



# Castle Mountain Forest Health and Fuels Reduction Targeted Implementation Plan

12/11/19

Meagher County Montana

**Goal Statement:**

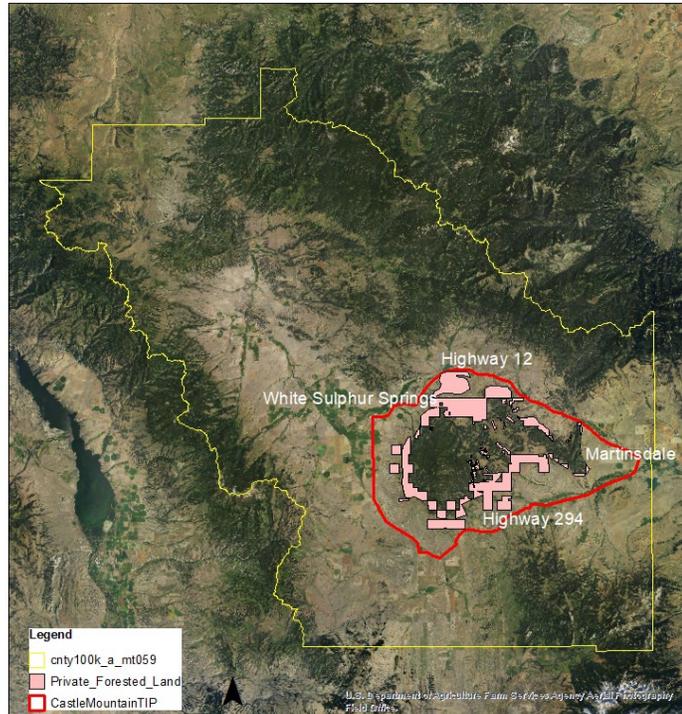
The goal of this project is to provide landowners with assistance to implement reduction of hazardous fuels, improve range productivity and health, remove conifer encroachment, and improve overall forest health within the Castle Mountains.

**Overview/Background Information:**

“The ecological role of fire is to function as an extrinsic disturbance factor (Crutzen and Goldammer 1993). It is a “keystone” disturbance that (1) recycles nutrients, (2) regulates succession by selecting and regenerating plants, (3) maintains diversity, (4) reduces biomass, (5) controls insect and disease populations, (6) triggers and regulates interactions between vegetation and animals, and, most importantly, (7) maintains biological and biogeochemical processes” (Agee 1993; Crutzen and Goldammer 1993; Mutch 1994).

The toll of fire exclusion on the forests of the Rocky Mountains has left a lasting impact that will affect forest management and produce challenges for centuries to come.

Over the past 10 years most of Montana’s forests have experienced epidemic insect and disease outbreaks. Mountain pine beetle has killed many acres of ponderosa and lodgepole pine in Meagher County. Spruce bud worm has damaged or killed many acres of Douglas fir and some Engelmann spruce. It is estimated that over 85% of Montana’s forests are at elevated risk for wildfire. Montana’s fire season is 40 days longer than it was 30 years ago. The 2017 fire season was our largest on record since 1910 with 1.2 million acres burned state wide and the average number of acres burned per year has increased 15-fold of the last 20 years (Forests in focus 2.0: Cross Boundaries, Montana Department of Natural Resources). Large fires have been minimal in Meagher County in recent years. In 2017 7,091 acres burned in the Black Butte fire. In 2003 1,7000 acres burned in the Burnt Gulch - Sheep Camp fire in 2003 and 2000 had numerous smaller fires .





*Photo: Young Douglas fir seedlings encroaching into sagebrush meadow in Castle Mountains. Spruce budworm defoliation evident on Douglas fir seedlings.*

**Problem Statement:**

“Increases in insect and disease activity are attributed mostly to increased stress and reduced vigor of the early seral, fire dependent tree species (Heinrichs 1988; Hessburg and others 1994; Kolb and others 1998). This plant stress is a direct result of the increased competition from rising stand biomass and ballooning plant density (Harvey 1994, 1998; O’Laughlin 1998). Stressed plants and dense canopies are usually a recipe for severe insect and disease infestations (Heinrichs 1988).”

