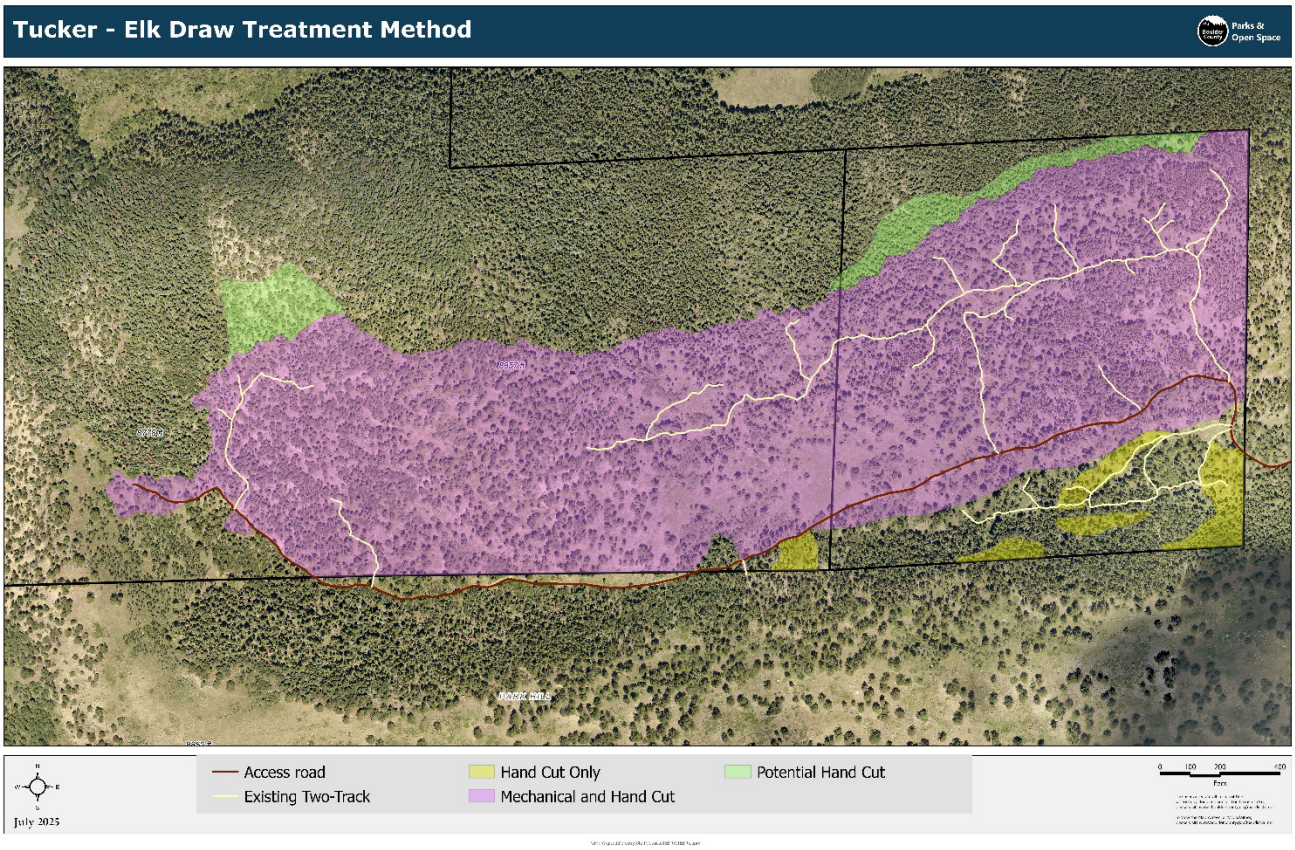


Figure 9: Tucker – Elk Draw map showing the access road and existing old roadbeds as well as types of operations

skid trails preapproved by Forestry Staff. See Figure 9 for the existing roads on Park Hill. Road improvement on the main access road will be limited to work improving road sustainability and decreasing erosion. Upon project closeout, the road will be accessible by a Type 3 wildland engine to allow fire personnel access in the event of prescribed or wildland fire operations. Some light work such as pruning of branches and removal of small trees along the road edge, and grading of existing access road may occur this fall.

The target metrics for the project are an average over the whole project area; however, exact removal amounts will vary greatly from location to location with some areas having higher BA/TPA than others. This allows nuance to be integrated into the prescription, so that sensitive

areas providing unique microhabitats can receive minimal impact. While not all of these small-scale features will be mapped, they will be taken into consideration during layout and marking. The project as a whole will aim for the average removal targets.

The spatial arrangement of density should also consider the effects of wind and the potential for blowdown. Minimal blowdown is acceptable and expected, but widespread blowdown should be avoided when possible. Thinning of small diameter understory trees can occur in most areas without impact to the wind firmness of overstory trees, but greater care should be taken for moderate diameter and overstory trees. Fewer overstory trees should be removed in areas that receive greater wind loading, such as the western aspect of the projects area's high point. Conversely, more trees may be removed in wind sheltered areas such as the east aspect of the high point and local low points. WindNinja, a wind modeling program, was used to assess areas with heavier wind load by running the program using weather data from some past high wind advisory days (See Appendix 2). These higher wind load areas are identified on the project map. See Appendix 1. Within these areas more trees will be retained especially in the overstory.

Any significant trees such as legacy trees, as defined in Identification and Ecology of Old Ponderosa Pine Trees in the Colorado Front Range (Huckaby et al., 2003), and any potential culturally modified trees will be retained and flagged to prevent their accidental removal.

If unforeseen circumstances necessitate a significant deviation from the plans described in this Scope of Work, permission will first be obtained from the BCPOS Forestry Interdisciplinary Team.

Resource Impacts & Mitigation Measures

Wildlife

Wildlife surveys were conducted from September 2024 – August 2025, with terrestrial (mammal) monitoring continuing through fall 2025 to document presence and migration movement of elk. Repeated site visits with Forestry staff to discuss wildlife habitat use related to forest structure and composition and to discuss concerns and recommendations provided ongoing input for treatment planning on TED. Additional visits were conducted with Plant Ecology staff to incorporate a nuanced understanding of habitat characteristics. Formal wildlife surveys (bird surveys and mammal surveys) were conducted at 24 point locations across all forest types in and outside the project area to capture the most complete dataset possible. See Figure 10. Informal data collection and wildlife sightings from staff and external sources captured additional information incorporated into recommendations.

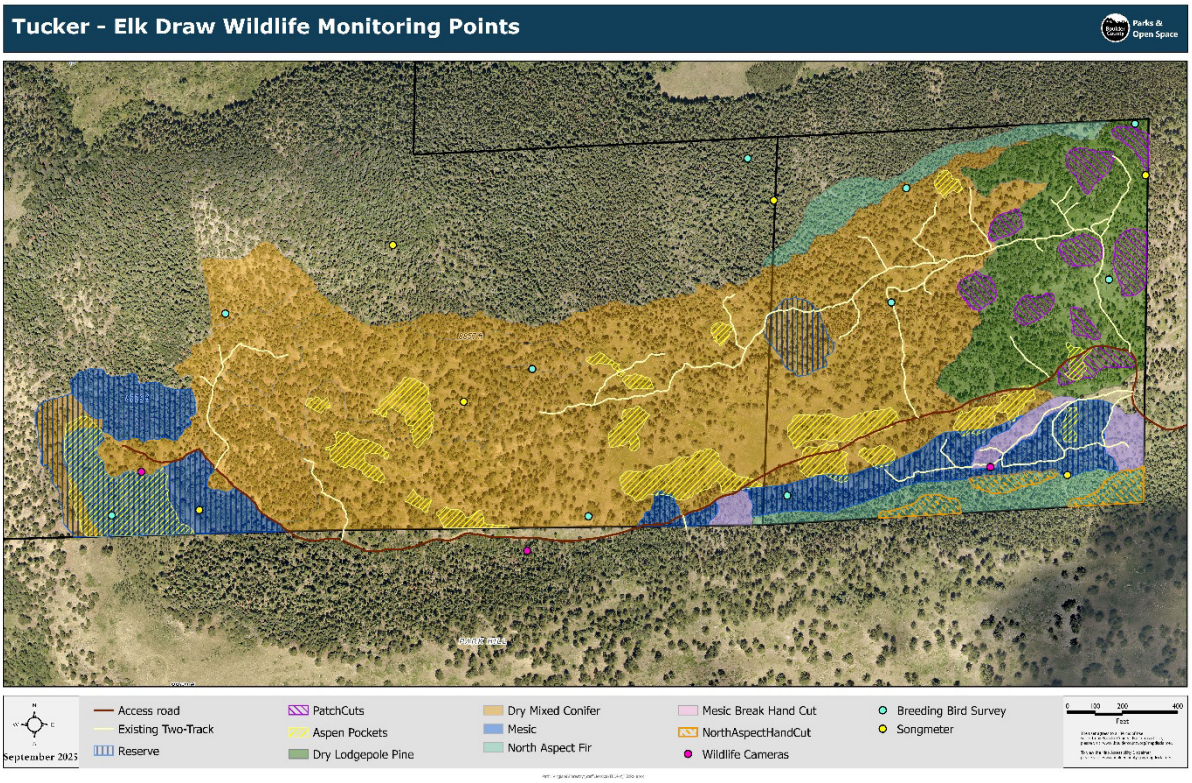


Figure 10: Tucker – Elk Draw map showing wildlife monitoring and data collection locations.

Avian Data Breakdown and Recommendations:

Formal in-person avian surveys utilizing a standard protocol with detection of birds by sight and sound occurred on June 11 and June 24 by a trained biologist. These surveys detected 27 species, however additional species were observed during field visits and from formal survey data shared by external sources. Avian Songmeters (bird song recording devices) were deployed in June at six locations across the property to supplement in-person songbird surveys with recordings of species from additional locations. Thousands of recordings were batch-processed using Kaleidoscope software after identifying individual species songs. Songmeters recorded ten species not detected during in-person morning surveys, including species more frequently detected during late hours such as Great-horned Owl and Common Nighthawk.

Boulder County Species of Special Concern that have been documented utilizing habitats on the property in 2025 or previous years include Golden-Crowned Kinglet, Northern Flicker, Olive-Sided Flycatcher, Pine Siskin, Northern Goshawk, and Virginia's Warbler. Due to the diversity of birds and variety of habitat types and stand treatment approaches on TED, Wildlife staff recommendations can be applied at the stand level. Wildlife staff recommend operations occur

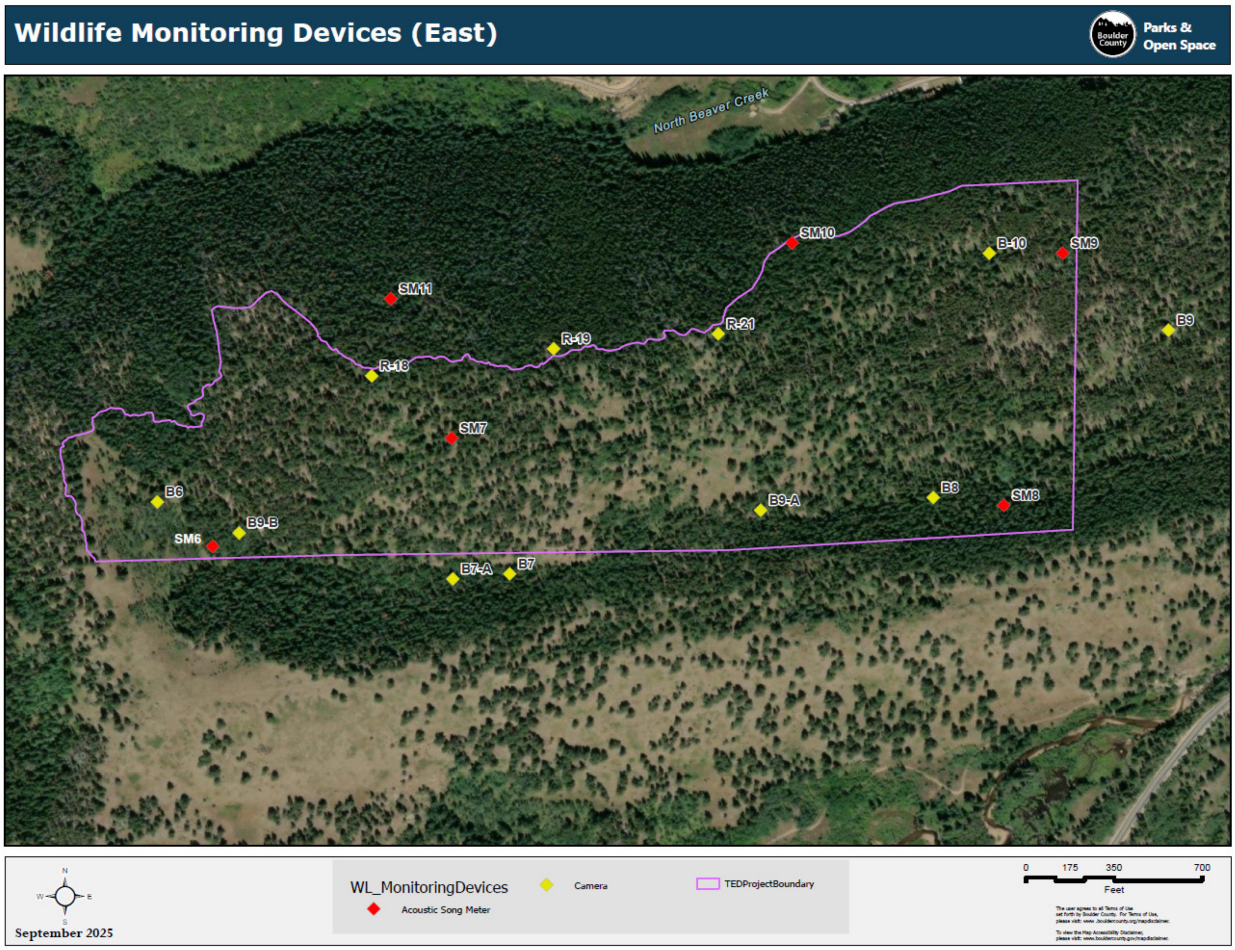


Figure 11: Tucker – Elk Draw map showing wildlife monitoring devices.

outside of the spring and summer breeding season (mid-May to early-August) to avoid impacts to local populations and unnecessary nest failures.

