Cook County

Community Wildfire Protection Plan

July 2017

"There are risks and costs to a program of action,
but they are far less than the long range costs of comfortable inactions."

- President John F. Kennedy

Cook County Community Wildfire Protection Plan

Signatory Page

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Introduction

The Cook County Community Wildfire Protection Plan has two objectives. **First**, it identifies and prioritizes Wildland/Urban Interface areas within Cook County (including federal and nonfederal lands) for hazardous fuels reduction treatments and recommends methods for achieving hazardous fuels reductions. **Second**, the plan outlines measures for reducing fire danger to structures throughout Cook County at-risk communities.

Because people and natural elements interact in the wildland-urban interface, expanding development and recreational use is creating an increasingly complex landscape in Cook County. The term wildland-urban interface is defined as any area where wildland fuels (trees, brush and other vegetative materials) threaten to ignite combustible homes and structures. With increasing wildland-urban interface development, comes problems specific to these natural areas, such as the threat of catastrophic wildfire.

As fire history shows, large wildfires are not uncommon in Cook County. The threats to life and property, the assets lost, and the cost for fighting fires are continuously escalating. As wildfires affect more people, active public involvement becomes integral to the success of any wildfire management initiative. By being proactive, Cook County communities can work together to combat the wildland fire issue. It is impossible to stop all wildfires ignitions from occurring, but appropriate mitigation measures CAN make a difference. Wildfire and structure protection **is** everybody's responsibility!

The Cook County Community Wildfire Protection Plan (CWPP) is a community based plan developed collaboratively amongst individuals; the local communities; businesses; and land management agencies working together to achieve a common goal. This guide is not a legal document, although recommendations contained here carefully conform to both the spirit and the letter of the Healthy Forest Restoration Act (HFRA) and the National Cohesive Wildland Fire Management Strategy. The goal of the HFRA is to reduce wildland fire risk to firefighters, communities, and important landscapes while keeping with the overall goal of improved forest health on a landscape scale. The National Cohesive Wildland Fire Management Strategy is a strategic plan to work collaboratively with all stakeholders across all land ownership toward: resilient landscapes, Fire Adapted Communities, and safe and effective wildfire response.

Completion of a CWPP helps communities tap into national funding resources such as National Fire Plan funding which annually provides millions of dollars to help states and communities with community fire planning, hazardous fuel reduction, and wildfire prevention across the nation. Implementation of all fuels reduction and hazard mitigation projects developed through this plan will follow County, State, and Federal land management plans, policies and procedures.

The Cook County Community Wildland Fire Protection Plan defines the steps and recommendations developed by a core planning committee, and the final recommendations as edited, reviewed and prioritized by the local community. This plan is a working document and will be enhanced collaboratively by the local Wildland Urban Interface communities which it serves. The Implementation Team will actively seek community input to help develop localized hazard reduction and mitigation projects. Community members wishing to comment and give suggestions to the implementation of the plan should contact the Cook County Emergency Management and Public Information Director, Law Enforcement Center, 143 Gunflint Trail, Grand Marais, MN 55604; or by phone at 218-387-3059 or e-mail valerie.marasco@co.cook.mn.us.

This plan will be implemented through the guidance of the Cook County Firewise Committee composed of a County Commissioner, the Cook County Emergency Management and Public Information Director, the Cook County Firewise Coordinator, a Department of Natural Resources Representative, a Cook County Fire Chiefs Association Representative, a Cook County Community Firewise Representative and a U.S. Forest Service Representative.

The specified *requirements* for a Community Wildfire Protection Plan as listed in the Healthy Forest Restoration Act include the following objectives:

1. **It must be developed collaboratively**: Local and State government representatives must collaboratively develop the plan, and must consult with federal agencies and other interested parties.
2. **It must set priorities to reduce fuels:** The plan must identify and prioritize areas for treatments that will reduce hazardous fuels. It must also recommend treatment types and methods that will protect one or more at risk communities and essential infrastructure.
3. **It must recommend treatment measures to reduce ignitability:** The Plan must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan.

Development of the Community Wildfire Protection Plan is an 8 step process.

1. Convene Decision makers
2. Involve Federal agencies
3. Engage Interested Parties
4. Establish a Community Base Map
5. Develop a Community Risk Assessment
6. Establish Community Hazard Reduction Priorities
7. Develop an Action Plan Assessment Strategy
8. Finalize the CWPP.