Lack of forest health has been an issue that has increased exponentially over the past 50 years due to lack of management on a landscape scale. As a result of fire suppression over the last 100 years, we have seen dramatic increases in forest stand density and stocking rates across Meagher County. Additionally, conifers have encroached into rangelands throughout the county, decreasing available forage and shrinking meadow habitat for wildlife. We have passed the point of allowing nature to reclaim its historic fire regime on forest and rangelands, and now we need to carefully implement management actions to restore healthy ecosystems. It is projected that we would need to increase fire regimes by at least 3 to 7 times in order to return our forests and rangelands to natural fire regime conditions.

There is no true substitute for restoring a fire regime back into a landscape, but one tool that is helpful to mimic these natural disturbances are fuels reduction through thinning and removal of woody vegetation. This solution does not simulate all the ecological processes of fire but is often the choice of private landowners not willing to risk the liability of prescribed fire.

The primary resource concern is plant productivity and health. Trees on forestland are unhealthy and diseased because fire suppression has led to timber stand overgrowth and pest proliferation. Understory forage production is less than expected for the forested ecological sites as a result of excessive overstory shading. Conifers are encroaching into ecological sites that were historically rangeland, causing 100-500lb/ac loss of forage production for livestock and wildlife. Areas of conifer encroachment have 10-5000 trees/ac.

The secondary resource concern is wildfire hazard from biomass accumulation. Timber fuels on forest and rangeland have accumulated over decades of fire suppression. As a result, there are more trees per acre than the forest sites can sustain. Dead and dying trees have resulted in excess fuels that are currently a wildfire hazard.

The project area is approximately 216,500 acres. The Helena - Lewis and Clark National Forest administers approximately 69,649 acres within this landscape. There are roughly 45,000 acres of private land that is forested or adjacent to forest land ranging from small acreages of patented mining claim inholdings to large contiguous blocks of private land. It is estimated that there are 6,000 acres of private land that may benefit from conservation practices, the goal of this Targeted Implementation Plan (TIP) is to treat 4,000 acres in five years. The project area includes the Willow Creek Municipal Watershed, which is the primary source of water for the city of White Sulphur Springs. This watershed has had considerable pine beetle kill and the large amount of dead and down fuel threaten the White Sulphur Springs water supply.

### **Goals:**

The desired future condition of our treatment units within the castle mountains are as follows:

- Overall reduction in fuel loading and catastrophic wildfire risk
- Stands that have lower stocking rates to improve health and vigor of individual trees
- An increased amount of native grasslands through reduction of conifer encroachment
- Increased grass, forb and shrubs in the understory of forests
- Creation of fuel breaks near structures or other important features
- Reduction in ladder fuels that cause potential for crown fires

### **Objectives:**

- 2,600 acres of forest land treated to reduce wildfire risk and improve forest health
- 1,400 acres of rangeland treated to improve forage and habitat for livestock and wildlife
- Implement NRCS practices, including: Forest Stand Improvement, Brush Management, Woody Residue Treatment, Fuel Break, Herbaceous Weed Treatment, and Forage and Biomass Planting.

### **Alternatives:**

#### 1. No Action

The no action alternative would lead to an increase in stocking rates of trees, further encroachment of conifers into rangeland, increased risk for catastrophic wildfires, and continued degradation- quality of soil and water quality within Meagher county. These

effects come with a risk of increased danger to residents within the wildland-urban interface, shortages of lands for grazing, exponential growth of forest insects and disease, and a loss of overall forest resiliency to changing climatic conditions.

