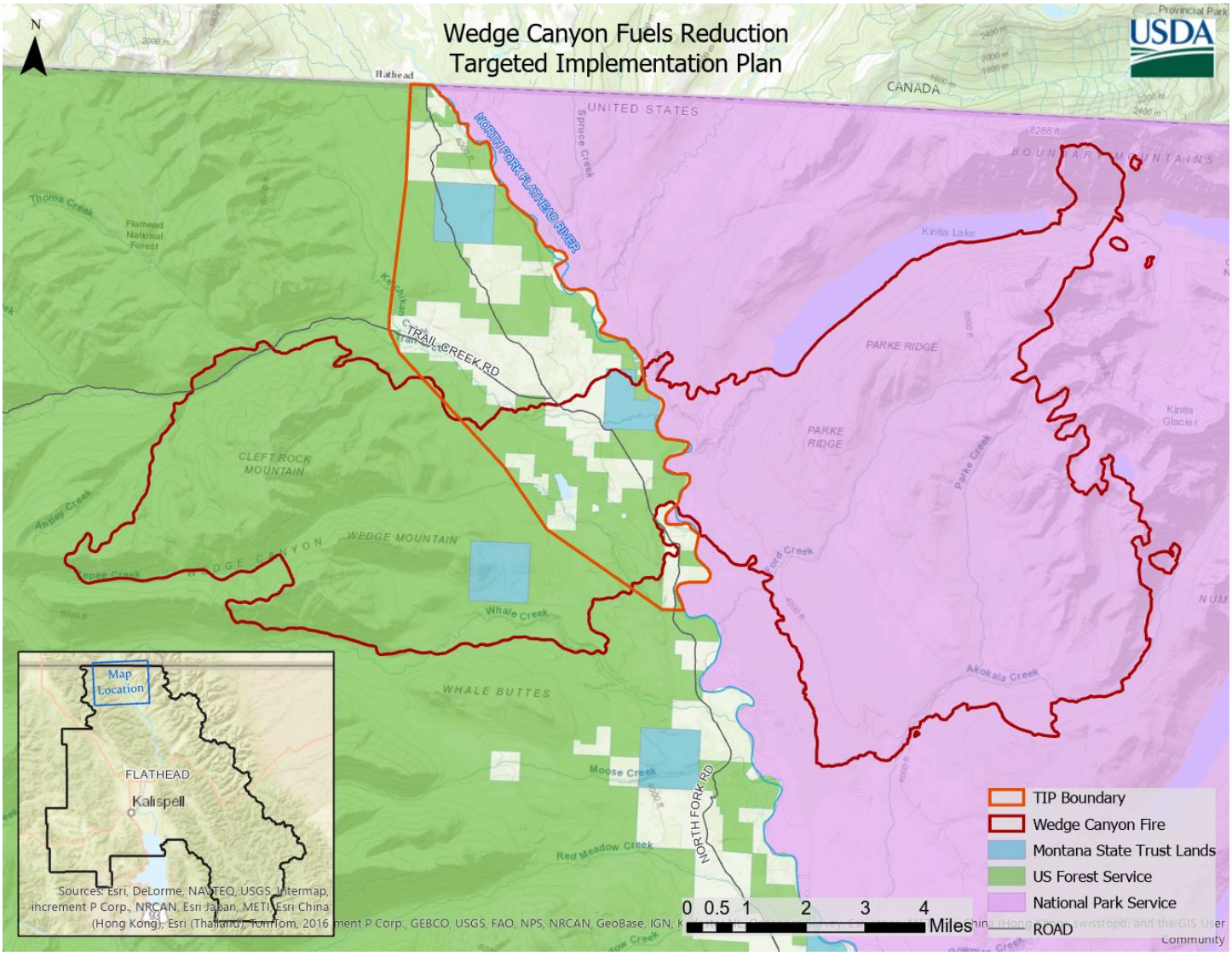
Wedge Canyon Fuels Reduction Targeted Implementation Plan