The Cook County Community Wildfire Protection Plan also addresses:

- issues and elements involved in developing the plan,
- elements discussed in assessing community risks and priorities,
- development of fuels reduction and mitigation plans to address community risks.

The Cook County Wildfire Protection plan is based on local needs of 15 Planning Areas which include defined Wildland Urban Interface (WUI) areas. The 15 Planning Areas were collaboratively defined by Cook County based communities with support from local land management agencies. Planning Areas were original defined by expanding local fire department jurisdictions to include additional infrastructure and community values at risk. Within the 15 Planning Areas, Wildland Urban Interface (WUI) areas were specified and mapped based on newest research and national standards that define a WUI; an area containing at least 6.17 structures per square kilometer.

This county-wide plan addresses issues such as fire response, community preparedness, structure and infrastructure protection and mitigation measures for potential wildland fire fuel hazards. In development of the Cook County Community Wildfire Protection Plan communities discussed and refined priorities for protecting life, property, and critical infrastructure within their County. Four focus areas surfaced from the 15 Planning Areas. These four Planning Areas are priorities as the implementation team works toward plan implementation. These priority areas include: **Greenwood/McFarland, Tom Lake, Mid Gunflint Trail, and Lutsen Township areas.**

Development of this plan has been an invaluable process. Cook County communities worked together discussing and defining issues with community leaders, community members, and local land management agencies. These discussions have lead to the completion of this document which lists common goals and fire management options for Cook County communities and their surrounding ecosystems.

Background and History of Fire and Fire Risks in Cook County

History of Fire Occurrence/Community Impacts

A pattern of repeated fires emerged in the border lake country as soon as flammable postglacial vegetation developed. This pattern continued for thousands of years, according to evidence from charcoal particles found layered in lake sediments. Measurements obtained from one lake in the Boundary Waters Canoe Area Wilderness established an average interval of 60-70 years between major fires, with a range of 20-120 years.

The late M.L. Heinselman documented major fire occurrence between 1727 and 1911. The ecologically significant fires ranged from 1,000 to 10,000 acres creating sizeable areas of even-aged forest. Most fires probably occurred during severe droughts that tend to recur at 20 to 30 year intervals.

Recent fire history indicates the potential for large wildland fire still exists in and adjacent to Cook County, as seen in 2006, 2007, and 2011. In 2006, the Cavity Lake (31,830 acres), Famine (4044 acres), and Redeye (1792 acres) fires affected parts of central and northern Cook County. In 2007, Cook County saw one of the biggest fires in recent history with the Ham Lake Fire which burned 75,850 acres straddling the U.S. and Canadian border. In neighboring Lake County, the Pagami Creek wildfire of 2011 is most notable. A lightning strike within the Boundary Waters ignited a small wildfire south of the Fernberg Trail. Under the Superior National Forest's Forest Land and Resource Management Plan, suppression action was taken on portions of the fire while other parts were monitored closely to meet pre-established resource objectives. By early September conditions began to change and on September 12 the fire made an unprecedented run traveling almost 14 miles in one day. The Pagami Creek Fire is now the largest fire in Superior National Forests history totaling over 93,000 acres. Evacuations occurred in multiple locations in Lake County, creating a heightened sense of awareness and concern among Lake and Cook County residents for wildfire and its potential impacts.

The three main causes of fires for Cook County are lightning, escaped campfires, and debris burning. Lighting fires are the number one natural cause but are out weighed 5 to 1 by human caused fires. Conifer forest type's account for 66 percent of the fires and 50 percent of the acres burned. Lightning is prevalent in the summer months, from May to October, with the peak occurrence in July and August. Lightning causes numerous fires every summer. Escaped campfires are a problem, especially in the Boundary Waters Canoe Area Wilderness, one of the most heavily used wilderness areas in the nation.

In recognition of fire as a natural change agent, the Superior National Forest has the ability to manage natural ignitions for resource benefits and can manage all ignitions for multiple objectives. The Forest's spatial fire plan has areas of the Forest (mainly in the BWCAW) that are pre-identified to possibly manage lightning caused fires for resource benefit. Each ignition is looked at by fire and land managers separately and appropriate management decisions are made based on weather, condition of the fuels, location, public and firefighter safety, and resource availability. All fires inside and outside of the wilderness are managed and suppression is often the needed response.