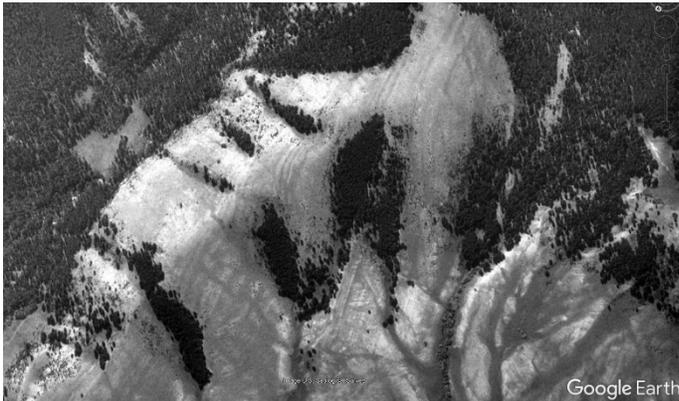
2. Fuels reduction through prescribed fire

Fuels reduction using fire would be the most natural way to address conifer encroachment onto native grasslands but could pose a risk due to high fuel loads from the extensive exclusion of fire from the landscape over the past 100 years. Logistically, using prescribed fire is challenging because the weather condition must be favorable to encourage fire behavior but not too much that there is risk of losing control of the fire. Most producers will not implement fire due to the liability risk.

3. Fuels Reduction through mechanical treatment

Fuels reduction using mechanical treatment is the most feasible and flexible treatment to be considered. Heavy machinery such as an excavator fitted with a masticator head can treat large areas of conifer encroachment regardless of weather conditions, though slope can be a limiting factor with this option. Hand crews working on steep slopes can be an economical choice. Excessive woody residue can be produced and must be treated either with piling and burning, chipping, or mastication.

*Google Earth photo series showing increased forest cover over time in a location near Willow Creek Reservoir in the Castle Mountains.*



1998



2005



2014

### Proposed Solution:

Alternative 3 (Fuels Reduction through mechanical treatment) is the best option when taking into consideration landowner objectives, ease of implementation, and financial feasibility. The speed of which treatment is applied is vital to the success of the TIP. As time elapses more rangeland will be invaded by conifers and conifer stocking rates will continue to increase to levels which cannot be reclaimed without excessive action and resources.

#### NRCS Conservation Practices to be implemented:

- Brush Management (314) and Forest Stand Improvement (666) will be used to remove conifer encroachment by mechanical tracked equipment and hand crews using chainsaws.
- Woody Residue Treatment (384) will be used to control the amount of woody material left after treatment to encourage forage growth and reduce fire risk.
- Herbaceous Weed Treatment (315) can be used where noxious weeds and annual grasses have invaded areas.
- Forage and Biomass Planting (512) can be used to re-establish native and/or high functioning perennial vegetation, especially where high densities of conifers have depleted understory species. This practice greatly reduces weed infestations.
- Fuel Break (383) can be used around structures, property boundaries or other important features to reduce fuel loads. It can be used to treat commercial size timber.
- Prescribed Grazing (528) can be used to pay for deferment from grazing if brush management is completed in rangelands where conifer cover has reduced grass vigor.

### Partnerships and other funding Sources:

Existing partnerships with this project proposal include: **City of White Sulphur Springs, Montana Fish, Wildlife and Parks, Meagher County, and Helena - Lewis and Clark National Forest.** The City of White Sulphur Springs has actively participated in road and hazard tree removal along their access routes and roads infrastructure. Recently, they provided heavy equipment to complete debris clearing from the roads to ensure access to the Willow Creek water infrastructure. **Montana Fish, Wildlife and Parks** has been actively engaged in the Castle's Mountain Restoration project by helping design units for wildlife habitat improvement and big game security; while also partnering with landowners within the project area to help manage elk populations. **Helena - Lewis and Clark National Forest** entered into an agreement with **Meagher County** for weed spraying along Forest Service Roads 211, 585 and 581 as well as various jeep trails that have noxious weeds present. The **Meagher County Weed Board** is interested in pursuing a weed spraying grant for Castle Mountain Landowners.