Avian data was used to recommend stand treatment modifications, reduce removal in some locations, and to completely exclude specific sites currently favorable to Species of Special Concern. Delineation of exclusion areas for Golden-Crowned Kinglet and Olive-Sided Flycatcher, both experiencing decline in habitat availability, were mapped in the field and shared with Forestry staff. Expansion of these areas and more specific location recommendations for retained patches, created openings, and retention of varied midstory has recently been incorporated. For more common species, such as shrub-nesting and ground-nesting birds, Wildlife staff requests balancing areas of removal of ground cover or ladder fuels in less fire resilient areas closer to the Town of Nederland and preserving more of these patches as the treatment moves west. For example, low-growing juniper provides nesting cover, a food source for wintering birds, and is the host plant for the Juniper Hairstreak butterfly. Retention of this habitat type in areas of lower fire risk are preferred, and staff has identified areas where retention of groundcover and complex understory features can be retained.

- Retain higher continuity of mesic, north-aspect cover types with mature stand characteristics to support populations of Golden-Crowned Kinglet and Ruby-Crowned Kinglet. Gaps created to separate cover continuity should be limited in size and incorporate existing openings. Areas where Kinglet detections occurred along the north project boundary have been excluded from treatment.
- Retain and expand Olive-Sided Flycatcher habitat to extent possible given higher-risk stand and topological characteristics. Mitigate risk by delineating exclusion perimeter based on existing adjacent openings and higher-fuel patches on east TED. This species relies on snags and tall perch trees (trees with dead tops, or with large bare limbs; especially those protruding above canopy) and openings directly adjacent to mixed-conifer/aspen stands. It is likely that habitat enhancement for this species is possible with the proposed treatment.
- Retain low-growing juniper patches and associated midstory conifers as part of isolated clumps within and adjacent to fire resilient stands.
- Retain all snags throughout the project area, including smaller diameter trees with identified nesting cavities.

Wildlife Camera Data Breakdown and Recommendations:

Remote cameras were deployed to assess species richness across TED, migratory timing of elk, and overall spatial distribution and activity of wildlife. Camera data was analyzed in September and included data from March 25 – August 12, 2025. One camera was deployed on adjacent USFS to capture animal movement to and from the Elk Draw and east Tucker properties. Of the eight cameras deployed, two cameras were placed along access roads where frequent human use occurs and later moved to new locations to sample additional sites. Cameras are placed 18 inches above ground level to improve detection and identification of smaller mammals while still recording large wildlife. Wildlife monitoring using game cameras is continuing for the purpose of documenting elk migration through fall 2025, and updates will be provided to the Forestry Interdisciplinary Team.

Eleven mammal species were documented on cameras across the property: Elk, mule deer, moose, red fox, coyote, black bear, mountain lion, bobcat, pine squirrel, snowshoe hare, and a mouse. Mammal species not detected in this dataset but observed or that could potentially occur in habitats present include American marten, least chipmunk, golden-mantled ground squirrel, striped skunk, and species rarer in Boulder County such as porcupine. Although game cameras were deployed to document the array of mammals present on TED, avian species were detected on camera including Wild Turkey, Steller's Jay, Broad-Tailed Hummingbird, Common Raven, American Robin and Northern Flicker. See Figure 12.

Species richness (diversity of species) was highest along the southern project boundary where mature mesic forest type and northern aspect provide areas of dense cover and complex habitat. See figure 13. Wildlife staff recommendations include retention of thermal and hiding cover, and structural diversity spanning this west-east corridor, considering its use by large mammal species such as moose, elk, and mule deer, but also black bear, coyote, and red fox. Large woody debris

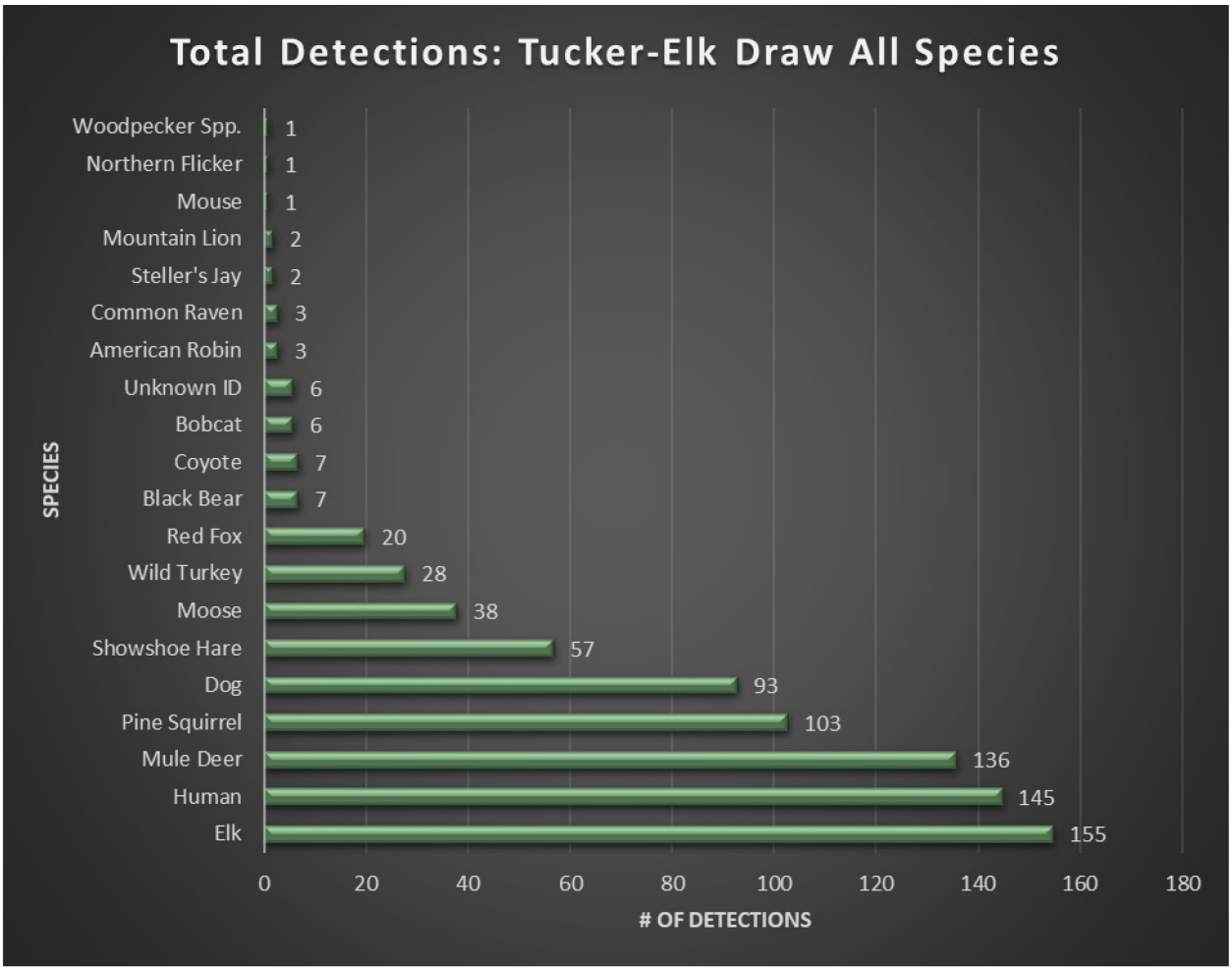


Figure 12: Tucker – Elk Draw totals by species detected. Avian species, humans, and dogs are included for comparison.

and spruce and fir trees with branches extending to the ground provide winter cover and refuge for snowshoe hare and other smaller wildlife. Species diversity was also high where mesic forest transitions to aspen, which provides some forage and diverse understory due to a more open canopy. The western aspen pocket is not thriving and shows evidence of decline and heavy browsing by elk, and the highest occurrence of elk was recorded in this area in early summer. Wildlife staff recommend enhancing this particular stand, and more broadly consider increasing generation of similar habitat patches to support higher biodiversity where feasible. Small, often suppressed aspen pockets exist across the parcel, but few have reached maturity.

Cameras deployed across the northern boundary of the project documented fewer species but recorded repeated use by large ungulates including moose, elk, and mule deer and associated predators like mountain lion. Thermal and hiding cover on the northern aspects provide an additional sheltered movement corridor with significant game trails present. Presence of elk peaked during spring, and camera data shows some individuals remain on the property. Cameras will remain deployed into fall to record elk migration, as it is preferred the timing for Forestry operations occur outside of elk migration and calving seasons.

Elk, mule deer, and moose were detected at all locations and multiple animals (such as a small herd) triggering the camera repeatedly within a short timeframe were counted as a single detection incident. The lowest detection of elk occurred at the eastern-most camera, on a frequently used access road on USFS, followed by lower detections along a similar roadway paralleling the southern project and parcel boundary, despite quality habitat. Both locations are impacted by high human recreation activity and dogs, which can negatively impact wildlife presence, distribution, and activity patterns. A broad suite of carnivores (black bear, red fox, coyote, and mountain lion) were detected along edge habitats on access roads and utilizing game trails.

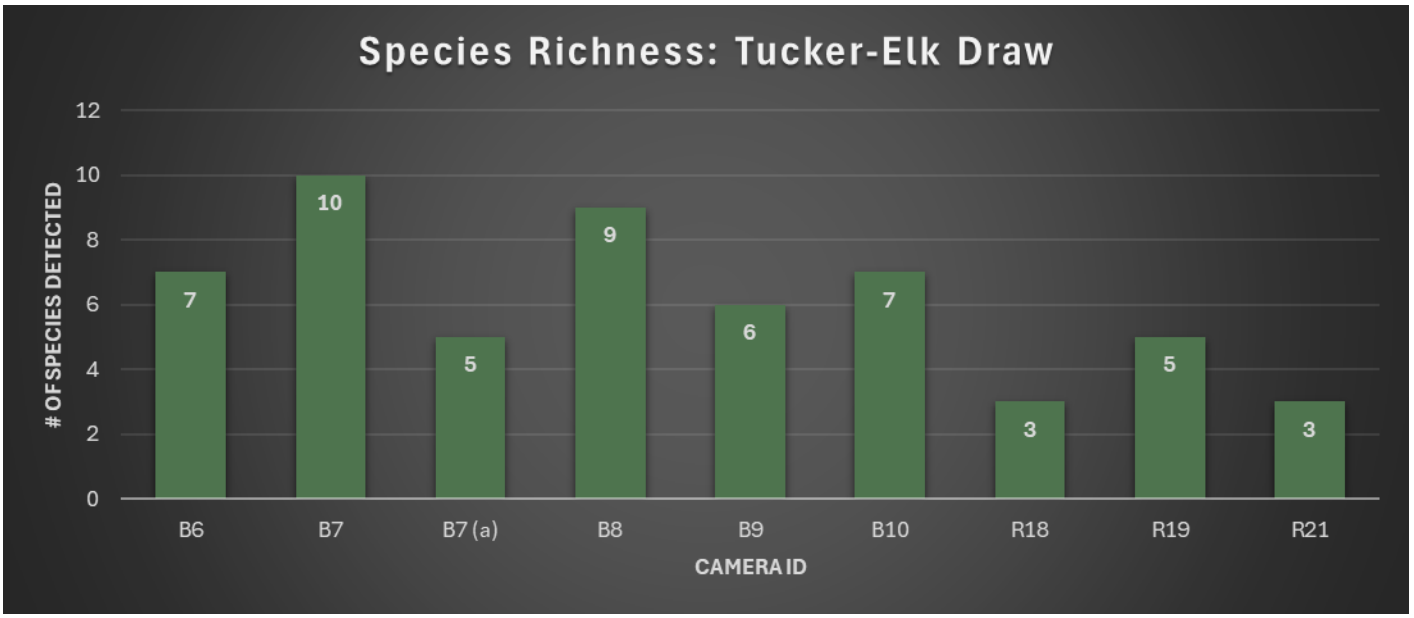


Figure 13: Tucker – Elk Draw species richness by sample location.

Additional Recommendations

- Field visits recorded significant small mammal (pine squirrel, least chipmunk) activity in mixed-conifer stands near the top of Park Hill. Wildlife staff recommend retaining of clumps of trees associated with large middens and request that connected canopy in these areas be maintained as much as possible.
- The abundance of coarse woody debris (CWD) on the forest floor varies across the project area, and decomposing wood plays an important role in small mammal, insect, fungus and plant abundance and diversity. Woody debris also provides crucial shelter, nest and den sites, and movement corridors for small species. Wildlife staff request that downed wood be left in place within areas excluded from treatment, and retention of CWD be considered across the project area. Wildlife staff will consult with Forestry staff due to areas of significant woody debris left behind from previous thinning operations along the eastern boundary of TED.

Sensitive Plant Communities and Species of Special Concern

There is one Significant Natural Community (SNC) within the TED project area: Quaking Aspen – Ponderosa Pine Rocky Mountain Forest. There is also a uniquely high graminoid cover of Geyer's sedge (*Carex geyeri*) in the understory, especially toward the eastern end of the TED project extent, representing a vegetation community type seldom seen among BCPOS properties. The SNC and the Geyer's sedge area are significant simply due to their rarity in the Colorado Front Range and presence within a narrow elevational range.

Only one species of special concern was identified in the project area in 2025: the Calypso orchid, or Eastern Fairy-Slipper (*Calypso bulbosa var. americana*) (Figure 14). This uncommon orchid is a perennial herb often with a single basal leaf and a slender flowering stem, usually no higher than 15 cm. The orchid bears one pink to purple flower and blooms in spring to early summer. The orchids were found in areas consistent with known habitat

Figure 14. The Calypso orchid, or Eastern Fairy-Slipper (Calypso bulbosa var. americana) growing in the TED project area near a drainage.

Figure 15: Vegetation communities within the TED project boundary.

requirements: in cool, moist, shady coniferous or mixed forest stands, often among thick duff and moss layers with minimal ground disturbance. The orchid is often associated with mature or

old-growth forests. Because it relies on a specific mycorrhizal fungus for germination and survival, it is very sensitive to habitat alternation and disturbance.