Flathead County

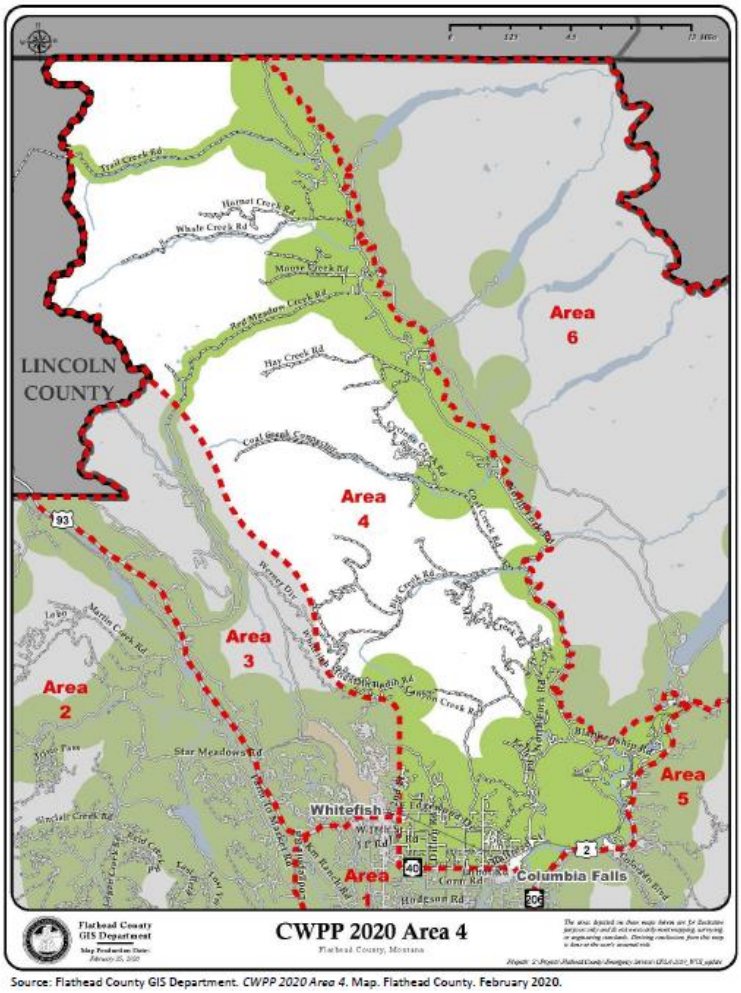
Promoting the reduction of hazardous fuel loads in the Wildland Urban Interface (WUI), increasing community preparedness and minimizing the likelihood of high intensity, large wildfires.



Overview/Background Information

In 2003 the Wedge Canyon fire burned 53,315 acres in the North Fork with 1,121 acres of that being private land and the rest being of US Forest Service (USFS), State, and National Park Service lands (Shown on title map). The fire started in the Whitefish Range in the Trail Creek area and move eastward burning into Glacier National Park along Kintla Lake. A total of 36 structures were lost in the fire with 7 of those being residences and the other 29 outbuildings and cost over $50 million just in fire suppression costs, not including damages to private structures. The fire was a stand replacing event that left behind a fire scar that has had abundant regeneration with continuous fuels that could carry another high intensity wildfire. The primary forest cover type in the TIP area is lodgepole pine. Within the Wedge Canyon fire scar there is a carpet-like density of lodgepole pine further increasing potential for rapid fire spread. With the extremely successful lodgepole pine regeneration, it is challenging for Western Larch and other desirable species to compete. This domination of a timber stand by predominately one species can have forest health implications as the stand matures. This monoculture leaves the stand very susceptible to disease and insect outbreaks that this area has experienced in the past. This TIP area was part of the landscape that burned in the historic fire of 1910 that burned over 3 million acres primarily in NW MT and ID (National Forest Foundation). Following that historic fire, the area regenerated primarily in lodgepole pine with minimal amounts of other species like Douglas fir and western larch also present. In 1977, the lodgepole regeneration from the fire of 1910 had grown to saw logged size and larger (8"+) when a mountain pine beetle (*Dendroctonus brevicomis)* outbreak swept through the area, taking out approximately 75% of those 8"+ lodge pole pines according to a retired USFS forester who's family has owned property in this area since around the 1950's. With the current stand being reminiscent of what was created following the fire of 1910, proper forest management while still in the sapling phase is critical to mitigate against another large scale disease or pest outbreak that adds to fuel loads following mortality of trees.

The TIP area is a total of 13,610 acres extending from the Canadian border down to the south end of the Wedge Canyon Fire scar. Ownership in the TIP area includes 5,220 acres of private land, with the rest the area consisting of public land with the majority being US Forest Service lands in addition to some Montana State Trust Lands. The area in this project is included in the Wildland Urban Interface (WUI) as defined by the Flathead Counties County Wildfire Protection Plan (CWPP). The project is located within Area 4, North Fork, of the CWPP (Figure 1), which has had more large fires than any other area in the county. Fires usually burn from west to east, with recent large fires starting in the Whitefish Divide, burning eastward to the North Fork valley and into Glacier National Park. Much of the TIP area is in the Fischer-Bradley fire group 7, which commonly experiences large fires every 100 to 500 years with more frequent, low intensity fires in between (Fischer & Bradley, 1987). The North Fork road, extending from Columbia Falls to the Canadian border, is the primary ingress/egress for the drainage. If there was a fire that compromised the road, there is a potential that residents could get trapped with no efficient way to evacuate. The project area has a total of 188 stuctures scattered on both private and public lands, with 141 of those being single family homes (Figure 2). The CWPP enphasizes the importance of having safe evacuation routes, promoting thinning 20 to 50 feet from the roads, specifically Trail Creek Road and the North Fork Road which are secondary and primary evacuation routes, respectively. Flathead County is heavily forested making fire preparedness one of the most prevalent concerns in the county. The Natural



Source: Flathead County GIS Department. *CWPP 2020 Area 4*. Map. Flathead County. February 2020.