Another factor contributing to Cook County wildfire potential is vast acres of blowdown. A major windstorm which swept across northern Minnesota in July of 1999 impacted around 477,000 acres within the Forest boundary, including 370,000 acres inside the Boundary Waters Canoe Area Wilderness (BWCAW). Large portions of Cook County were impacted by this storm. Fire restrictions were developed and are enacted when conditions so warrant. In responding to this storm and its aftermath the following response plans were developed:

- Fuel reduction activities on USFS managed lands addressing blowdown: BWCAW Environmental Impact Statement, 2001; Gunflint Corridor Environmental Assessment, 2000; and the Crescent Lake Environmental Assessment, 2000.
- Subsequent NEPA documents addressing fuels concerns on USFS managed land include the Maple Hill EA, 2009; Clara EA, 2009; Devil Trout EA, 2007; and Lima Green EA, 2012.
- Fire prevention activities, (MN Interagency Prevention Plan of 2005).
- Fire preparedness.
- Northeastern Minnesota Wildfire Integrated Response Plan of 2004.
- Cook County Firewise Committee was developed.

Since the 1999 blowdown there have been over 45,000 acres treated out of 93,000 acres planned to be treated from the BW EIS, Gunflint Corridor EA, and the Crescent Lake EA. The Superior National Forest continues to plan and implement prescribed burning in response to the 1999 blowdown. Private land owners have also been performing fuel reduction activities on their properties in response to the blowdown and recent wildfires.

General Fire Behavior Expected

Most large wildland fires occurring in Cook County are drought based and wind-driven, as seen in recent years (2005-2007). Slower spreading, small surface fires with occasional torching trees are the norm; especially when winds are blowing less than 15 miles per hour. Short duration "mini-droughts" can quickly dry out shallow ridge top soils increasing the potential for extreme fire behavior. Lightning fires are prevalent during the summer months. During a normal fire season most fires remain fairly small and are caught during initial attack.

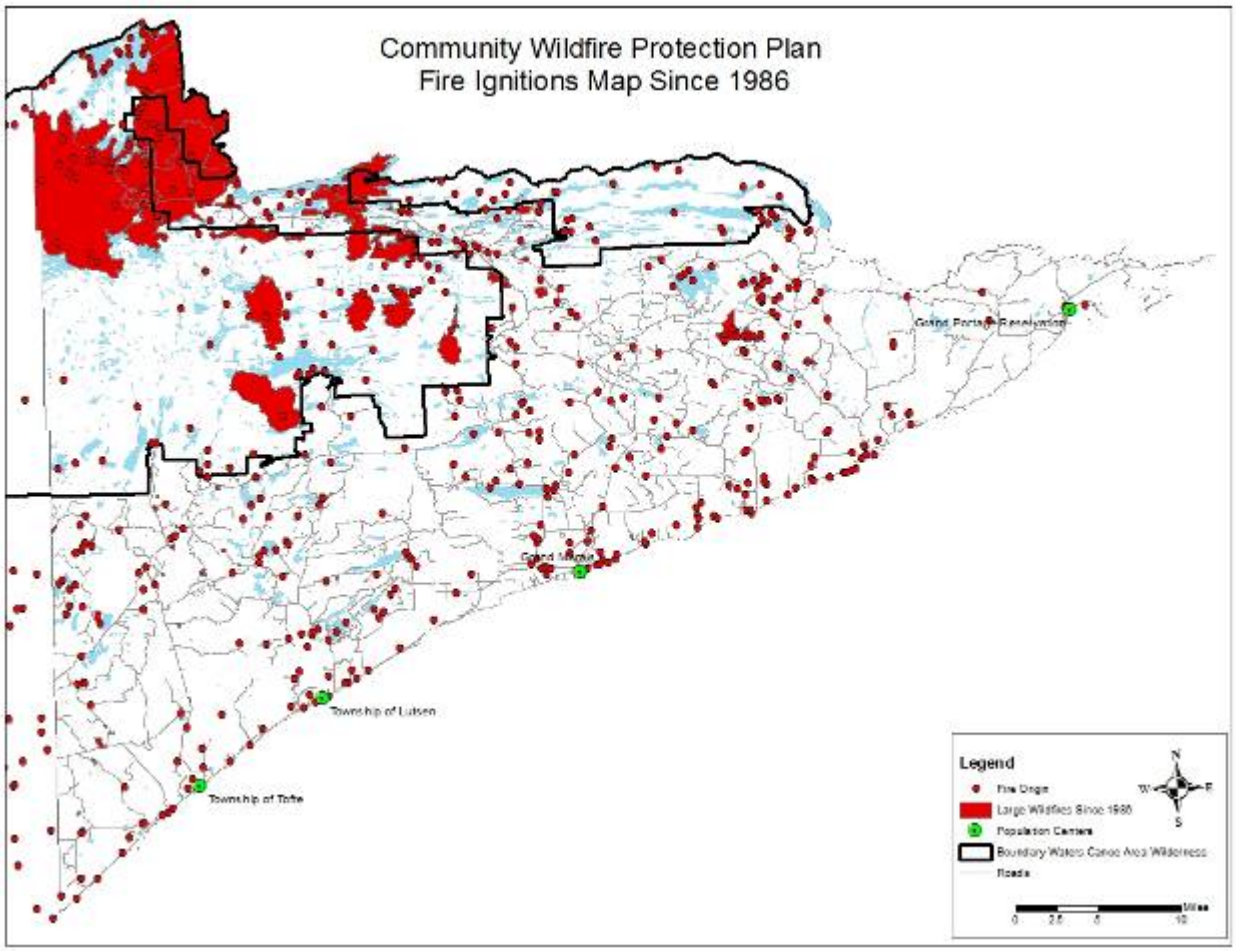
Crown fires can develop if tree tops are in close proximity of each other and wind speeds are adequate to carry the fire. Single day fire runs of 1.5 to 7 miles are documented. Large runs like this occurred on the Sag Corridor, Cavity Lake, and Ham Wildfires. The presence of numerous lakes can make effective firebreaks under low to moderate conditions. During extreme fire conditions, ¼-mile to ½-mile spotting distances makes all but the largest lakes ineffective at stopping fire spread, and even the largest lakes with islands can have fire spread across them via the spotting from island to island.