Ten distinct vegetation communities were mapped to the association level using the US National Vegetation Classification (USNVC) system within the TED project area, including Lodgepole Pine/Geyer's Sedge Forest (42 acres), Douglas-fir/Common Juniper Forest (22 acres), Quaking Aspen-Ponderosa Pine Rocky Mountain Forest (17 acres), Subalpine Fir-Engelmann Spruce/Grouse Whortleberry Forest (7 acres; SNC with a rank of G3S1), Ponderosa Pine/Kinnikinnick Woodland (5 acres), Quaking Aspen/Timothy Semi-natural Forest (3 acres), Ponderosa Pine/Geyer's Sedge Woodland (2 acres), Ponderosa Pine - Douglas-fir/Geyer's Sedge Forest (2 acres), Ponderosa Pine/Common Juniper Woodland (2 acres), and Populus tremuloides - Pinus contorta/Juniperus communis Forest (1 acre). See Figure 15 for a map of these vegetation communities.

The footprint of the single Colorado Natural Heritage Program (CNHP) designated SNC in the TED boundary (Quaking Aspen – Ponderosa Pine Rocky Mountain Forest), is illustrated in the map below in red, comprising 17 acres (16%) of the project area (Figure 16). It is ranked by CNHP as G3S1 (Globally vulnerable, State critically imperiled). Occurring only within a narrow band of elevation in the Colorado Front Range, this successional, mixed aspen-conifer forest has a moderately open to closed canopy with occasional presence of other conifers such as lodgepole pine, limber pine, and Douglas-fir. The open growth form of aspen allows more light to penetrate the canopy compared to pure conifer stands, promoting a richer understory, particularly in younger or more mesic sites. The short-shrub understory is comprised mostly of common juniper, but wax currant and mountain ninebark are other common shrubs. Geyer's sedge comprises a notable cover in the herbaceous cover, as well as a wide variety of forb species. This

Figure 16: Highlighted in red, the significant natural community Quaking Aspen – Ponderosa Pine Rocky Mountain Forest is ranked as a G3S1 community by the Colorado Natural Heritage Program.

forest type is ecologically significant for its structural diversity and transitional nature, and for the uncommon assemblage of dry-tolerant ponderosa pine and other upland species with mesic plants such as aspen. Care should be taken to retain understory shrubs in these areas. No other specific management actions are recommended at this time.

In addition to the one CNHP-designated significant natural community, there are several areas within the project comprising multiple USNVC community types that exhibit a high Geyer's sedge understory, despite a sometimes dense conifer canopy (see Figure 17). These vegetation communities within the TED project boundary represent most of the known forested land managed by BCPOS that have a high sedge understory, making this area unique among BCPOS properties. Thinning conifer stands with a high Geyer's sedge understory does not necessarily confer a benefit to the sedge. In a 1992 study on whether competition from overstory ponderosa pine trees limited growth of understory vegetation, particularly Geyer's sedge in northeastern Oregon forests, Riegel, Miller, and Krueger (1992) found canopy thinning alone did not significantly increase biomass production of Geyer's sedge. Canopy thinning did significantly increase light (photosynthetically active radiation) and midday air temperature, while it reduced midday relative humidity. The study found that root trenching around sedge populations – severing ponderosa pine roots entirely – had a strong positive effect, indicating that below-ground competition for water and nutrients is the primary factor limiting Geyer's sedge growth in that forest system, unlike increased light availability.

In June 2025, BCPOS Plant Ecology staff evaluated several conifer stands (mix of mostly

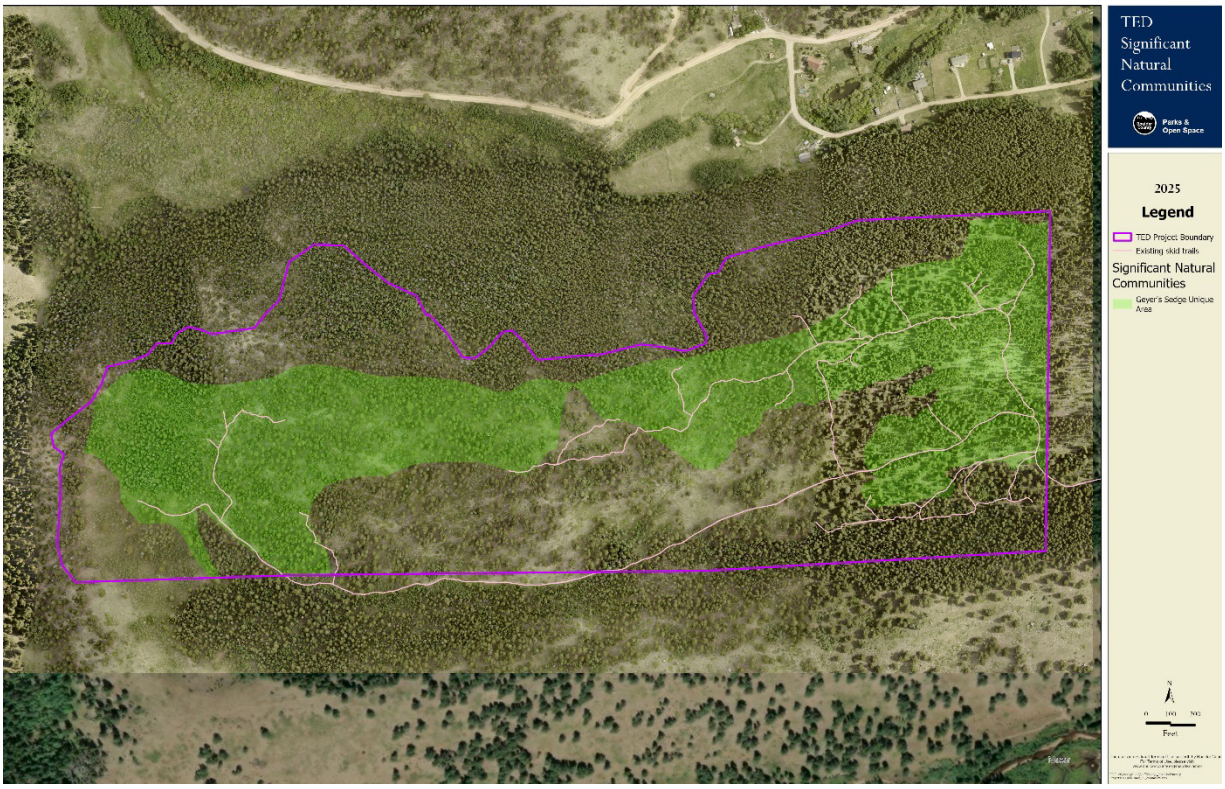


Figure 17. Highlighted in green, conifer stands with a high Geyer's sedge understory represent a unique assemblage of USNVC community types among BCPOS properties, totaling roughly 46 acres (44%) of the TED project area.

lodgepole, Douglas-fir, and ponderosa) on the eastern end of the project area that contained a high Geyer's sedge understory (30-50% cover in the herbaceous stratum) and found that in areas

with the highest sedge cover, conifer canopy cover ranged from about 25 to 55%. While the sample size was small and this brief evaluation does not meet the standard of high-quality research, it may provide a general concept of acceptable canopy cover range for ideal Geyer's sedge habitat within the project boundary.
Geyer's sedge often increases in cover after lighter disturbances such as trampling, but is highly susceptible to more intense disturbances such as during logging operations where its rhizomes can become damaged. For this reason, it will be important that logging equipment is restricted to existing skid trails, and that operations are completed during times of high snowpack or during frozen conditions. Geyer's sedge often increases after fire, but its success is largely dependent on fire severity, with cover decreasing after stand-replacing wildfires (and clearcuts), and increasing in cover after low severity burning. The intensity of fire during slash pile burning would likely be detrimental to the sedge in the immediate vicinity; therefore piles should be kept off or minimized, when possible, in these heavier sedge understory areas. Plant Ecology staff will work with Forestry staff to identify the best locations of patch cuts to avoid areas with the highest density of sedge cover.

Invasive Weeds

Invasive Plants staff has conducted a review of this project site for presence of invasive plants and noxious weeds in 2024. Consistent with high altitude sites, presence of noxious weed species is limited on the Tucker, Elk Draw Open Spaces. General species encountered:

State of Colorado List A Eradication Species – None. The area will be monitored for the potential presence of Orange Hawkweed (*Hieracium aurantiacum),* which is found in the general surrounding areas of Nederland.

Other Boulder County designated eradication weeds for this site would include Musk Thistle (*Carduus nutans)*, Common Teasel (*Dipsacus fullonum),* and Oxeye Daisy (*Leucanthemum vulgare*). State and County List B Suppression species found on site were Canada Thistle (*Cirsium arvense*), Common Mullein (*Verbascum thapsus*), Downy Brome (*Bromus tectorum),* and Diffuse knapweed (*Centaurea diffusa*). These noxious and invasive weeds will be monitored post forest mitigation by the Invasive Plant group's Restoration and Eradication Specialists.

Contractors conducting land management activities on Boulder County lands must follow Best Management Practices (BMPs) to prevent the introduction and spread of noxious weeds. All equipment, vehicles, and tools must be cleaned of soil, seeds, and plant materials before entering and after leaving the site. Contractors should avoid disturbing weed-infested areas during peak seed production and must promptly report new infestations to the project manager lead. When soil disturbance is necessary, early revegetation should be prioritized. Any revegetation efforts should be done with weed-free seed mixes, approved by Plant Ecology or the Invasive Plants group. If the contractor will be applying herbicide, they must comply with all label directions and applicable State or Boulder County regulations, and only target species identified by the agency. Adherence to these BMPs helps protect native ecosystems, reduce long-term control costs, and ensure compliance with Boulder County land stewardship goals.

Despite these types of precautions new populations of weeds are usually created. In general, this is due to soil disturbance and changes of light penetration through the canopy reaching the forest floor after treatment and having noxious or invasive weed seed already in the soil seed bank.

Depending on length of time to complete these projects, periodic inspection for new noxious weed populations and an aggressive noxious weed treatment plan post forest management can help prevent new extensive populations of noxious weeds especially in high disturbance areas.

General integrated weed management techniques shall be utilized in the management of existing and future noxious weed populations. This can consist of the use of mechanical, chemical, or biological controls or some combination thereof. If herbicide options will be utilized, care should be taken to not impact plants that are rare or species of concern across the site.

Cultural Resources

In July 2025, a Class III cultural resources inventory was conducted, which included systematic pedestrian survey of the project area. The survey documented three previously recorded linear sites and 32 newly identified cultural resources. These include four historic sites (a trash dump, a ditch/channel, and two locales with structural remains and prospect pits) as well as 28 isolated finds such as prospect pits, can scatters, historic debris, a stove, a steel trap, and a small number of undetermined-age artifacts and features.

Overall, the findings reflect the late 19th–early 20th century mining and ranching history of the area. None of the identified resources were recommended as eligible for listing in the National Register of Historic Places or as Boulder County historic landmarks. As a result, no further cultural resource work is recommended for the project at this time.

The Tucker-Elk Draw properties lie within a culturally significant region historically used by Indigenous peoples. There is evidence of long-term occupation and seasonal use of the surrounding montane environments. Because cultural landscapes and traditional use areas may not always leave visible or formally recorded traces, all project activities will adhere to Boulder County's Unanticipated Discovery of Cultural Resources Protocol.

Unanticipated Discovery of Cultural Resources

If any materials or features potentially associated with historic or Indigenous cultural use are encountered during excavation or construction activities – including artifacts, foundations, structural remnants, or bone – all work in the immediate vicinity must be halted. The contractor must notify the Boulder County Parks and Open Space Cultural Resource Program Coordinator immediately.

The following response tiers apply:

- Non-significant or Isolated Finds
  If the materials are clearly non-significant (e.g., scattered modern refuse, isolated artifacts, or features lacking integrity), the contractor may resume work without further delay. In most cases, the feature may be left in situ with minor adjustments to avoid further disturbance.
- Potentially Significant Finds
  If the discovery appears to have potential historical or archaeological significance, field crews should stop work in the immediate area, take a photograph with GPS coordinates (e.g., using a phone in the field), and leave the material in situ until it can be evaluated by the Cultural Resource Program Coordinator. A cultural resource professional will then assess the site. Work will remain paused in the affected area until the evaluation is complete and Boulder County provides authorization to proceed. Mitigation measures (e.g., documentation, avoidance, or data recovery) may be required.

- Human Remains
  If human remains are discovered, all work must cease immediately in accordance with Colorado Revised Statutes § 24-80-1301–1305. Local law enforcement and the State Archaeologist will be notified, and no work may resume until authorized by the appropriate authorities.

This protocol applies to all ground-disturbing activities, including excavation, mechanical thinning, forwarding, grading, and more.
All contractors and subcontractors will receive a project briefing that includes cultural resource protection policies and the importance of maintaining sensitivity to cultural landscapes during project implementation.

Mechanical Harvesting - Specifications & Considerations

Felling, delimbing, and bucking will be accomplished at the stump, either with fully mechanical equipment or a chainsaw. All material generated will be pre-bunched trailside and yarded to the designated landing/loading area by a mechanical forwarder along pre-designated forwarding routes.

Operational Specifications

Due to proximity to the Town of Nederland, active forestry operations will only occur Monday through Friday. Active operations are prohibited on Saturday and Sunday as well as federal holidays. As a safety measure the property will be closed to the public Monday through Friday during operations.
This is a fully marked project utilizing both individual 'take' tree mark (ITM) and boundary marking. All take trees will be marked at approximately breast height with blue paint. Patch cut = vertical blue stripe facing into unit. Project boundary = blue/white candy stripe flagging. Individual stands = yellow silviculture boundary flagging. Reserve areas = pink RMZ flagging.
All operations will cease if Colorado Parks and Wildlife staff or Boulder County wildlife staff inform the Project Manager of significant elk movement occurring in the project area. Operations will also cease if the Operator or Project Manager observe significant elk movement through the current operational area. Operations may resume when Colorado Parks and Wildlife staff or Boulder County wildlife staff give their approval.
Stump height will not exceed 6" on the uphill side. If this is not attainable with fully mechanized harvesting, a chainsaw may be used to lower the stump to specs. The stump height standard will be enforced. Stumps should be cut flush for aesthetics.