Figure 1. Flathead CWPP Area 4 with WUI areas indicated

Resources Conservation Service (NRCS) Kalispell Field Office (FO) has been very active in planning and implementation of EQIP forest management projects. The project area has been chosen because of the residents' interest in fire safe practices and forest health and was identified through the Flathead Local Working Group process. Interest was gauged with the local group called the North Fork Landowners Association (NFLA) with positive responses. The Forest Service will potentially be conducting commercial and precommercial thinning as well as prescribed burns on adjacent Forest Service lands in the North Fork undthater the Frozen Moose Project (Draft decision).

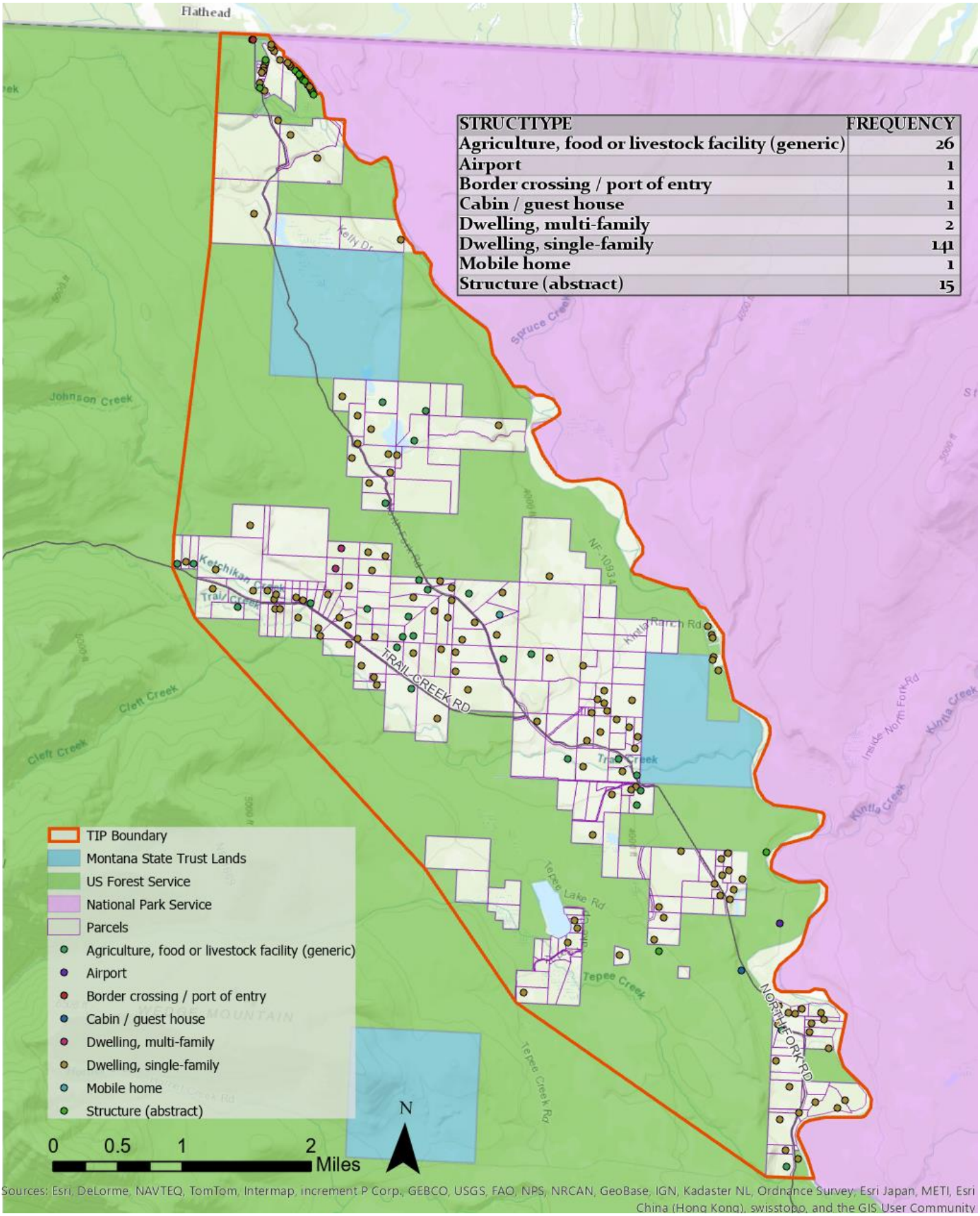


Figure 2. Count and type of structures located in the Wedge Canyon TIP Proposal. Created by Karli Becher.