On July 4th of 1999 the Superior National Forest including portions of Cook County, were affected by a rare "derechco" event that left significant blowdown damage in the BWCAW and adjacent lands. The worst damage occurred in the Boundary Waters Canoe Area where a swath 4 to 12 miles wide and approximately 30 miles long, lying in a WSW to ENE direction occurred posing a significant threat to the Gunflint Trail Corridor, Canadian border and other areas of concern.

This event dramatically changed the fuel profile and fire behavior potential. Hazardous fuels reduction work in the Gunflint Trail corridor has strengthened wilderness boundaries and forest perimeters helping to reduce the likelihood of fires impacting WUI areas. Projects are still being planned to reduce heavy fuel loadings, further reducing the fire hazards as they relate to the blowdown.

Fires in blowdown can burn at higher intensities for prolonged periods of time with faster overall spread rates as compared to fires occurring prior to the blowdown. In addition to the normal threat of wind-driven fire, the threat

of plume-dominated fire has increased due to available fuel loading from blowdown fuels. Spotting distances for a plume-dominated fire (fire behavior that is determined by its own convection column) can exceed one to three miles. The Cavity Lake Fire of 2006 started in blowdown and burned with high intensity for two days but without significant growth under windspeeds of less than 10 mph. Spotting distances were approximately 1000 feet from the head and flame lengths were 30-40 feet in blown down timber. On July 16, a storm passed near the southern edge of the fire increasing wind gusts to approximately 40 mph which drove the fire 5 miles to the north within a few hours, and exhibited both rapid rates of spread and increased spotting distances. Prescribed burn areas implemented prior to the Cavity Lake Fire proved successful in keeping wildfire out of the Gunflint Corridor and urban interface areas. The Ham Lake Fire of the following year was ignited in standing timber under very dry and windy conditions (gusts to 28 mph) prior to spring green up and traveled close to 3 miles within the first day. On May 11, winds increased to over 20 mph resulting in a 13 mile run. Although the Ham Lake Fire burned readily through past fuels treatments in cured grasses and other fine fuels, fire behavior was moderated. The Ham Lake Fire had a large impact on the urban interface areas of the mid and upper Gunflint Trail. Personal residences, businesses and recreation were all effected by the fire.