## **Implementation:**

The timeframe for implementation of this plan would be 2020-2024 with a goal of treating most of the acres within the first three years of the TIP. An additional 2 years may be needed. White Sulphur Springs and Bozeman area staff time will be used to implement this TIP. The NRCS and the Helena-Lewis and Clark National forest are currently submitting a proposal for the Joint Chiefs Landscape Restoration Partnership – a collaborative effort between the NRCS and USFS to address fuels and forest health in the Castle Mountains.

The Helena - Lewis and Clark National Forest completed National Environmental Policy Act (NEPA) evaluations in 1997 with a range-wide Environmental Assessment (EA). Approximately 1,000 acres of meadow restoration remains to be implemented. This involves hand thinning conifer colonization within meadows to improve wildlife and livestock forage. Final implementation will occur in 2020. NEPA has been completed for enhancing fisheries habitat, and for a fuels reduction project in the municipal watershed of Willow Creek. The project will enhance approximately 2 miles of Willow Cr for a pure strain of westslope cutthroat trout and reduce fuel loadings which have increased organic material in the water system, potentially increasing costs for water treatment. Implementation started in 2018.

The Helena - Lewis and Clark National Forest currently has an Environmental Impact Statement (EIS) underway for the Castles Mountain Restoration Project that is expected to be completed by November 2019 (See Castle Mountain Joint Chiefs Map on page 10 for treatments). This work is currently on the Forests program of work for FY20 – FY23. A map with the Forests planned treatments is included at the end of this document.

The White Sulphur Springs NRCS Field office has been developing a TIP for Castle Mountain fuels reduction. The Meagher County local work group developed a Long Range Plan (LRP) identifying forest health and fuels in the Castle Mountains as priority resource concerns. A mailing was sent out in June 2019 to 70 landowners located in the Castle Mountains. The mailing described the practices available to improve forest health and illustrated what the practices look like after completion. The field office has completed inventories on 6,300 acres of private land and has been getting landowners in contact with contractors that can complete thinning and brush management (i.e. encroachment removal) work. There are three private landowners in the Castles whom have collectively completed 330 acres of thinning and brush management work according to NRCS' specifications, providing great examples for neighboring landowners.

As with any project involving NRCS technical or financial assistance, National Environmental Policy Act (NEPA) concerns will be addressed through environmental evaluations that include cultural resources and threatened and endangered species reviews. It is estimated that this targeted implementation plan will generate 3-8 application per year.

2020 Payment Estimates				
Practice	Extent	Type	Payment Rate	Total
Forest Stand Improvement (666) Intermediate	380	ac	\$418.69	\$159,102
Forest Stand Improvement (666) High Density	190	ac	\$505.55	\$96,054
Brush management (314) Light Density	50	ac	\$104.03	\$5,201
Brush Management (314) High Density	200	ac	\$308.18	\$61,636
Fuel Break (383)	10	ac	\$692.09	\$6,920
Woody residue Treatment (384)	300	ac	\$324.74	\$97,422
Herbaceous Weed Treatment (315)	50	ac	\$43.48	\$2,174
Forage and Biomass Planting (512)	50	ac	\$79.42	\$3,971
Total				\$432,480

2021 & 2022 Payment Estimates				
Practice	Extent	Type	Payment Rate	Total
Forest Stand Improvement (666)	250	ac	\$418.69	\$104,672
Brush management (314) Light Density	250	ac	\$104.03	\$26,007
Brush Management (314) High Density	250	ac	\$308.18	\$77,045
Fuel Break (383)	10	ac	\$692.09	\$6,920
Woody residue Treatment (384)	500	ac	\$324.74	\$162,370
Herbaceous Weed Treatment (315)	50	ac	\$43.48	\$2,174
Forage and Biomass Planting (512)	50	ac	\$79.42	\$3,971
Total				\$383,160

**Progress Evaluation and Assessment:**

Acres completed will be certified in the field. NRCS staff will identify ineffective efforts while in the field and work to correct them immediately. Completed acres is the measurable unit. Photo monitoring will be used to assess before and after range and forest conditions. Outreach, in the form of field tours, will be an effective way to show non-participating landowners examples of completed work.