- All designated stems to be harvested will be felled, de-limbed, and processed at the stump. Stems will preferably be processed to tree length, but no less than a minimum of 8' log length and to a minimum top diameter of 5". Material less than 8' in length, and not meeting the minimum top diameter of 3", may be delimbed and piled according to the specific unit's slash guidelines

Slash treatment, other than grinding, will primarily consist of hand piles. Due to multiple factors, the average pile size needs to be kept in the range of 8-10' diameter, 6-8' in height, compact as possible, and free of oversize material and contaminants. In order to avoid scorching the residual overstory, piles should not be constructed under the crown/canopy.

- Forwarder traffic will only operate when adequate snowpack (>1 foot depth) is present, and the soil is frozen to decrease disturbance and soil compaction. At no time will operations be allowed if soil conditions are above the plastic limit.

All equipment and haul traffic will be restricted to operating on pre-designated landings and established haul roads.

Operational Considerations

All equipment must be maintained and in good working order. Continuous and/or excessive oil, hydraulic, coolant fluid, or fuel leakage will not be tolerated and will be cause to have the machinery removed immediately from the site. The contractor will be held liable for any site contamination, including removal of any contaminated soil by the contractor.
All bulk fuel storage/transfer tanks shall either be contained in a vehicle or, if stationary on-site, placed within a lined catchment basin or tank.
All equipment used on site shall be cleaned prior to arrival to ensure that noxious/invasive weed seed is not present. Machinery will be subject to the Project Manager's inspection before unloading at the site.
All machinery, other than mechanical harvesters, will be restricted to operation on the pre-designated landings, established skid/forwarding trails, and haul roads.
Any equipment maintenance and repair on site shall be done in a responsible manner with proper prevention/mitigation measures taken to alleviate any site contamination. Welding, outside of County burn bans, may only take place over bare mineral soil with a fire extinguisher and shovel within easy reach.
Equipment operations will only be conducted when surface conditions are frozen, and at least 1' snowpack is present. All reasonable measures will be taken to avoid rutting and excessive soil compaction. Significant and unnecessary site damage, as deemed by the Project Manager, will be the responsibility of the contractor to rehabilitate at the direction of the Project Manager or their designee.
Excessive site damage and rub trees will not be tolerated.
Standard forestry Best Management Practices (BMPs') as outlined by the CSFS, are to be adhered to for all harvesting/treatment activities. Contractor is responsible for a thorough working knowledge of the current updated 2023 BMP Standards for the State of Colorado. All exclusion areas for wildlife, riparian areas, etc. will be clearly marked by the Project Manager.
All equipment operators shall have the skills to operate the machinery in a responsible, safe, and efficient manner while being conscientious of natural resource and public values.
The contractor will maintain a clean operation. All trash, refuse, and waste will be disposed of properly and hauled off site, daily, by the contractor. The contractor must provide on-site portable toilet facilities for their staff.
Overnight camping by contractor and/or designees is not permitted.
Contractor must abide by, and is responsible for being familiar with, all applicable BCPOS rules and regulations found here: Parks & Open Space Rules and Regulations - Resolution No. 2023-024

Transportation of Harvested Forest Products

In order to facilitate efficient and cost-effective transportation of the harvested material, the contractor will be required to transport all harvested material designated for removal as outlined below. Final destination for material removed from the project is the BCPOS Forestry Storage Yard located at 7698 Saint Vrain Road, Longmont, CO 80503.

Material will be loaded from the landing/decking area, transported, and unloaded to the final destination located at 7698 Saint Vrain Road, Longmont, CO 80503. No hauling will take place on Saturdays, Sundays, or federal holidays.
The haul distance, one way, from the center of the primary landing to the final destination is approximately 40 miles. Transportation route includes segments of municipal, county, state, and federal paved roads. The contractor is solely responsible for any required transportation fees/permits associated with project.
Contractor will have the sole responsibility for all resources and personnel needed to load, transport, and unload the material. No equipment or operational support will be provided by Boulder County. A loader may be staged at the final destination area if the contractor desires to do so. Self-loader trucks may be used as the primary means of product transportation, negating the need for an additional loader.
Decking areas at the final destination will be clearly identified by the Project Manager.
Decks at the destination area, 7698 Saint Vrain Road, Longmont, CO 80503, will be constructed in a neat and orderly fashion at the pre-designated area.
Caution signs, indicating heavy truck traffic, will be provided by the contractor and shall be placed at appropriate intersections located adjacent to the project.
All truck drivers, whether employees or sub-contractors, will be fully licensed and experienced CDL drivers. Drivers must be experienced with driving in adverse conditions, on unimproved roads, that include steep/rough terrain. All transport equipment must be in fully operable safe condition as set forth by CDOT regulations.

Site Rehabilitation

The contractor will be responsible for mitigating and repairing adverse equipment impacts at the project site. This will include all skid/forwarder trails, landings, and access roads.

- Landing rehabilitation will be the responsibility of the contractor. This may include ripping and seeding. The landing will be inspected by the Project Manager and rehabilitation actions will be determined at that time.
- Forwarding/yarding trails will be rehabbed by the contractor to deter unauthorized trail creation after operations.
- The contractor will be responsible for negative and unnecessary impacts to forwarding/yarding trails within the units. The Project Manager and/or designee will inspect the forwarding/yarding trails and rehabilitation actions will be

determined at that time. Most likely this will not involve ripping but may involve seeding.
- BCPOS will provide the required seed mix.
- Contractor will be held responsible for any damage to public roads sustained during the project.

Safety and Conduct

The contractor and its employees, as well as any sub-contractors, are expected to maintain a high degree of professionalism and safety while being present on Boulder County property. The units being treated are on public land; therefore, it is highly likely that the contractor will encounter public citizens utilizing trails and other available resources. In areas within the management unit that have established trail corridors, Boulder County will supply safety signs to be placed along appropriate trail corridors. It is the contractor's responsibility to maintain adequate safety zones with regard to all components of its operation. Aspects of safety and conduct include, but are not limited to:

All personnel associated with the contractor will wear O.S.H.A. approved P.P.E. appropriate for their current duties.
First aid equipment/supplies will be readily available for all workers as well as reliable means of communication in the event of an emergency situation.
Equipment operators will be responsible for maintaining an awareness of the safety zone surrounding their particular application/operation.
One (1) 5# fire extinguisher will be in place on mobile operational equipment as well as trucks.
One (1) hand tool (shovel, Pulaski, etc.) will be readily available for each employee currently on site for fire suppression, if needed.
Unlawful, rude, or aggressive behavior will not be tolerated.

Monitoring of Post-Project Conditions

Implementation monitoring will be completed within one year of the end of the treatment. This monitoring will focus on the prescriptive elements of the scope of work (SOW). Monitoring efforts will be focused on the variables: basal area, tree density, species composition, distribution of snags, and spatial heterogeneity. The sampling design can be the same as the baseline inventory or a new sampling design can be created. Information gathered during this process will be used to inform or adjust future SOW for the area.

Monitoring for project effectiveness will be completed within one year of the end of the project. This type of monitoring will focus on the stated objectives and desired future outcomes. The purpose of this monitoring is to determine if conditions have moved towards the stated goals. Sampling design for this monitoring will use the same protocols as the baseline inventory. Key metrics such as structure, composition, and function will be modeled and compared to pre-treatment conditions.
Specific areas that require site rehabilitation will be monitored annually for three years. Any presence of Colorado 'List A' Invasive Vegetation will trigger immediate notification to the Invasive Vegetation Senior Resource Specialist and may require direct control, such as, but not limited to, chemical application or removal, depending on the recommendations of the Invasive

Vegetation group. Presence of List B or C Species will trigger the same notification, but the corrective action may be delayed until staff is available to deal with it. Any deterioration of erosion control features that are deemed necessary will require maintenance or replacement as determined by staff.

Ongoing monitoring and maintenance will be conducted by BCPOS forestry staff. Regeneration of saplings within patch cuts is expected and dense regeneration will be maintained by thinning the saplings while young. The area will be monitored for any new unauthorized trail creation following operations. Resource Protection and Trails Staff will be notified of any authorized usage, so that enforcement or remediation can occur.

Slash piles will be burned by the Boulder County Sheriff's Office Wildland Fire crew in subsequent winters once the piles are sufficiently cured and as weather conditions allow. The project area will be monitored regularly for issues of blowdown, detrimental insects, and excessive regeneration. Reentry into the unit to address any issues will be assessed as needed. Broadcast prescribed burning would be the ideal tool for long-term project maintenance and may be considered for future use based on fire personnel risk assessment, community acceptance, and financial and logistical capacity.

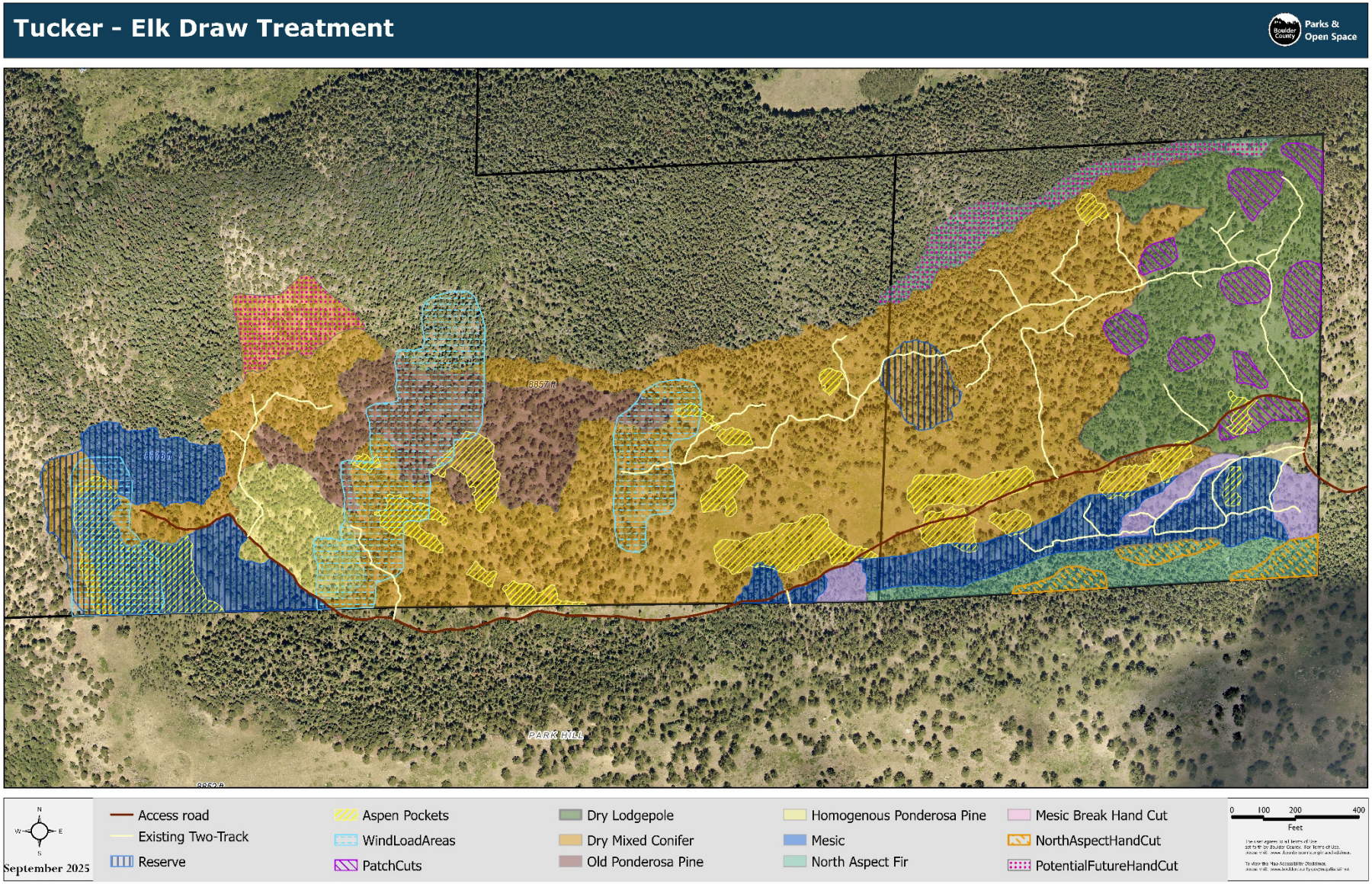
Budget Items

Grant Award: 2024 COSWAP-LRI
Match Requirement: BCPOS CAST Funding
This will be completely funded by CAST. COSWAP-LRI funds are going to Arapahoe Ranch, USFS, etc.

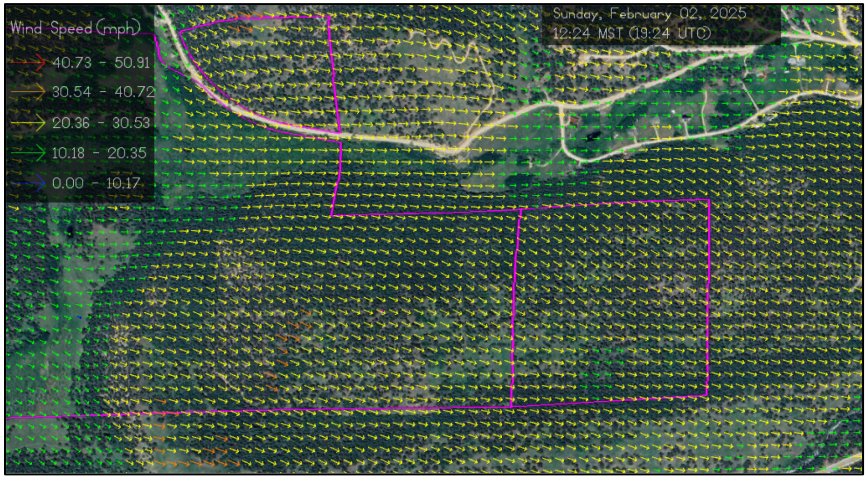
Tentative Milestone dates

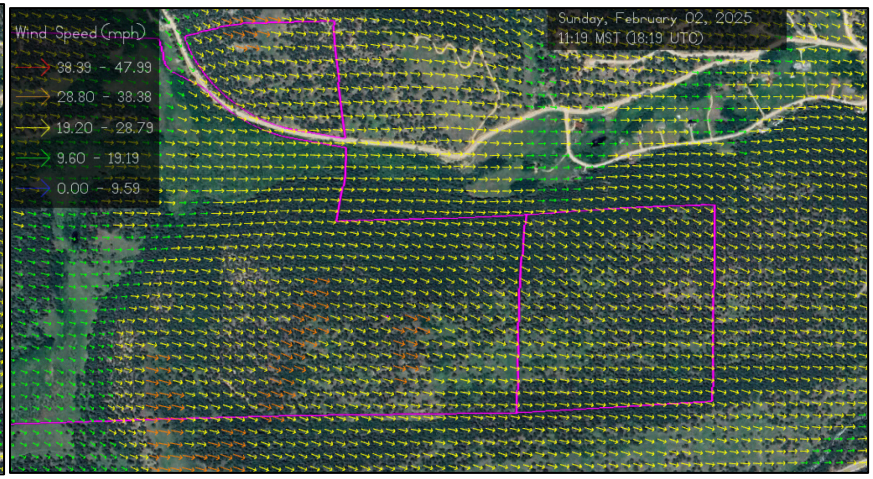
Q3/2025: Layout/mark project
Q3/2025: Release RFP, conduct pre-bid tour, select contractor
Q4/2025-Q1/2026: Initiate mechanical operation, weather and timeline permitting
Q2/2026: No action, monitor
Q3/2026: Initiate hand cut and pile with wildlife staff approval, complete contract and close out if mechanical operation is complete
Q4/2026-Q1/2027: Resume mechanical operation if not completed previous winter, complete contract and close out
Q1/2027 and beyond: BCSO burn hand piles during suitable operational periods, invasive weed control and post-treatment monitoring.