Activities for Community Fire Protection

(Expanded from Firewise Information**)**

Specific community projects and priorities will be listed under each community page.

- **Firewise Assessments –** predetermined evaluation factors designed to assess potential hazards and risk to a homeowners' structures.

- **Improve ingress/egress –** improve road, approach, and turn around capabilities for responding emergency vehicles such as structural fire engines and ambulances to provide better protection capabilities and evacuation procedures to the community and the public.

- **Dry Hydrants –** an arrangement of pipe permanently connected to a water source other than a piped, pressurized water supply system that provides a ready means of water supply for firefighting purposes and that utilizes the suction capability of fire department engines.

- **Communication System –** recent state-wide initiative and experience from recent major fires show a need to upgrade communications to achieve interoperability among volunteer fire departments and other agencies.

- **Homeowner Firewise mitigation measures –** actions taken by home owners that moderate the severity of a fire hazard or risk.

- **Sprinkler systems –** water sprinkling systems set up by home owners or fire protection agencies to wet down structures or slow down the fire behavior of an approaching fire.

- **Firewise communities –** communities completing the designated projects and receiving recognition under the Firewise Community/USA program. Cook County is not a Firewise Community by definition, however Cook County has been recognized nationally for its firewise efforts and currently has three recognized Firewise Communities.

- **Fuel hazard treatments** on private, state, and federal lands including:

    - **Chipper Days –** identified neighborhoods needing brush fire clearance. A day or two will be arranged for green waste to be collected chipped and recycled after homeowners have cleared their brush.

    - **Prescribed burning –** controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions, which allows the fire to be confined to a predetermined area, and to produce the fire behavior and fire characteristics required to attain preplanned fire treatment and resource management objectives. Burning options include underburns, patch burns, and broadcast burns.

    - **Harvesting** – selective cut, partial cut, and/or clearcut,

    - **Thinning –** the removal or pruning of strategic trees within pine stands to reduce the density of ladder fuels, provide fuel breaks, or reduce the potential of a crown fires.

    - **Crushing –** a mechanical means of grinding and chopping vegetative materials to reduce fuel loading or build-up.

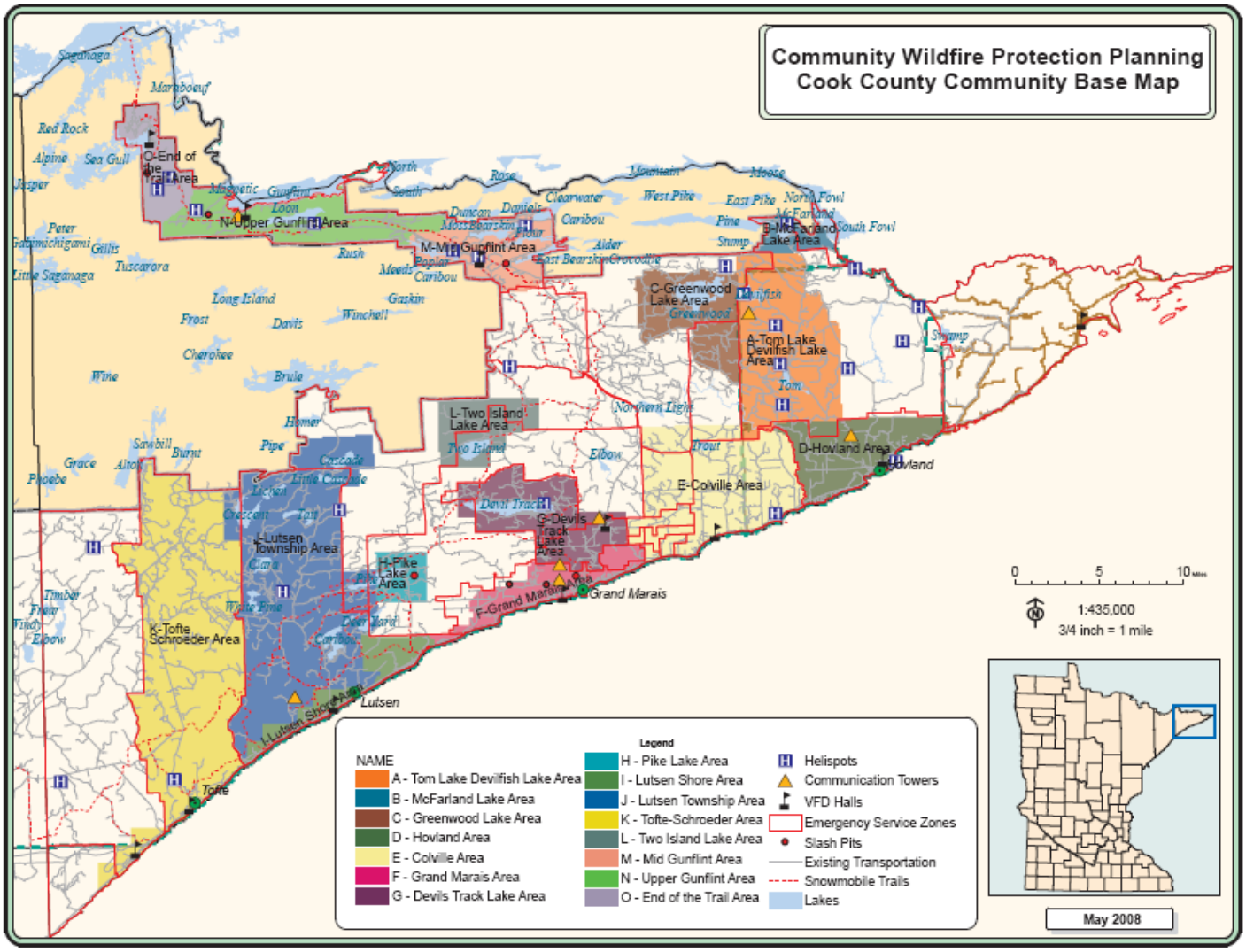
    - **Pile and Burn –** if other methods are not applicable, flammable fuels are piled and later burned when conditions are appropriate. This treatment type is appropriate in stands where there is not enough merchantable fuel to harvest, too much dead and down fuel to broadcast burn, near private property where structures are present, or in harvested stands with logging slash.