**Prioritization:**

1. Has the applicant had an NRCS program contract terminated since January 1, 2017; OR does the applicant have an existing contact that has been determined to be in noncompliance and currently under an active NRCS-CPA-153 (only answer as Yes is the non-compliance was for something within the participants' control)? If yes, identify the following: Date of Termination or date participant signed the NRCS-CPA-153 with an existing deadline to bring the contract back in compliance.

Yes – Application is a LOW priority

No – Continue to question 2.

2. Is the proposed conservation treatment within the geographic boundaries of this Targeted Implementation Plan (TIP)?

Yes – Continue to # 3

No – Application is a LOW priority

3. Does the application meet the intent of the TIP, and is for practices currently offered in the TIP that will treat the identified priority resource concern?

Yes – Application is a HIGH priority

No – Application is a LOW priority

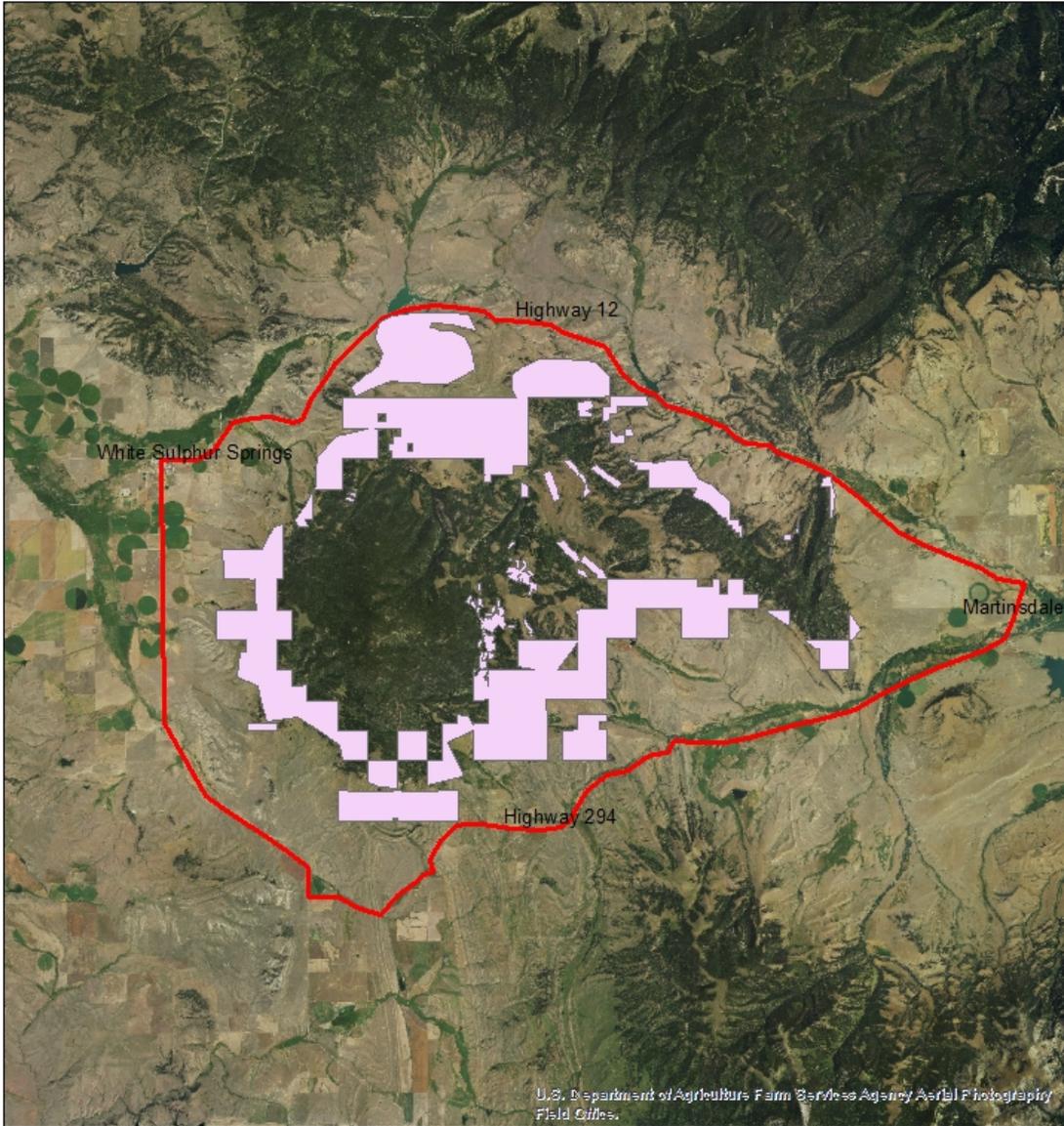
**Ranking:**

**Local Issues Addressed**

<b>Issue Questions</b>	<b>Responses</b>