The Flathead County Local Working Group, along with other partner organizations, have identified forest health as their number one resource priority in the county. During the development of the Flathead County Long Range Plan, fuels reduction and forest health were identified as an objective for the Kalispell Field Office on page 29. This TIP was developed in response to the recognition of the need to improve the resiliency of forests while protecting homes and structures from large wildfires. The TIP also recognizes and addresses several growing resource concerns within this WUI area that have the potential to be devastating not only to forest resources, but also to life and property.

Due to the stand replacing fire that took place in 2003, disease and insect pressures within the Wedge Canyon burn are minimal at this point but have potential to grow because of the lack of tree species diversity. Western gall rust, a fungus that attacks lodgepole pine, is present but at low infection levels. This fungus could become an issue as western gall rust tends to infect younger sapling aged trees in dense canopies which create a humid environment that allow the rust to develop and spread. Thinning the stand will allow for improved air flow to help decrease the humidity in the lower levels of the stands (Hoffman & Hagle, 2011). Additional insect pressures to monitor are spruce budworm (Douglas-fir and subalpine fir), tip weevil (lodgepole pine), and larch casebearer (western larch) but those pests either come through in cycles or attack species that aren't overly dominate.

Problem Statement

The primary resource concern that this project will address is wildfire hazard and biomass accumulation. As stated above this fire group typically experiences large stand replacing fires every 100 to 500 years with less intense, cool fires in between. These lower and mixed severity burns leave live trees and a more open canopy stand of fire tolerant species that can recover and regenerate after the fire. Forest management in the past century has emphasized fire suppression which has removed low intensity fires from the landscape, which has shifted fire resilient forests to densely stocked forests more susceptible to stand replacing fire events. Shifting species composition and a buildup of hazardous fuels has contributed to Flathead County seeing an increase in frequency and size of high intensity, high severity fires. The area in the TIP outside the Wedge Canyon Fire scar is characterized as having high fuel load due to poor forest management. The area in the TIP that is within the Wedge Canyon Fire scar is now overstocked with intermingling crowns of young lodgepole pine, which for this fire group are the most hazardous fuels (Fischer & Bradley, 1987).

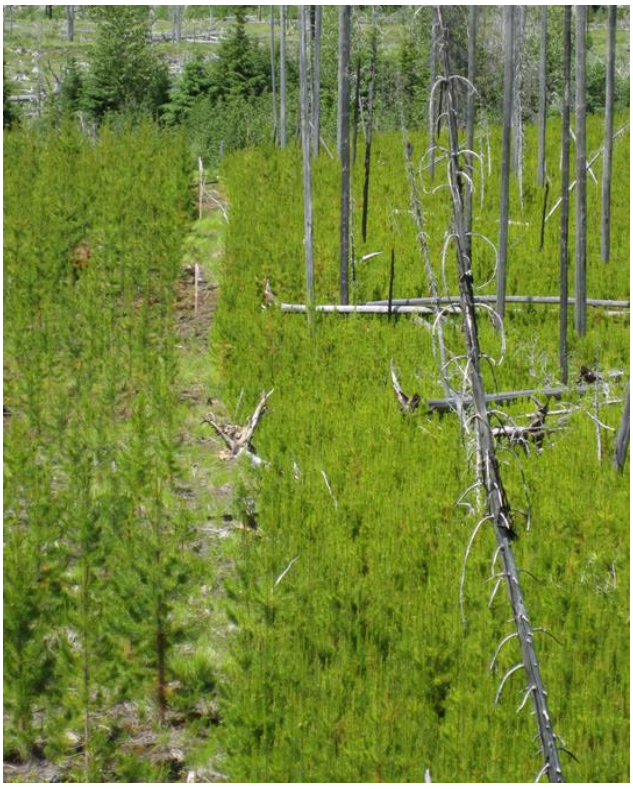


Figure 3. Left was thinned 6 to 7 years after fire, right was not thinned.

With wildfires also comes the concern of people living within the WUI and their knowledge of wildfires and how they can prepare for a wildfire on their property. It is important for people with property in a WUI to know how they can create defensible space to decrease the likelihood of their homes and structures being damaged or destroyed in a wildfire. This awareness is important both for the community members and firefighters who can better defend property and structures if proper precautions are taken.