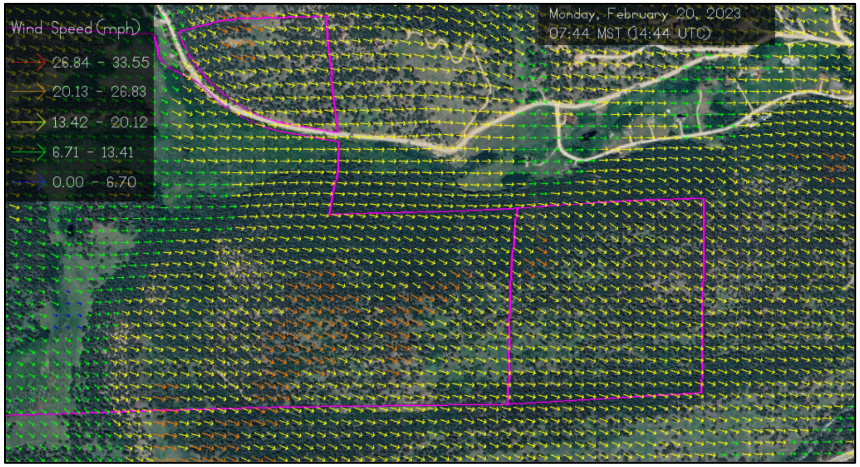
Appendix 1: Tucker – Elk Draw Treatment Map

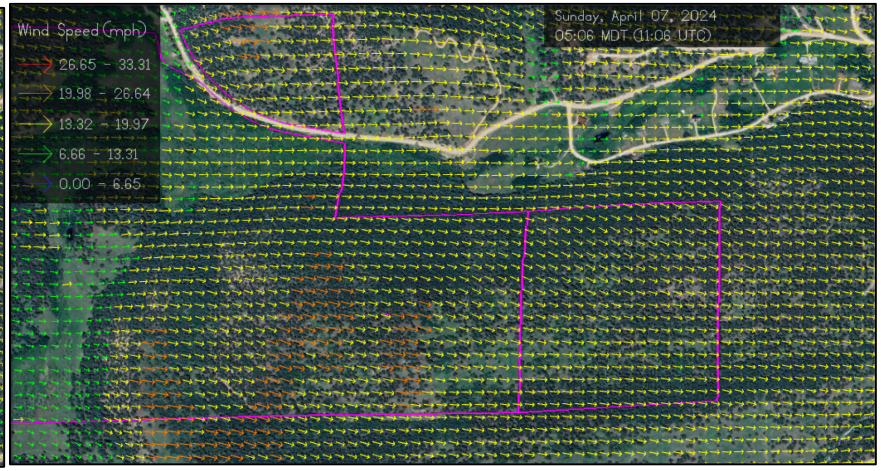


Appendix 2: Example WindNinja Outputs









Appendix 3: Fire Behavior Model

Fuel Models

The project area for this analysis is 106 acres in size and is comprised of 6 main fuel models according to Landfire data (Fig 1). A high-load conifer litter (TL5, 185) is the most abundant, covering 60 acres or 57% of the area. A less abundant but representing the same vegetation cover is a long needle litter (TL8, 188) fuel model that covers 8 acres or 8% of the area. These fuel models are generally characterized by light slash or mortality fuel and needle litter with a low to moderate rate of spread and low flame lengths. In the project area this is representing the lodgepole dominated areas including the previously treated portions with activity fuels still present as well as the more closed canopy areas co-dominated by ponderosa pine and Douglas-fir.

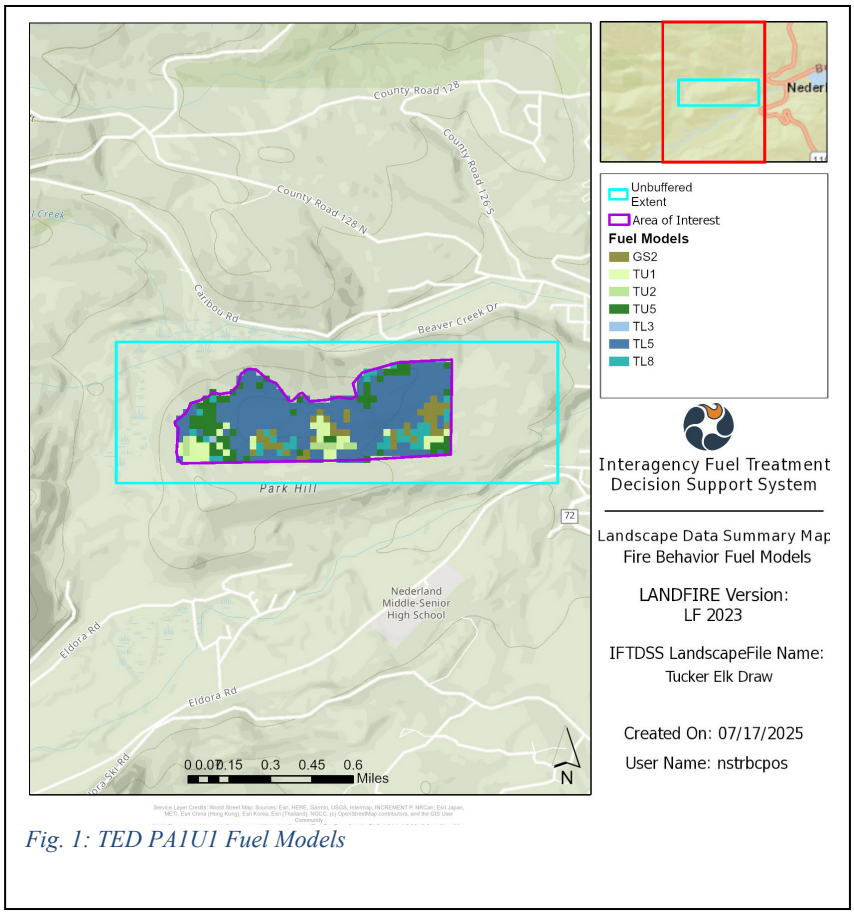


Fig. 1: TED PA1U1 Fuel Models

A very high-load, dry climate, timber-shrub (TU5, 165) is the next most abundant fuel model covering 16 acres or 15% of the project area. This fuel model is generally characterized by a conifer overstory with heavy forest litter with a shrub or small tree understory with a moderate spread rate and flame lengths. This fuel model is most representative of areas where firs are dominate or co-dominate with a surface vegetation comprised of conifer regeneration and/or common juniper, bitterbrush, and wax currant.

A low-load, dry climate, timber-grass-shrub (TU1, 161) model covers 10 acres or 9% of the area and a moderate load, humid climate timber shrub (TU2, 162) model that covers 2 acres or 2% of the area generally have a low to moderate spread rate and low flame lengths. This fuel model represents the more open areas dominated by ponderosa pine and aspen with a diverse understory. The final fuel model in this analysis is a moderate-load, dry climate, grass-shrub (GS2, 122) model that covers 10 acres or 9% of the area and generally has a high rate of spread and moderate flame lengths. This model represents the most open areas that are comprised of common juniper, bitterbrush, wax currant, as well as native and non-native grasses and forbs.

Fire Behavior

The fire behavior for the Tucker Elk Draw (TED) project was modeled by fire management staff using data from Landfire (v. 2023), Fire Family Plus (FF+, v. 5.0 build Mar 6 2024) and the Boulder County Parks and Open Space inventory data as inputs for BehavePlus 6 (v. 6.0.0 build 626) and the Interagency Fuel Decision Support System (IFTDSS, v. 3.11). Inputs for the models can be found in Table 1. The dead fuel moisture inputs represent elevated (3rd percentile) conditions for the Pickle Gulch Remote Automated Weather Station (RAWS) located south of Nederland along Hwy 119.

1 Hr Fuel Moisture	10 Hr Fuel Moisture	100 Hr Fuel Moisture	Live Herbaceous Fuel Moisture	Live Woody Fuel Moisture	Foliar Moisture
4%	7%	9%	106%	108%	100%

Table 1: Inputs for modeling taken from RAWS data.

The modeled flame lengths for the project area range from <1' to >25' with the majority of the area falling into the lower categories of <4' (Fig. 2). These areas with lower predicted flame lengths are less dense with a significant vertical separation between the surface fuels and the tree canopies. The closed canopy areas dominated by lodgepole pine also see lower flame lengths because the primary carrier of the fire is predicted to be the litter layer which lies on the surface allowing for significant vertical separation between surface fuels and canopy. This dynamic would likely change in areas with high fuel loads from blowdown. The areas with higher flame lengths (>25') are areas that do not have a vertical separation between the surface and the canopy, mainly in areas with a significant shrub and/or small

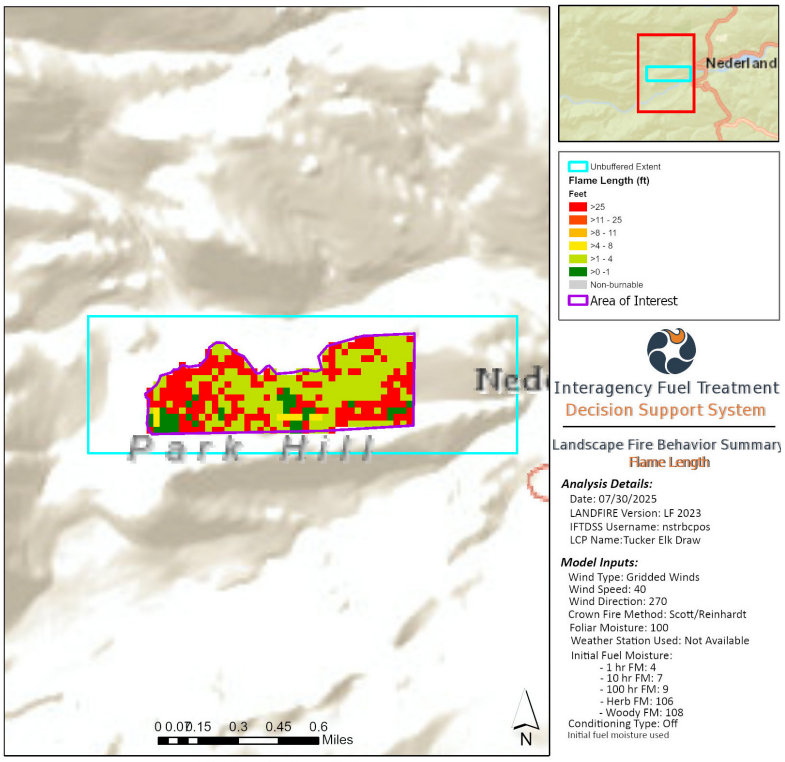


Fig. 2: TED PA1U1 flame lengths

tree (ladder fuel) component. The rates of spread also vary quite a bit from <2 ch/hr to >150 ch/hr (2.2-165 ft/min) (Fig. 3). Spread rates are dependent on the type of fire that is burning through the area. The areas with lower flame lengths are predicted to have lower rates of spread. This can be interpreted as fire that remains at the surface will move slower while fire that moves through the canopy will be significantly faster.

Fire that moves through the canopy poses another problem beyond just the speed at which it moves. Crown fires also produce brands that are lofted into the atmosphere and land out ahead of the main fire, starting new fires. Using gridded winds, the highest potential for crown fire is predicted at the windward side of the ridge on the western portion of the project area and also in areas with a less vertical separation between the surface fuels and the canopy due to a low canopy base height, taller vegetation such as small diameter trees, or fuels that produce greater heat per unit area, such as common juniper (Fig. 4).