1. Is all or part of the proposed project area located directly adjacent to a public road?	35 Point(s)
2. Will forage production for wildlife and livestock be improved on lands that are currently grazed.	35 Point(s)
3. Does the application have a home-site on the property and will the defensibility of that site be improved by the treatment?	35 Point(s)
4. Is the project adjacent to a planned forest service treatment, according to the Castle Mountain Restoration Project Map. See Castle Mountain Joint Chiefs Map.	60 Point(s)
5. Does the application include practices that reduce hazardous wildfire fuels on land adjoining current or recently completed (within last 10 years) wildfire fuel reduction projects?	35 Point(s)

Castle Mountain Targeted Implemetantion Plan

Agency: USDA- NRCS

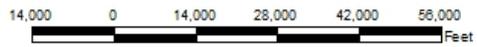


U.S. Department of Agriculture Farm Service Agency Aerial Photography Field Office.

Prepared with assistance from USDA-Natural Resources Conservation Service

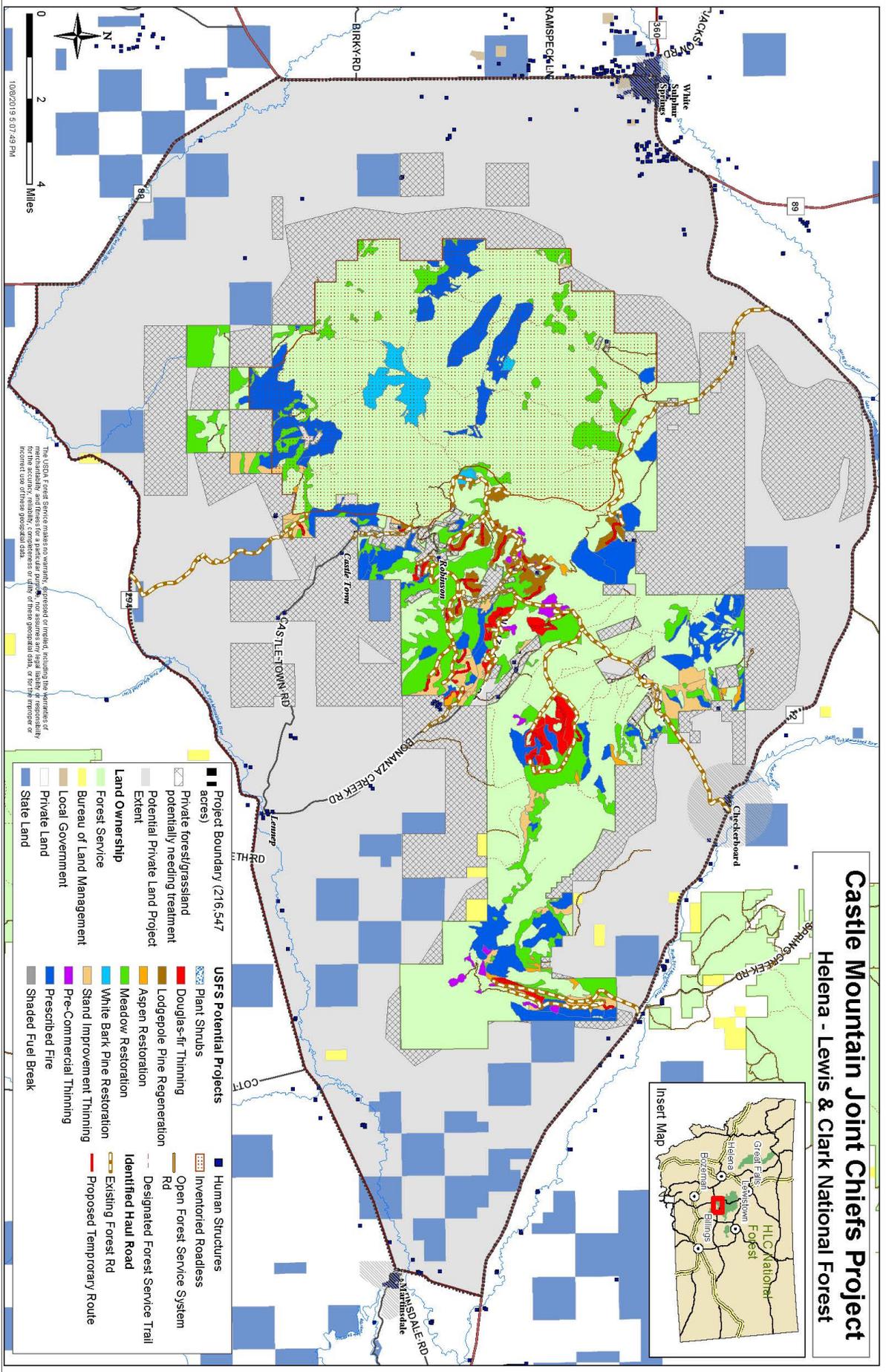
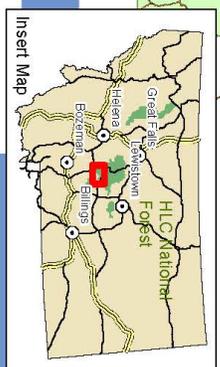
Legend