Aside from the potential damages to property and structures from a wildfire, there are also large-scale potential impacts relating to climate change as well. According to a summary developed by Montana Business Quarterly in 2017 (Table 1), wildfires in MT can have a significant impact on climate change due to the emission of CO2. The summary looked at the total acres burned in MT and how that equates to CO2 emitted in the years of 2003-2015. The Wedge Canyon fire in 2003 was part of the 681,885 acres that burned in MT, releasing an estimated 16,884,900 tons of CO2 into the atmosphere. With an average US passenger car emitting approximately 5.1 tons of CO2/year (Environmental Protection Agency), that's the equivalent of an additional 3,303,705 cars on the road.

Year	Area Burned (acres)	CO2 Emitted (thous. tons)	Biomass Consumed (kg per square meter)
2003	681,885	16,848.9	3.43
2004	21,088	272.5	1.80
2005	95,517	2,058.9	3.00
2006	683,370	9,445.9	1.92
2007	580,383	16,172.1	3.87
2008	133,175	1,101.0	1.15
2009	48,899	1,068.7	3.04
2010	61,808	738.1	1.66
2011	173,178	3,310.6	2.66
2012	954,347	12,747.8	1.86
2013	89,962	2,533.3	3.91
2014	24,772	258.8	1.45
2015	337,715	8,698.4	3.58
2003-15 average	298,931	5,788.8	2.56

Table 1. Summary of fire years 2003-2015 in MT relating to release of CO2

The secondary resource concern in the TIP area is plant health and vigor with other considerations being given to plant structure and composition and plant pest pressure. Tree stands in the project area can be characterized as being densely stocked making them more susceptible to mortality from insect and disease outbreaks. The health and vigor of these forests substantially decrease when trees are stressed from overcrowding. The overcrowding has been a result of previous poor forest management or lack of management. Trees that are stressed grow slower and take longer to mature into a merchantable product. Within the fire area, extreme stocking levels in lodgepole pine has adversely affected height growth compared to stands which have already been thinned. Stands thinned at a young age are generally 12' to 14' tall, while un-thinned adjacent stands on the same site are 6' to 8' tall. The height growth difference is significant in a 17-year-old stand (Figure 3).

There are existing noxious weed populations scattered in the project area. Weeds are mostly found along roadways and trails and can easily spread due to frequent travel in these areas. Common weeds found in the project area include knapweed and houndstongue.

Goals and Objectives

1) Reduce wildfire hazard and biomass accumulation to minimize wildfire impacts and decrease the likelihood of stand replacing fire events.
    a. The Kalispell FO will use NRCS practices to achieve this goal along with help from Montana Department of Natural Resources and Conservation (DNRC) with creating forest management plans that emphasize forest wildfire resilience.
    b. Progress will be measured by overall acres treated while also looking at stand density.

2) Improve plant health and vigor, increasing stand resilience to insects and diseases.
    a. The Kalispell FO will work with landowners along with the DNRC to create forest management plans that have an emphasis on overall forest health in addition to using NRCS practices to create healthy and resilient stands.
    b. Work with partners, primarily DNRC, to identify insect and disease outbreaks in the project area that may have damaging effects on forest health and cause an increase in hazardous fuels.
    c. Progress will be measured by overall acres treated while also looking at the reduction of pest and disease outbreaks.

3) Address existing populations of noxious weeds.

a. To help prevent the further spread of noxious weeds both on the project site and also to adjoining parcels, identified noxious weeds will be controlled through the application of herbicide where applicable.
b. Progress will be evaluated on an acres treated basis and relying on the landowners to conduct follow-up applications where necessary to continue to reduce noxious weed presence.

4) Increase awareness of defensible spaces around homes and structures, decreasing hazardous fuels in the home ignition zone.
    a. DNRC will use their Community Preparedness & Fire Prevention Specialist to do outreach on defensible spaces around homes and home assessments in the project area.
    b. Progress will be measured by communicating with partners on how many community members they have outreached to and had sign up for their programs.
    c. The desired outcome is to increase awareness of fire safe practices while also increasing the number of community members who implement these practices around their homes and structures.

Alternatives

Alternative 1: No action. Financial and technical assistance will not be provided by the NRCS Kalispell FO for reduction of hazardous fuels. Partners may still work in the area in the future but will not be prioritizing the area. Forest fuels will likely continue to increase which will increase the susceptibility to high intensity fire events and decrease forest health.

Alternative 2. (Preferred) Use NRCS financial and technical assistance from the NRCS Kalispell FO along with partner assistance to address resources concerns. Practices will include Forest Stand Improvement (666), Woody Residue Treatment (348), Fuel Break (383), and Herbaceous Weed Control (315).

The US Forest Service has a project surrounding the Wedge Canyon Fuels Reduction TIP called the Frozen Moose Project with National Environmental Policy Act (NEPA) completed with a draft decision notice and alternatives chosen. The project is taking place in the Glacier View District of the Flathead National Forest. More information on this project can be found below in the 'Partnerships' section.