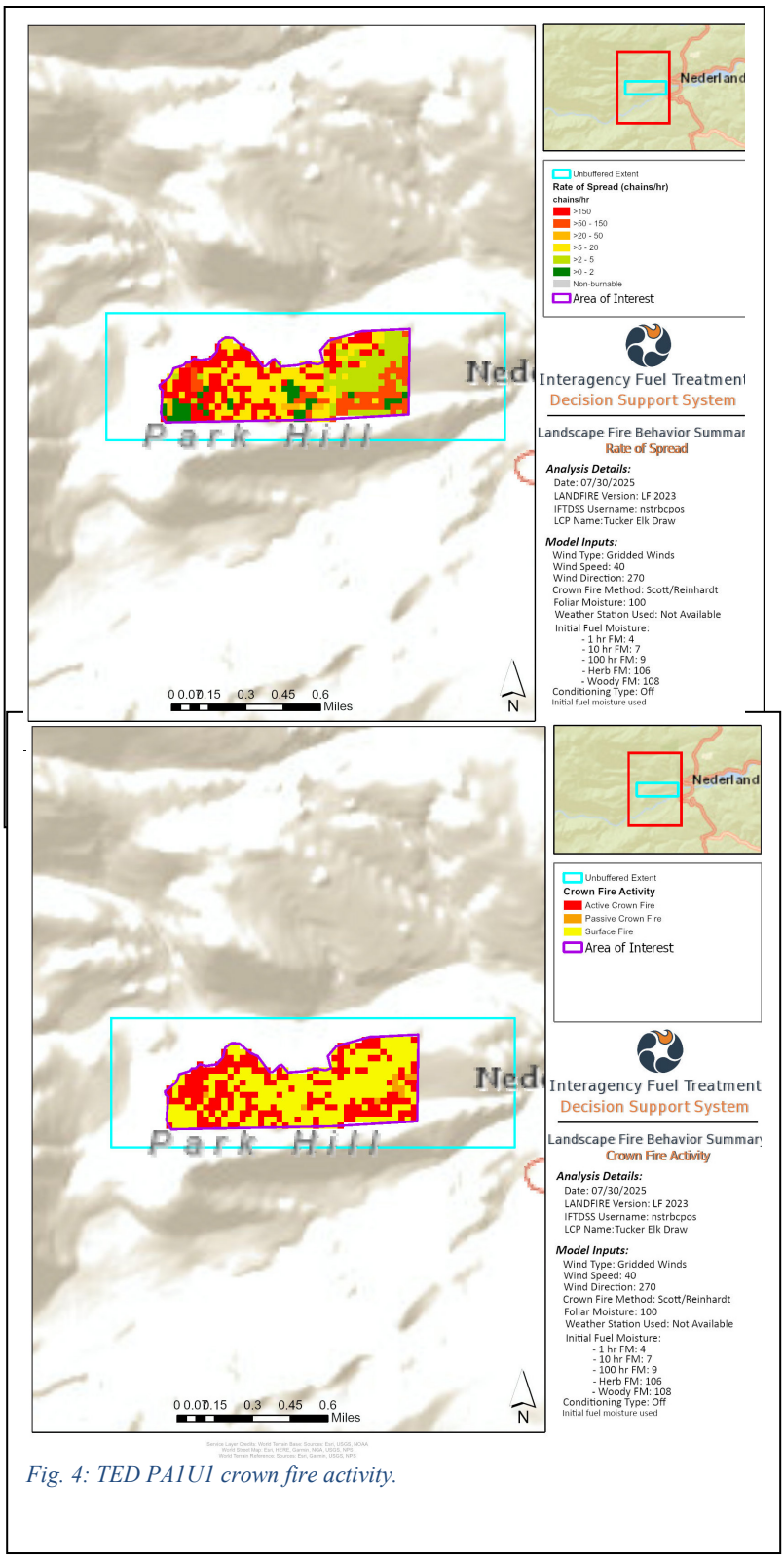


Fig. 4: TED PA1U1 crown fire activity.

Results for: Transition to Crown Fire ?

Douglas-fir

20-ft Wind Speed	Canopy Base Height ft					
mi/h	3	4	5	6	7	8
15	No	No	No	No	No	No
20	No	No	No	No	No	No
25	No	No	No	No	No	No
30	No	No	No	No	No	No
35	No	No	No	No	No	No
40	No	No	No	No	No	No

Subalpine fir

20-ft Wind Speed	Canopy Base Height ft					
mi/h	3	4	5	6	7	8
5	Yes	Yes	Yes	Yes	Yes	No
10	Yes	Yes	Yes	Yes	Yes	Yes
15	Yes	Yes	Yes	Yes	Yes	Yes
20	Yes	Yes	Yes	Yes	Yes	Yes
25	Yes	Yes	Yes	Yes	Yes	Yes
30	Yes	Yes	Yes	Yes	Yes	Yes

Lodgepole pine

20-ft Wind Speed	Canopy Base Height ft					
mi/h	3	4	5	6	7	8
15	No	No	No	No	No	No
20	No	No	No	No	No	No
25	Yes	Yes	Yes	Yes	Yes	Yes
30	Yes	Yes	Yes	Yes	Yes	Yes
35	Yes	Yes	Yes	Yes	Yes	Yes
40	Yes	Yes	Yes	Yes	Yes	Yes

Table 2: Tables showing the wind speeds necessary to initiate crown fire based on canopy base height and forest type.

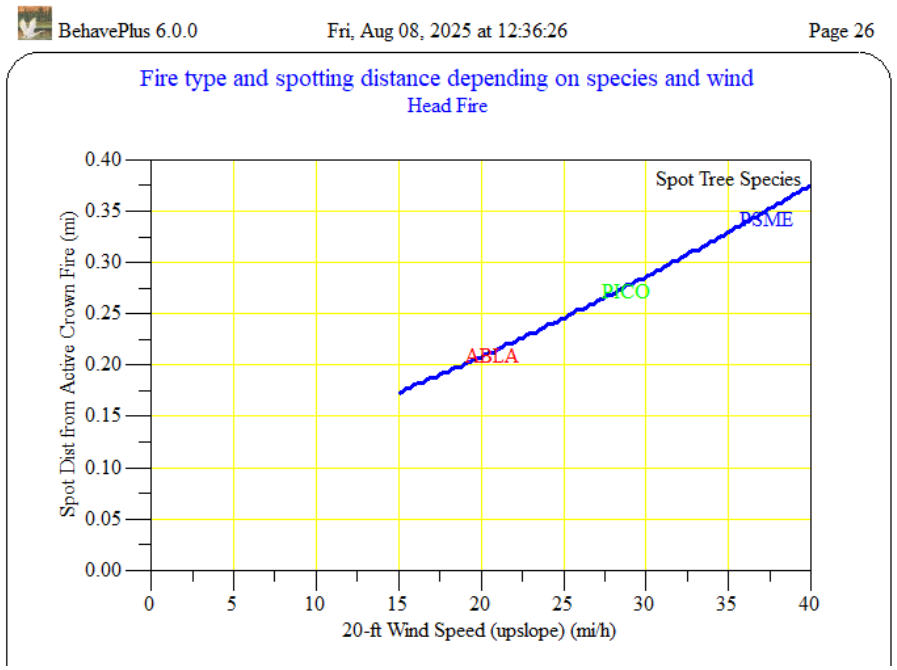


Fig. 5: The distance of spotting crown fire based on wind speed and species.

Using a static wind model there is a wind threshold dependent on species and canopy base height for transitioning from a surface fire to a crown fire (Table 2). In lodgepole-dominant areas it is >35 mph with canopy base heights <5 feet. In areas with subalpine fir, it is >25 mph regardless of canopy base height. The fuel model TU1 with co-dominate ponderosa pine and Douglas-fir or aspen is difficult to transition to a crown fire but Douglas-fir with a low canopy base height (<3 ft) can move fire into the crown.

Once fire has transitioned to the crowns and begins to spread, it will generate fire brands that will be lofted ahead of the main fire which can start new fires. Depending on the wind speed, the maximum spotting distance is predicted to be between 0.2 miles and 0.4 miles (Fig. 5).

Treatment Recommendations

All Cover Types

Removing ladder fuels and pruning the remaining trees up to at least 5 feet will lower the potential for a crown fire. A reduction in the canopy cover by at least 1/3 along the northern, eastern, and southern edges will help to move any canopy fire down to the surface and would be a visual target from the air for retardant application during aerial suppression of wildfire. Any access roads within the project should have <50% canopy cover 1-2 chains (66-132 feet) width on both sides to facilitate suppression activities.

Mixed-Conifer Cover

A reduction of surface fuels will lower the rates of spread and the potential flame lengths. The use of prescribed fire is the most effective method to accomplish this, but with the proximity to Nederland it may not be feasible without significant planning and public buy-in. The removal or reduction in the amount of common juniper and other shrub species would help to meet the goal of fuel reduction and the desired forest conditions of an area that supports low-moderate severity fire and is resilient to disturbance.

Lodgepole Pine Cover

Small (0.5-5 acres) patch cuts will help to limit the amount of spread that can occur through the canopy and will help to meet the goal of fire mitigation while promoting desired forest conditions that allow low-moderate severity fire to occur, enhance age class diversity, and improve spatial arrangement of fuels. The openings in the lodgepole canopy can occur across the project area, but are not recommended on the western portion of Park Hill due to the higher potential windspeeds. A more open canopy on the east side of the project will also lower the amount of fire brands that may reach Nederland.

Fir-Dominated Cover

Some removal of fir species should occur to meet the fire mitigation objectives, but it should be selective to also meet the species diversity objective. Limbing may not be an option without removal of the surface fuels at the base of the trees. Instead, it may be more effective to isolate stands that are fir-dominated with breaks in the canopy that are 1.5-2 tree lengths in size to limit the potential for spread through the canopy, particularly further east in the unit.

Appendix 4: Outreach Summary and Comment Matrix

Middle Boulder Creek Partnership Project Community Engagement Overview

Boulder County Parks and Open Space received the 2024 COSWAP-LRI Grant from the Colorado Department of National Resources (DNR), in the summer of 2024. In early 2025, BCPOS contracted with the Boulder Watershed Collective (BWC) to support community engagement and linked wildfire resilience programs in the Nederland Town area surrounding the Middle Boulder Creek (MBC) project boundary.
Community engagement for the MBC project included the following goals:
Inform the public about the planned project,
Gather public input to inform project decision making, and
Increase wildfire resilience actions in the communities surrounding the MBC project area.
BWC began the engagement process by meeting with stakeholders to co-develop the community engagement plan. BWC met with the Parks, Recreation, and Open Space Advisory Board (PROSAB) for the Town of Nederland; The Nederland Fire Protection District (NFPD) Board; The Town of Nederland; The Magnolia Forest Group; Eco-Integrity Alliance; and other wildfire and forestry focused community leaders in Nederland. Stakeholders provided input on the kinds of engagement events that best fit community interests and needs, the preferred communication channels for disseminating information to the public, common questions about the project, and other wildfire resilience priorities. Following stakeholder review, the engagement plan was finalized and uploaded to the BWC website.

The co-developed community engagement plan included three community meetings for the public to be informed and provide input on the MBC fuels reduction project, an FAQ document answering community questions about the project and forest and fire science generally, and tailored educational and action-oriented events and programming in support of broader wildfire resilience goals outlined in the Nederland and Timberline CWPP. These tailored events included community mitigation programs for Nederland neighborhoods with high wildfire risk, a reflective address sign drive to support the NFPD during emergency response situations, and educational events on topics including forest and fire ecology, beaver conservation and reintroduction, and home hardening.

Community input on the MBC project was gathered throughout the engagement process, from stakeholder meetings, the three community meetings, and open comment forms available on the Boulder County website. A short write up of each community meeting is included here. To see how community comments from these meetings and elsewhere were included in the project planning, see the details of the public comment theming process below.

Community Meeting #1: May 17th - Site Visit

The first community meeting was held on May 17th, 2025, from 10-11:30am on the Middle Boulder Creek project site at the Tucker Ranch property. Approximately 45 community members were shuttled from the Nederland Park and Ride into the project area to become acquainted with the project site, receive project background information, hear from project partners, and learn about project goals. Speakers included Boulder County Parks & Open Space,

the Boulder Watershed Collective, Wildfire Partners, Colorado Forest Restoration Institute, and the Nederland Fire Protection District.

The event began by driving vans onto the project site. After a short presentation at the parked vans inside the project boundary, participants walked a short loop of the project site and engaged in an informal Q & A while walking. Project partners tracked community questions and used these to develop a project FAQ.

Community Meeting #2: June 12 - Project Presentation & Q&A

The second community meeting was held on June 12, 2025, from 6-7:30 p.m. at the Nederland Community Center. Approximately 35 community members attended the meeting to learn about the project, including its goals, timeline, and partner organizations. Hosted by the Boulder Watershed Collective (BWC) and Boulder County Parks & Open Space, the meeting aimed to introduce the project, share community feedback collected to date, and gather additional input to help inform the draft project scope as it was being developed.

The meeting began with a welcome and overview of the agenda, followed by a presentation from project partners including BWC, Boulder County Parks & Open Space, Wildfire Partners, City of Boulder Public Works, and Nederland Fire Protection District. Presenters outlined the project's goals, potential co-benefits, and summarized the community input gathered so far. An open Q&A session followed, addressing topics such as prescribed burning, tree size cut limits, alternatives, and coordinated plans for a nearby U.S. Forest Service parcel.

The second half of the meeting featured an open house format, where attendees engaged directly with project staff and partners at topic-specific stations. These included Water Resources, Home Hardening and Defensible Space, Treatment Planning, Forest Resilience, Recreation Management, and Fire Response. This structure allowed for place-based conversations and meaningful community input to support the development of a locally-informed project scope.

Community Meeting #3: July 31, To-date Comment Integration and Project Scope Presentation

The third and final community meeting was hosted on July 31, 2025, from 6-7:30pm at the Nederland Community Center to present and discuss the draft scope for the Middle Boulder Creek project. About 20 community members attended to learn about the draft scope, hear a summary of community input collected so far, ask clarifying questions, and find out how to submit feedback.

The meeting began with an overview of the project's main goals: reducing the risk of severe wildfire, supporting fire-adapted communities, promoting resilient ecosystems, and protecting regional water supplies. Presenters from BWC and BCPOS walked through the project timeline—from initial planning and data collection to future implementation phases through 2031—and shared how public input is shaping the project's direction. Key themes reviewed from community feedback included treatment effectiveness, habitat and wildlife protection, recreation impacts, treatment methods, and long-term maintenance.

The team also reviewed detailed slides outlining proposed treatments for different forest types, before hosting a live Q&A. Attendees asked about species-specific cutting levels, the balance

between mechanical and hand treatments, treatment effectiveness, equipment types, potential effects on recreation access, and how wind conditions are being considered.
For two weeks following the meeting, a public comment form specific to the draft scope of work was available on the Boulder County project webpage.

Scope of Work (SOW) Comment Integration

Throughout the community engagement process the project team gathered comments in multiple forms. Verbal and written comments were recorded at the initial stakeholder meetings, the site visit, and the two community meetings by notetakers and by encouraging participants to duplicate their comments on sticky notes. Community members were also given an opportunity to write comments outside of engagement events through an online comment form. The comment form was made available for community members from May 7th to July 31st. A second comment form was created for comments specific to the SOW after the final community meeting that remained open from Aug 1st to Aug 15th. Additional effort was made to meet with community members who had in-depth local knowledge of the project site, to walk the property, and gather location-specific comments. Comments were also taken through email by project points-of-contact and gathered from other public forum platforms (e.g., Daily Camera Forums).