-  Private\_Forested\_Land
-  CastleMountainTIP
-  SamplingSites



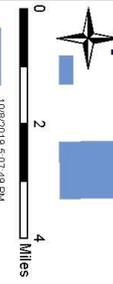
# Castle Mountain Joint Chiefs Project

## Helena - Lewis & Clark National Forest



- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li>■ Project Boundary (216,547 acres)</li> <li>▨ Private forest/grassland potentially needing treatment</li> <li>▨ Potential Private Land Project Extent</li> <li>■ Land Ownership           <ul style="list-style-type: none"> <li>■ Forest Service</li> <li>■ Bureau of Land Management</li> <li>■ Local Government</li> <li>■ Private Land</li> <li>■ State Land</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>■ USFS Potential Projects           <ul style="list-style-type: none"> <li>■ Plant Shrubs</li> <li>■ Douglas-fir Thinning</li> <li>■ Lodgepole Pine Regeneration</li> <li>■ Aspen Restoration</li> <li>■ Meadow Restoration</li> <li>■ White Bark Pine Restoration</li> <li>■ Stand Improvement Thinning</li> <li>■ Pre-Commercial Thinning</li> <li>■ Prescribed Fire</li> <li>■ Shaded Fuel Break</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>■ Human Structures</li> <li>▨ Invented Roadless</li> <li>▨ Open Forest Service System Rd</li> <li>▨ Designated Forest Service Trail</li> <li>▨ Identified Haul Road</li> <li>▨ Existing Forest Rd</li> <li>▨ Proposed Temporary Route</li> </ul> |
|--|---|---|