Alternatives will be analyzed in compliance with the National Environmental Policy Act (NEPA) and Endangered Species Act (ESA). Special consideration will be given to avoid and/or mitigate for practices effecting T/E species, such as Canada Lynx, in order to meet all federal regulations and NRCS policy requirements. Planning will also consider the Bald and Golden Eagle Protection Act and Migratory Bird Treaty, avoiding known nesting sites. Any cultural resources present will be identified and avoided during planning and implementation of practices involving any federal action.

Proposed Solutions and Actions

The proposed solution is to use a suite of NRCS forestry practices to treat the resource concerns expressed above which will complement work being done in the area on adjacent public lands. All actions will take place in the WUI in the project area. This project has already gained much interest in the community which can be used to leverage more engagement as this project continues for the proposed 5 years.

These practices will be used in the project:

Forest Stand Improvement (666) – can be used for several silvicultural treatments including pre-commercial thinning, intermediate silviculture treatments, and others. Most of this work will be completed by NRCS with management plans mostly being written by the DNRC Service Forester in Kalispell.

Fuel Break (383) - can be used to aid in protection and defensibility of homes and structures. In addition to creating breaks along ingress/egress routes.

Woody Residue Treatment (384) - can be used as a supporting practice after the above practices are implemented to aide with reduction or elimination of slash. Options will include piling and burning, chipping, shredding, and removal for utilization. Most of this work will be done through NRCS contracts.

Herbaceous Weed Control (315) – can be used to treat noxious weed infestation that can occur with forestry activities. Treatment can include chemical or biological application. This will be done through NRCS funding and technical assistance.

A combination of these practices may be used throughout the project area according to the goals and objectives of each participant and their forest management plan. Overall benefits from implementation of these practices will include a more healthy and productive forest that aligns with the participants forest management plan while also reducing the future fire risks. With focusing on fire hazard reductions, the included practices will be able to be implemented in a strategic fashion to allow them to enhance the overall project effectiveness. While the Forest Stand Improvement practice will allow for treatments to be conducted on a larger scale, those sensitive/high risk areas can be further treated with the Fuel Break practice. This combination will allow for the future fire intensity to be reduced across the whole planning unit while further reducing fire intensity along ingress/egress routes and structures to allow for more direct attack to take place during potential suppression efforts.

Participants can also benefit by working with partner organizations to meet management goals. Specifically creating defensible spaces around homes by using funding and technical assistance through the Northwest Montana Hazardous Fuels Program.

Partnerships

- Department of Natural Resources and Conservation – Flathead County Service Forester (Technical)
- Northwest Montana Hazardous Fuels Program (Technical)
- Flathead County FireSafe Council (Technical)
- US Forest Service (USFS)
- Flathead County Conservation District (Outreach)
- North Fork Landowners Association (Outreach)
- Montana Tree Farm System (Outreach)

For this TIP to be successful the Kalispell FO will have help from partners that are experienced and competent. DNRC's Service Forester will work closely with the Kalispell FO staff. Initial site visits will be made with NRCS and DNRC staff together if the applicant wants both agencies to be present. The bulk of the work that the DNRC Service Forester will take on will be to assist with writing forest management plans with landowners so that they can be eligible to participate in the program. This will help decrease the upfront planning workload for the Kalispell FO. The Service Forester may also assist with laying out of thinning units and site visits during contract implementation if needed.

DNRC's Community Preparedness & Fire Prevention Specialist will assist with outreach in the project area. They will meet with landowners to discuss the Home Ignition Zone (HIZ) and how best to create defensible spaces around homes and structures.

The Montana Tree Farm System is undertaking new outreach efforts in Flathead County and has been actively recruiting new members in the North Fork which will reinforce efforts in the TIP area. The management plan required for certification in the American Tree Farm System meets the intent of the forest management plan required by NRCS.

The USFS has the Frozen Moose Project which has NEPA completed with a draft decision that should be accepted soon. The project encompasses 151,200 acres surrounding the TIP area. The project specifically focuses on reducing fuel loads in the WUI with a suite of silviculture practices to reduce hazardous fuels and create healthy forests that are resilient to insect and disease outbreaks. A map of the planned practices in the north portion of the Frozen Moose Project is below (Figure 4).