The project team has endeavored to be responsive to these community comments. Comments ranged in type from information-seeking questions, to specific project scope requests, and concerns. The site visit and second community meeting provided opportunities for the project team to respond directly to questions and concerns, provide clarifying answers, and explain the rationale behind decision making. Comments that made specific requests that impacted project scope were incorporated where possible while maintaining consideration for the accomplishment of project goals. Public comments also impacted the community engagement process, pushing for increased transparency. For example, in response to community interest in viewing the project scope, a draft scope of work was released to the public, and the final community meeting agenda was altered to present the draft scope of work and answer clarifying questions.

A second public comment period was then opened specifically for comments relating to the draft scope of work. These comments were then integrated in a few ways. The project boundary was decreased in response to public and internal feedback from 104 acres to 87 acres. An additional 12.6 acres within the project boundary were set aside as reserve, with no treatment planned in those areas. As a result of this input only 74.87 acres of the original 104 acres will be treated.

In response to the high value the community placed on impacts to wildlife, Boulder County Parks and Open Space wildlife staff increased sampling intensity above and beyond typical processes and are considering implementation of seasonal wildlife closures to ensure that impacts to wildlife are minimized as much as possible. Prescription parameters for tree cutting were also changed in response to community comments, from 75% Douglas-fir and lodgepole pine at 0-8” DBH and 75% subalpine fir at 0-3” DBH, to 66% removal for those groups. The timing for project implementation was already responsive to concerns about soil impacts and elk migration timing but working parameters have solidified in response to community comments. The timeline for the project has been extended from winter 2025-2026 to include the option for work to occur in winter 2026-2027 as well, to accommodate stringent working parameters, such as soil plasticity requirements and sensitivity to wildlife activity that may introduce delays in

work. Further considerations are ongoing for concerns around managing recreation and unauthorized trail building.

Public Comment Theming Process

After assembling all community comments, our team (one Boulder County employee, two Boulder Watershed Collective staff, and one facilitator from Collaborative Decision Resources (CDR) Associates) carefully read through all comments and created eleven topic themes that captured the general interests, concerns, recommendations, and/or questions each comment centered around (see Figure 1 below for topic themes). In some instances, comments were split up from one comment (e.g., one long paragraph) into two or more comments to better capture the main topic(s) the commentator was discussing. After establishing the 11 topic themes, the team then assigned each specific comment to one or more topic themes. While there is some human error in this process, the team was meticulous in double checking that comments generally fell under the correct topic themes, and in many cases, assigning two, or more themes to any particular comment when applicable.

In addition to assigning comments to topic themes, the team also created and assigned comments to the type of comment that was provided. Comments were categorized into one, two, or all three of these comment types, which included: 1) Questions - these comments were posed as a question, either instances where community members wanted to learn more about a topic/asked questions to understand, or wanted to know how the topics of interest to them were going to be managed, 2) Recommendation or Interest - these comments were recommended actions or topics for management, and/or posed a topic as something that should be of focus in the scope of work, or generally a topic of interest to community members, and 3) Concern or Risk - these were comments where the community member did not pose a specific recommendation, but posed a concern about potential actions/inactions of a topic.

The team then calculated the total number of people who commented in any forum, and how their comments fell across the topic areas *and* comment types (see tables below). There were 16 people who provided comments non-anonymously, and an extra 27 comments that were either anonymous or documented from the May field site visit. Therefore, there were 43 people who provided comments either verbally at the site visit or written comments at either of the community meetings, online, and/or through other mediums (e.g., news posting).

After assigning themes to each comment, the team located specific places in the SOW and the FAQ where these comment themes were addressed, and added these locations to the comment theme boxes below. Community members are encouraged to read the SOW in its entirety, but can make use of the comment theme hyperlinked responses to easily navigate to areas in the SOW where their questions or comments have been addressed.

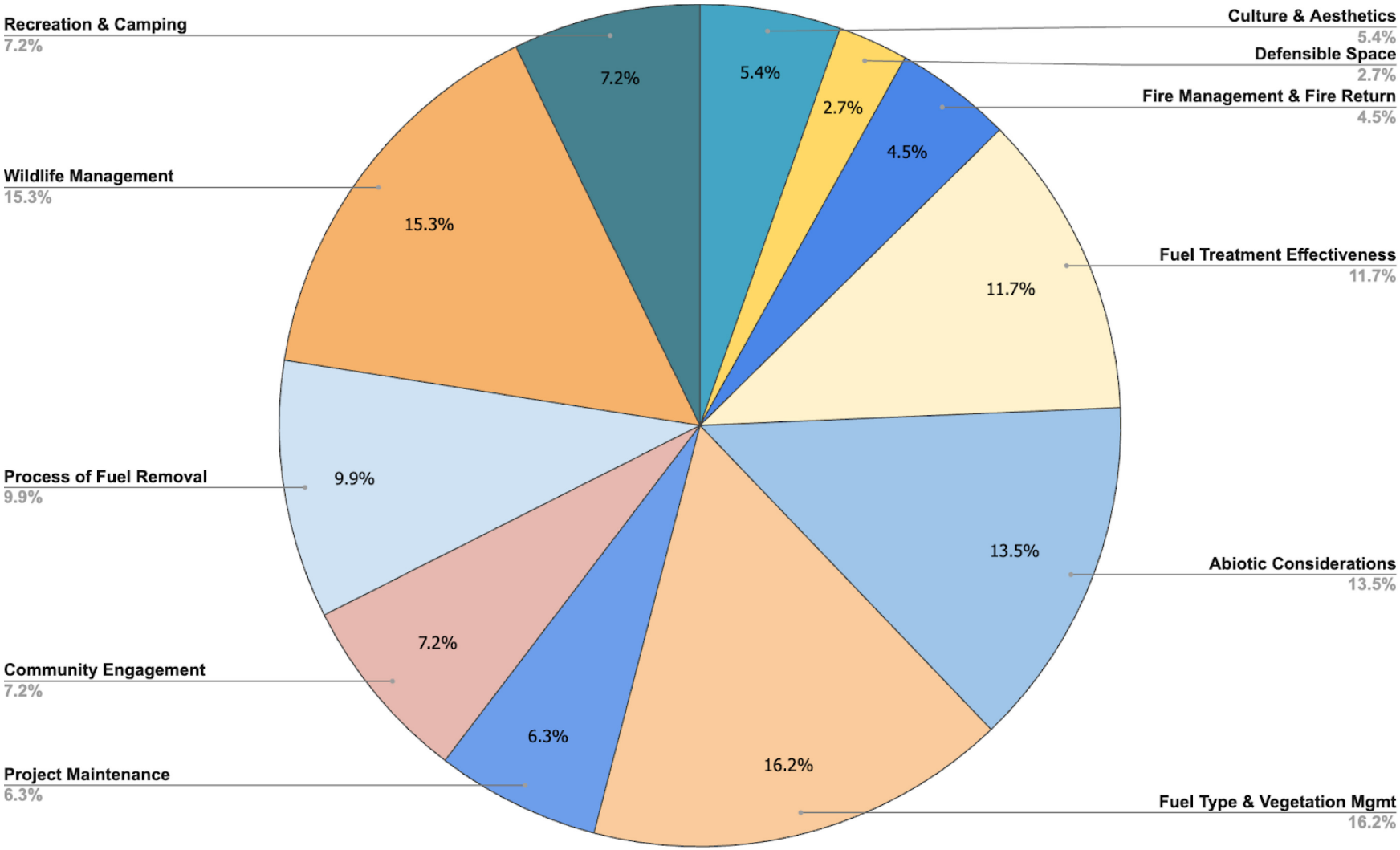


Figure 1. *Pie chart of percent of people who had questions, recommendations/interests, and/or concerns/risks about a particular topic of the 43 people who provided documented verbal and/or written comment*

Culture and Aesthetics
(6 people commented)

- **1 person** had one or more **questions** on this theme
- **5 people** had one or more **recommendations** on this theme
- **2 people** had one or more **concerns/risks** on this theme

Theme Definition**:** People's interest in advancing or minimizing the project's focus on landscape aesthetics and/or cultural considerations (e.g., culturally modified trees).

Example Comment:
"How is the County identifying and marking culturally modified trees?"

Specific Recommendations/Concerns:
Identify culturally modified trees (CMT); contact tribes to gain more information about the cultural significance of this landscape; preserve the beauty and diversity of the landscape.

Ways theme is addressed:
On CMT's and other cultural resources:

- SOW Page 13, Paragraph 3, Treatment Narrative: *"Any significant trees… will be retained and flagged to prevent accidental removal."*
- SOW Page 23, Paragraph 5 - Page 24, Cultural Resources: "...a Class III cultural resources inventory was conducted…. None of the identified resources were recommended as eligible for listing in the National Register of Historic Places."
- FAQ Page 8, Question 2, How will significant trees be protected from accidental removal?

On preserving beauty and diversity:

- SOW Page 4, Paragraph 3-4: *"TED also has high ecological value within the larger landscape…"*

Home Hardening and Defensible Space
(3 people commented)

- **1 person** had one or more **questions** on this theme
- **3 people** had one or more **recommendations** on this theme
- **2 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in advancing or minimizing the project's focus or other sources of funding on home hardening and defensible space wor*k.*

Example Comment:
"...funding could instead be put towards proven-to-be-effective home hardening and defensible space pruning 100 feet around homes adjacent to Tucker Ranch."

Specific Recommendations/Concerns:
Put more funding towards Home Hardening and Defensible Space; Home Ignition Zone (HIZ) is the critical factor in why a home burns.

Ways theme is addressed:
On why forest management is recommended as well as Home Hardening

- SOW Page 3, Paragraph 4, Treatment Rationale: "...This treatment extends beyond individual property interests, aiming to promote conditions which would increase the ability of the ecosystem to rebound after fire."

On how to access resources for Home Hardening and Defensible Space:

- FAQ Page 3, Question 3, Is Wildfire Partners' home mitigation service a part of this project? How can I reduce wildfire risk to my own home?

Fire Management and Fire Return
(5 people commented)

- **2 people** had one or more **questions** on this theme
- **3 people** had one or more **recommendations** on this theme
- **3 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in advancing or minimizing the project's focus on fire management (maintenance of natural fire, pile or broadcast burns) and/or comments referencing the historic role of wildfires on the landscape.

Example Comment:
"How is fire (and fire reintroduction) being considered in this plan since it brings new ecosystems and is a natural process?"

Specific Recommendations/Concerns:
Use prescribed fire for maintenance; forest should be left to burn and is not outside its average fire return interval.

Ways theme is addressed:
On treatment rationale and fire return interval:

- SOW Page 3, Paragraph 2, Treatment Rationale: "*Treatments…aim to foster an ecosystem that is able to accept fire in a less catastrophic way*."
- SOW Page 4, Paragraph 1-2, Treatment Rationale: "Caribou Ranch area has likely missed at least one fire cycle for this ecotone…With climate change impacts communities can expect more extreme fire weather conditions leading to elevated fire frequency, scale, and severity."
- FAQ Page 2, Question 1, What are the goals and objectives for the MBC Fuel Reduction Partnership Project?
- FAQ Page 6, Question 2, What is the difference between forest restoration and forest resilience?

On prescribed fire and maintenance:

- SOW Page 29, Paragraph 3, Monitoring of Post-Project Conditions: "Slash piles will be burned…once the piles are sufficiently cured and as weather conditions allow… Broadcast prescribed burning would be the ideal tool for long-term project maintenance and may be considered for future use…"
- FAQ Page 3, Question 2, Will prescribed fire be part of the project?

Fuel Treatment Effectiveness and Past Fuels Reduction Projects
(13 people commented)

- **2 people** had one or more **questions** on this theme
- **12 people** had one or more **recommendations** on this theme
- **12 people** had one or more **concerns/risks** on this theme

Theme Definition**:** People's focus on efficacy or inefficacy of landscape fuel treatment effectiveness and past fuel treatment projects in the area to keep communities safer and the ability to stop wildfires, and other potential outcomes from these projects (e.g., wind vector changes).

Example Comment:
"I'm skeptical that extensive logging of forests reduces wildfire risk to communities…"

Specific Recommendations/Concerns:
High winds reduce treatment efficacy; removing canopy cover dries soils and introduces more wind; some specific past treatments were not effective at impacting fire behavior; if fuel is left on the landscape (as in past projects) treatment may not impact fire behavior.

Ways theme is addressed:
On treatment efficacy:

- SOW Page 3, Paragraph 4, Treatment Rationale
- FAQ Page 2, Question 1, What are the goals and objectives for the MBC Fuel Reduction Partnership Project?
- FAQ Page 5, Question 2-3, Why is Fuel Reduction recommended for this project? Does "Fuel Reduction" reduce wildfire risk? How will this project impact fire behavior?
- FAQ Page 10, Question 1, Will the effectiveness of this project be studied in the event of fire?

On consideration for wind:

- SOW Page 13, Paragraph 2: "Thinning of small diameter understory trees can occur in most areas without impact to the wind firmness of overstory trees, but greater care should be taken for moderate diameter and overstory trees. Fewer overstory trees should be removed in areas that receive greater wind loading…"

Management - Abiotic Considerations
(15 people commented)

- **3 people** had one or more **questions** on this theme
- **13 people** had one or more **recommendations** on this theme
- **13 people** had one or more **concerns/risks** on this theme

Theme Definition**:** People's interest in the project's management for or against actions that directly alter or influence non-living parts of the system (e.g., soils, carbon sequestration, climate change, other large scale topographic changes, water quality).

Example Comment:
"Healthy, standing forests absorb and store carbon dioxide, making them one of our strongest lines of defense against accelerating climate breakdown."

Specific Recommendations/Concerns:
Concerned soil may become drier/be damaged by treatment/have reduced carbon storage capacity; recommend to keep dense stands to reduce wind and windthrow; requests to prevent erosion and protect clean water.

Ways theme is addressed:
On protecting soil:

- SOW Page 25, Paragraph 8, Operational Specifications: "Forwarder traffic will only operate when adequate snowpack (>1 foot depth) is present and the soil is frozen to decrease disturbance and soil compaction. At no time will operations be allowed if soil conditions are above the plastic limit."
- SOW Page 26, Paragraph 6, Operational Considerations: *"All reasonable measures will be taken to avoid rutting and excessive soil compaction."*
- SOW Page 12, Paragraph 1, Treatment Narrative: ": Winter operations will be conducted during periods when vegetation is dormant and wildlife activity is at its lowest, minimizing ecological disturbance."
- FAQ Page 8, Question 4, Can the cutting be carried out manually instead? What is being done to reduce the impact of heavy machinery on the landscape?
- FAQ Page 9, Question 2, Will you be building roads to enter the project area? Will you be driving over the project area in trucks/with heavy machinery?