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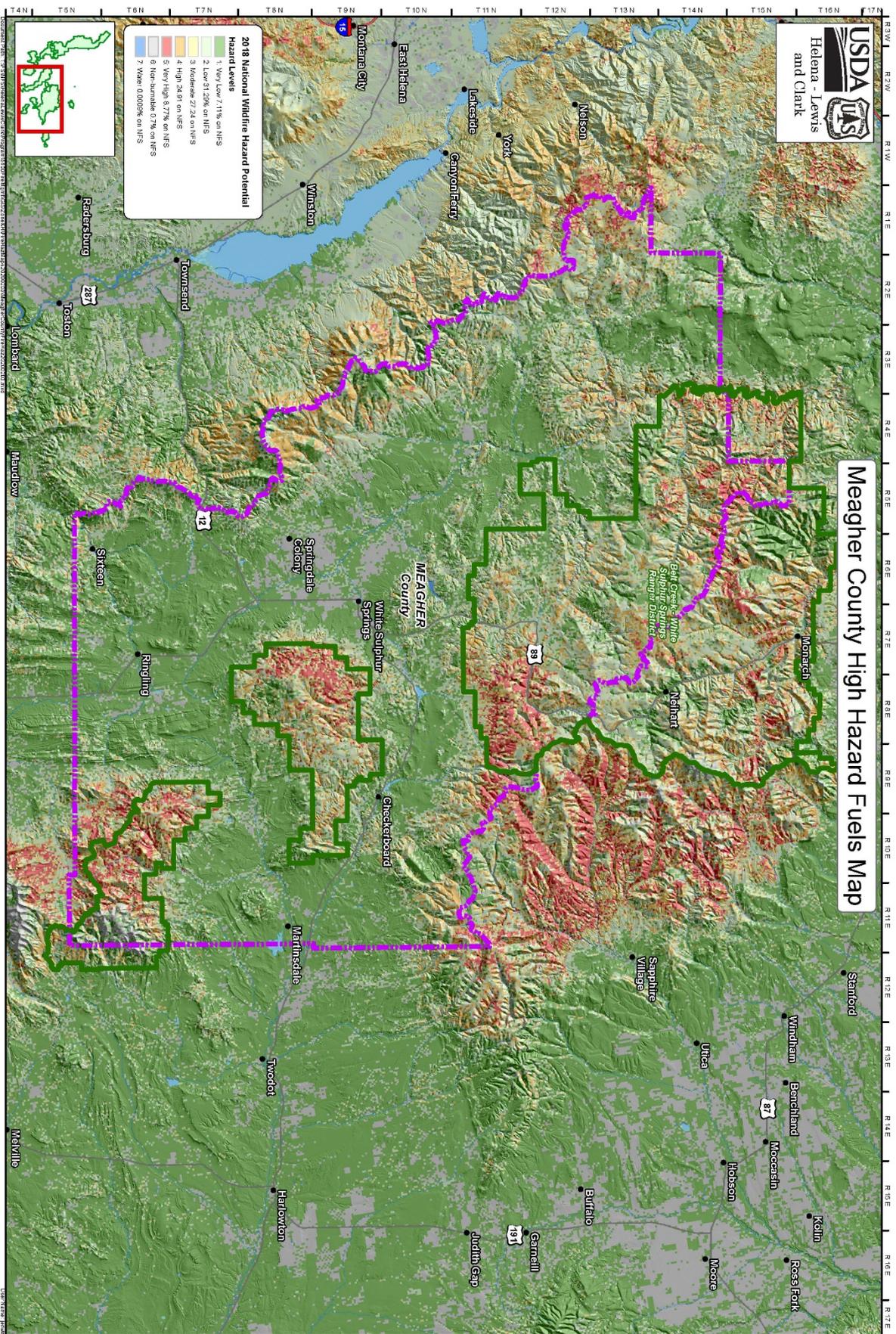


# Meagher County High Hazard Fuels Map

**2018 National Wildfire Hazard Potential**

**Hazard Levels**

- 1. Very Low 7.11% of NPS
- 2. Low 31.29% of NPS
- 3. Moderate 27.24 of NPS
- 4. High 24.91 of NPS
- 5. Very High 5.37% of NPS
- 6. Non-hazardous 0.73% of NPS
- 7. Water 0.0009% of NPS



USDA Forest Service