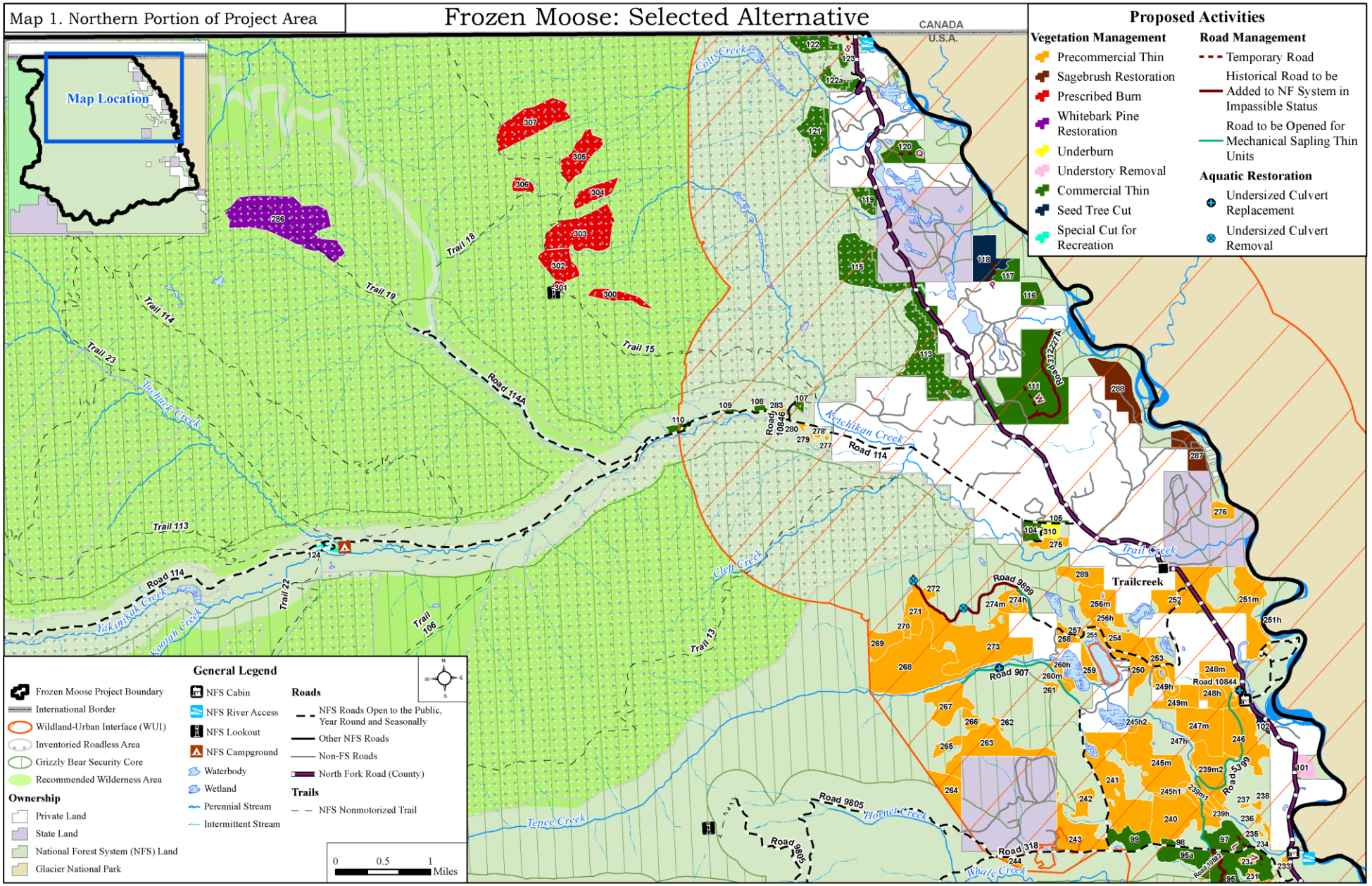


Figure 4. Northern portion of the Frozen Moose Project in the Flathead National Forest with selected treatments.

Implementation

This project is planned for a 5-year period as there has already been much interest expressed by landowners in the area and the Kalispell FO anticipates more interest as individual projects commence. Through the North Fork Landowners Association (NFLA), initial outreach has begun with a good number of landowners already expressing interest in addressing fuel loads on their properties within the proposed boundary.

Kalispell NRCS will have assistance from partners, mostly DNRC, to create forest management plans for landowners. All contracts with Kalispell NRCS will be written and managed by the Kalispell FO. Community members in the project areas may also have opportunities to apply for funding through partner organizations during the length of this project. The Kalispell NRCS will coordinate with partners on which landowners are best suited for either the NRCS program (EQIP) or for a grant program through a partner to accomplish their goals. All partners working on this project will communicate regularly on progress and implementation.

Kalispell NRCS will work with partners to prioritize areas to focus efforts on. Prioritization will take in to account current hazardous fuels loads and stand density. Insect and disease issues already affecting the stand will be looked at as a secondary priority for the project area.

Cost estimates are based on the 2021 Environmental Quality Incentive Program (EQIP) cost list. Actual costs may vary from year to year based on changes to the cost list and individual practices selected. Future budget projections have been conservatively estimated using anticipated producer interest, average property sizes, and engagement with landowners to date.