On protecting other ecological services

- SOW Page 3, Paragraph 5, Treatment Rationale: *"... 'protecting key drinking water infrastructure, watershed health, and a known elk migration corridor'."*
- SOW Page 4, Paragraph 1-2, Treatment Rationale: "...treatment of Elk Draw and this area of Tucker Ranch has the objective of improving forest resilience to climate change and disturbances, such as fire and insect and disease."
- SOW Page 13, Paragraph 2: "...Fewer overstory trees should be removed in areas that receive greater wind loading…"

Management - Fuel Type and Vegetation
(18 people commented)

- **4 people** had one or more **questions** on this theme
- **17 people** had one or more **recommendations** on this theme
- **15 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in the project's management for or against actions that directly alter or influence the general (understory, overstory) or specific vegetation types (juniper, snags) and ecosystem structure-function in the project area.

Example Comment:
"Why the war on junipers? (I recognize that they are flammable, but they also have important values for wildlife (forage, berries). Being the property is a critical wildlife habitat I would give the upper hand to retaining them on the landscape."

Specific Recommendations/Concerns:
Retain Spruce/Fir forest types, especially in wet areas; retain structural diversity for wildlife (snags, understory veg, specifically juniper); retain diversity across landscape; retain old/legacy trees; focus cuts to the east, reduce to the west; concern about loss of cover from wind and heat in lodgepole cuts; concern about removing nutrients from forest system.

Ways theme is addressed:

- SOW Page 6-11, Forestry Prescriptions

On species diversity and retaining mesic/north aspect fir:

- SOW Page 6, Paragraph 1-4, Recommended Treatment: *"...promoting species diversity is an additional objective of this treatment."*
- SOW Page 9, Paragraph 2, Forestry Prescriptions: "These mesic areas will be retained with the exception of a few openings that will be created to provide a break in canopy for fire mitigation purposes and aspen stand enhancement."

On structural diversity for wildlife:

- SOW Page 9, Paragraph 1, Forestry Prescriptions: "Coarse woody debris is important for wildlife so efforts will be made to retain sufficient material in defined areas that will be located to pose a minimal risk of contributing to fire severity."
- SOW Page 19-22, Sensitive Plant Communities and Species of Concern
- FAQ Page 7, Question 4, How do you plan on protecting local vegetation and wildlife habitat during project implementation?

On legacy trees:

- SOW Page 7, Paragraph 2, Forestry Prescriptions: "Within this area primary emphasis will be placed on preserving individual older trees by removing ladder fuels and increasing canopy spacing. With so few areas like this left in the County, it is important to help these trees to be as resilient to fire as possible."

Management - Maintenance
(7 people commented)

- **3 people** had one or more **questions** on this theme
- **6 people** had one or more **recommendations** on this theme
- **3 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in the project's management for or against actions that consider maintenance of fuels, invasive plants, and other potential ecosystem changes.

Example Comment:
"Treatments, in particular lodgepole patch/clear cuts, need a plan for follow-up maintenance before the initial project is undertaken. Ideally this would be some form of regen thin for lodgepole, or prescribed burn for other cover types. Without follow-up maintenance the long term result of your project will likely be an increase in surface and ladder fuels and an increase, rather than reduction, in wildfire risk."

Specific Recommendations/Concerns
Create maintenance plan; move slash offsite; maintain slash onsite as mulch/inoculate with fungi to improve soil; track and mitigate insect impacts; manage weed growth after treatment; manage Lodgepole regrowth and windthrow; questions about pile burns.

Ways theme is addressed:
On maintenance and monitoring:

- SOW Page 29, Paragraph 2, Monitoring Post-Project Conditions: "*Ongoing monitoring and maintenance will be conducted by BCPOS forestry staff…"*
- SOW Page 27, Paragraph 9 – Page28, Paragraph 3, Site Rehabilitation: "The Project Manager and/or designee will inspect the forwarding/yarding trails and rehabilitation actions will be determined at that time…"
- FAQ Page 9, Question 3, What does future management and maintenance look like? What will be done for management after the cutting happens?

On weeds:

- SOW Page 22, Paragraph 4- Page 23, Paragraph 4, Invasive Weeds: "...periodic inspection for new noxious weed populations and an aggressive noxious weed treatment plan post forest management can help prevent new extensive populations of noxious weeds especially in high disturbance areas."
- FAQ Page 10, Question 2, How will weeds be managed?

On Lodgepole regrowth, maintenance, and retaining wood onsite:

- SOW Page 9, Paragraph 1, Lodgepole Patch Cut Prescription

Management - Planning and Community Engagement
(8 people commented)

- **2 people** had one or more **questions** on this theme
- **7 people** had one or more **recommendations** on this theme
- **6 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in the project's management for or against actions that consider/have been considering the community's input, general planning, objectives and definitions and Scope of Work.

Example Comment:
"I was disappointed that there was only two weeks to submit comments on the mitigation plan."

Specific Recommendations/Concerns
Concern that the project was funded before community engagement began; concern that SOW was not completed before engagement began; recommend SOW be released to the public; concern SOW did not change to reflect community comments; concern SOW needed more time for community to review; recommend continued community involvement post-treatment.

Ways theme is addressed:
Alterations based on community input:

- SOW Page 37-54, Appendix 4: Community Engagement Overview: "...in response to community interest in viewing the project scope, a draft scope of work was released to the public, and the final community meeting agenda was altered to present the draft scope of work and answer clarifying questions."
- SOW Page 6, Paragraph 5, Recommended Treatment: "The entirety of Unit 1 (totaling 104 acres) was originally proposed for treatment within this project. As a result of public feedback and input from the internal Forestry Interdisciplinary Team, the project area was revised to 87 acres of which approximately 12 acres are reserve area that 7 will not be treated. As a result of this input only 74.87 acres of the original 104 acres will be treated."
- FAQ Page 4, Question 1-2, Will there be opportunities for the public to learn more about the project, and to give comments? How will public feedback be incorporated into the project plan?

Increased wildlife monitoring resulting from community input:

- SOW Page 13 Paragraph 5 - Page 24, Resource Impacts and Mitigation Measures

Management - Specific Temporal, Spatial and Process of Fuel Removal
(11 people commented)

- **1 person** had one or more **questions** on this theme
- **11 people** had one or more **recommendations** on this theme
- **8 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in the project's management for or against actions that consider specific time/seasonality or locations (north slopes), and specific types of fuel removal (hand crews, mechanical treatment).

Example Comment:
"...we do have concern that with potentially warm winters mechanical equipment will still compress the soil, and potentially even be tracked through muddy soil. Operation limits should be put in place not just for timing, but for conditions on the ground"

Specific Recommendations/Concerns
Shred and return forest material to soil; minimize mechanical equipment use in general, and prevent from leaving existing roads; phase treatment intensity from east to west; public closures for elk migration and bird mating seasons; thin with resilience in mind, and match parameters to forest type/aspect/slope; recommend "leave areas" in mesic, windy, and high wildlife value areas; don't create new roads/hiking/biking trails; do create hiking/biking trails and improved public access; don't leave marking paint on site; clean-up slash and blowdown in lodgepole.

Ways theme is addressed:
On considerations for ecological impacts of mechanical operations:

- SOW Page 11, Paragraph 4 - Page 13, Paragraph 2, Treatment Narrative: *"Manual chainsaw work will occur in areas that are sensitive, difficult to access for equipment, or do not have larger tree removal… [however] the impact to plant and animal communities was determined to be less with mechanical winter operations."*
- SOW Page 25, Paragraph 2-9, Operational Specifications: "All operations will cease if Colorado Parks and Wildlife staff or Boulder County wildlife staff inform the Project Manager of significant elk movement occurring in the project area…"
- SOW Page 26, Paragraph 6, Operational Considerations: "Equipment operations will only be conducted when surface conditions are frozen, and at least 1' snowpack is present. All reasonable measures will be taken to avoid rutting and excessive soil compaction."
- FAQ page 8, Question 2 -4, How do you determine which trees to cut? What will be done with felled trees, and how will slash be managed? Can the cutting be carried out manually instead? What is being done to reduce the impact of heavy machinery on the landscape?

On phasing treatment intensity east to west:

- SOW Page 7, Paragraph 1, Forestry Prescriptions: "On the western portion of Park Hill less emphasis can be placed on fire mitigation and more vertical complexity may be retained."

On "leave areas" in mesic forest types:

- SOW Page 9, Paragraph 2 - Page 11, Paragraph 1, Forestry Prescriptions: "...mesic areas will be retained with the exception of a few openings that will be created to provide a break in canopy for fire mitigation purposes and aspen stand enhancement…"

On machines off roads:

- SOW Page 22, Paragraph 3, Sensitive Plant Communities and Species of Special Concern: *"...it will be important that logging equipment is restricted to existing skid trails, and that operations are completed during times of high snowpack or during frozen conditions."*
- SOW Page 25, Paragraph 1, Mechanical harvesting – Specifications and Considerations: *"All material generated will be pre-bunched trailside and yarded to the designated landing/loading area by a mechanical forwarder along pre-designated forwarding routes."*

On recreation:

- SOW Page 1, Paragraph 2: "The property is open to passive recreation, but unauthorized trail building is prohibited… No new trails may be constructed on the property without first going through an established management planning process."

On slash and blowdown in Lodgepole:

- SOW Page 9, Paragraph 1: "A small series of patch cuts totaling approximately 3 acres will be implemented in the eastern portion of Elk Draw where previous lodgepole thinning has resulted in residual wind throw."
- FAQ Page 7, Question 1, What is a "patch cut?" Why are they used for forest management?

Management - Wildlife

(17 people commented)

- **7 people** had one or more **questions** on this theme
- **14 people** had one or more **recommendations** on this theme
- **15 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in the project's management for or against actions that consider the advancement/restoration of wildlife and habitat, or minimizing impact to wildlife in project area.

Example Comment:

"I am learning about site fidelity for birds - and butterflies! - where they return to the very trees where they were born. What happens when those trees are gone and the forest is transformed?"

Specific Recommendations/Concerns

Concern that focus on removing fuel will remove wildlife habitat (snags, downed wood piles, juniper, understory veg, and other structural diversity good for wildlife), concern elk migration patterns and bird migration and nesting areas will be disturbed; concern for removal of wildlife food sources (juniper, spruce/fir seeds, other shrubs); recommend beetle mitigation and management/monitoring.

Ways theme is addressed:

On operational wildlife considerations:

- SOW Page 25, Paragraph 4, Operational Specifications: *"All operations will cease if…significant elk movement occurring in the project area."*
- SOW Page 13, Paragraph 5 – Page 18, Wildlife
- SOW Page 13 Paragraph 1: "The target metrics for the project are an average over the whole project area, however exact removals will vary greatly from location to location with some areas having higher BA/TPA than others. This allows nuance to be integrated into the prescription, so that sensitive areas providing unique microhabitats can receive minimal impact while less sensitive areas can receive heavier treatment."
- SOW Page 11, Paragraph 4, Treatment Narrative: *"The manual hand cutting will occur in late summer to avoid critical wildlife timing…"*
- FAQ Page 7, Question 4, How do you plan on protecting local vegetation and wildlife habitat during project implementation?

On maintaining wildlife habitat:

- SOW Page 7, Paragraph 1, Forestry Prescriptions: "On the western portion of Park Hill less emphasis can be placed on fire mitigation and more vertical complexity may be retained. Most standing dead trees should be retained for wildlife value unless they pose a hazard to operations."
- SOW Page 9, Paragraph 1, Lodgepole Patch Cut Prescription: "Coarse woody debris is important for wildlife so efforts will be made to retain sufficient material in defined areas that will be located to pose a minimal risk of contributing to fire severity."
- SOW Page 10, Paragraph 1, North Aspect Fir Stand Prescription
- SOW Page 15, Paragraph 2- Page 16, Paragraph 4: "Wildlife staff requests balancing areas of removal of low vegetation or ladder fuels on least resilient areas and stands closer to the Town of Nederland… Low-growing juniper, for example, provides nesting cover, a food source for wintering birds, and is the host plant for the Juniper Hairstreak butterfly, and retention of this habitat type in areas of lower risk are preferred."

Recreation and Camping Impacts
(8 people commented)

- **2 people** had one or more **questions** on this theme
- **7 people** had one or more **recommendations** on this theme
- **5 people** had one or more **concerns/risks** on this theme

Theme Definition: People's interest in advancing or minimizing the recreation and impacts of camping in the area.

Example Comment:
"I strongly oppose mountain biking trails in TED. There are already many options for mountain bikers in our area, including West Magnolia..."

"Trails connect our community members to nature, improving both mental and physical health."

Specific Recommendations/Concerns
Concerns about unauthorized trail building; concerns about recreational trails impacting wildlife; concerns about trails fragmenting wildlife areas; enforce unauthorized recreation; recommend including new trails in project scope; recommend improving existing social trails and recreational access.

Ways theme is addressed:
On trails and recreation:

- SOW Page 1, Paragraph 2, Project Background: *"The property is open to passive recreation, but unauthorized trail building is prohibited…"*
- SOW Page 27, Paragraph 9-12, Site Rehabilitation: "Forwarding/yarding trails will be rehabbed by the contractor to deter unauthorized trail creation after operations…"
- SOW Page 29, Paragraph 2, Monitoring of Post-Project Conditions: "The area will be monitored for any new unauthorized trail creation following operations. Resource Protection and Trails Staff will be notified of any unauthorized usage, so that enforcement or remediation can occur…"
- FAQ Page 9, Question 1, How will you minimize the impact from unauthorized use by the public?

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Forest Treatment Plan

Project Name	Tucker and Elk Draw Project Area 1 Unit 1 Scope of Work	Date Sumbitted	09/25/25
		Project Priority	Moderate

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Addional Notes:

This scope of work is for Tucker Elk Draw (TED) Project Area 1 Unit 1. This project is a part of the Middle Boulder Creek Fuels Reduction Partnership Project.