NRCS Deliverables

Practice	2022	2023	2024	2025	2026	Totals
Forest Stand Improvement – CPS 666	200 ac	300	300	100	100	1000 ac
Wood Residue Treatment – CPS 384	200 ac	300	300	100	100	1000 ac
Herbaceous Weed Control – CPS 315	30 ac	40	50	20	10	150ac
Fuel Break – CPA 383	5 ac	5	5	5	5	25 ac

Practice Cost Estimates Used for Calculations

Practice	Cost Estimate/Acre
Forest Stand Improvement – CPS 666	$660.00
Wood Residue Treatment – CPS 384	$480.00
Herbaceous Weed Control – CPS 315	$110.00
Fuel Break – CPA 383	$940.00

NRCS Financial Contributions

Contributions	2022	2023	2024	2025	2026	Totals
NRCS EQIP FA	**$236,000**	**$351,100**	**$352,200**	**$120,900**	**$119,800**	**$1,180,000**

Projected NRCS/Partner TA Contributions

	Avg. Time to Complete (hrs)	Estimated Total hours for TIP
Forest Management Plan Development	30	1,200
Plan Development	8	320
Contracting	6	240
Implementation/Certification	20	800
Totals	64	2,560

Projected staff time for NRCS/partners is approximately 320 days.

When considering that just fire suppression efforts during the 2003 Wedge Canyon fire exceeded $50 million without factoring in damages to private structures, this TIP has the potential to save tax payers 10's of millions of dollars. By treating the high to extreme fuel loads on private lands along with the adjoining USFS lands also being treated through the Frozen Moose decision, fuel loads will be drastically reduced with the anticipated results helping to reduce the intensity of a future fire to a level that allows for more direct attack and fewer suppression dollars being spent.

Currently outreach has been done by the NFLA and can continue through this organization. It is also anticipated that word of the project will spread via word of mouth with neighbors communicating throughout the community. If there seems to be a lack of knowledge of the project in the area at any point during the 5 years, the Flathead County Conservation District has offered to fund a mailing to the landowners in the project area.

Prioritization and Ranking

State Prioritization Questions:

Appropriate state prioritization questions will be used to determine application priority.

These local ranking questions will be applied to all applications applying for the Wedge Canyon Fuels Reduction TIP to determine funding allocation priority.

1. Are the acres treated within the area burned by the Wedge Canyon Fire? – 75 pts
2. Will the project result in the reduction of fuels along ingress/egress routes?
    a. Primary ingress/egress (North Fork Rd, Trail Creek Rd) – 40 pts
    b. Secondary ingress/egress – 20 pts
3. Are the acres planned to be treated located adjacent to properties on which there is previously completed pre-commercial thinning (private, industrial, state, or federal lands all apply)? – 50 pts
4. Does the application include stands that have identified disease or insect problems in at least 1 tree species? – 25 pts
5. Will the application include the treatment of existing populations of noxious weeds? – 10 pts

Progress Evaluation and Monitoring

There will be inventories conducted both before and after any practices are initiated to determine acres, stocking rates, stand conditions, and species composition. Data from these inventories can then be compared to inventories taken after a practice is completed to determine progress in the project area. Each practice that is completed as part of an NRCS contract will be certified to meet NRCS standards and specifications by the Kalispell NRCS staff. This pre/post treatment information will be entered into the FlamMap fire behavior model with the coordination with the USFS. This modeling software takes variables such as fuel loads, elevation, aspect, and slope to model out things such as projected fire intensity and flame length. With before and after information modeled, we can truly predict within reason what a fire might look like and the impact that this TIP will play in reducing future fire intensities. Progress will be recorded through mapping and certifications in Conservation Desktop. The Kalispell NRCS will also communicate with partners on acres of progress on both writing forest management plans and creating defensible spaces around homes. Based on previous inventories and completed projects in this Wedge Canyon fire scar, expected stand densities will be reduced from approximately 20,000 trees/acre to around 700-800 trees/acre although actual numbers may vary. This will allow for both improved forest health while also achieving separation of the crowns to allow from improved wildfire severity reductions by greatly diminishing the chances of a running crown fire which commonly leads to a stand replacing fire while also have a much higher impact on structures.

Sources

Fischer, William C. & Bradley, Anne F. April 1987. Fire Ecology of Western Montana Forest Habitat Types. United States Forest Service, Intermountain Research Station.

Hoffman, J. & Hagle, S. 2011. Western Gull Rust Management. United States Forest Service.

https://www.nationalforests.org/our-forests/your-national-forests-magazine/blazing-battles-the-1910-fire-and-its-legacy

North Fork Flathead Wildfire Mitigation and Planning Report

Montana Business Quarterly - Wildfire Emissions in Montana