- Evacuation Plans for each VFD area. The importance of these plans was demonstrated during the Ham Lake and Cavity Lake wildfire events. Volunteer Fire Departments have evacuation plans for their respective fire districts.

- **Biomass removal –** development of a biomass facility and industry. This would provide a marketable method for fuel reduction activities and therefore allow for more extensive fuel reduction treatments.

Cook County Planning Areas/Wildland Urban Interface

Cook County is divided into 15 Planning Areas which were originally based on local fire department jurisdictions. After several community based discussions, the 15 Planning Areas were enlarged to allow local communities more latitude in setting local priorities related to fire risk reduction. These activities include; fire protection and preparedness, hazardous fuels reduction, restoration of healthy forests, fire prevention and ecosystem based planning. Each Planning Area will serve as a boundary for implementation of the Cook County Wildland Fire Protection Plan (CWPP). Projects can overlap between Planning Areas and cross different (ownership) jurisdictions where agreements are in place. The map below shows Cook Counties' 15 Planning Areas and wildland urban interface (WUI) boundaries. Based on the national standard, a WUI is defined as an area having at least 6.17 structures per square kilometer. A more detailed map (11x17) can be found in the appendix of this document. Detailed descriptions of each (15) Planning Area can be found starting on page 21. (Reformat map to be more readable across two pages or horizontal.)



Cook County Communities and Neighborhoods

The Cook County Community Wildfire Protection Plan (CWPP) offers a variety of benefits to communities at risk from wildland fire. Within Cook County, 15 Planning Areas have been identified. Each area has its own set of unique circumstances and need for mitigating measures. Each of the 15 Planning Areas has specific Wildland Urban Interface (WUI) areas mapped within them based on the newest research and national standards related to WUI areas. Documentation for each Planning Area is found starting on page 21.

Fuels treatments can occur along evacuation routes regardless of their distance from the community. At least 50 percent of funds when appropriated under the Healthy Forest Restoration Act must be used within WUI areas as defined by a Community Wildfire Protection Plan or by the limited definition provided by the HFRA when no CWPP exists.

Another important reason for completion of a CWPP is that federal agencies must give specific consideration to fuel reduction project implementation plans identified in the Cook County Community Wildfire Protection Plan. If a federal agency proposes fuel treatment methods in an area addressed by this community plan, but the community identifies a different treatment method, the federal agencies must also evaluate the community's recommendation as part of the federal agencies environmental assessment process.

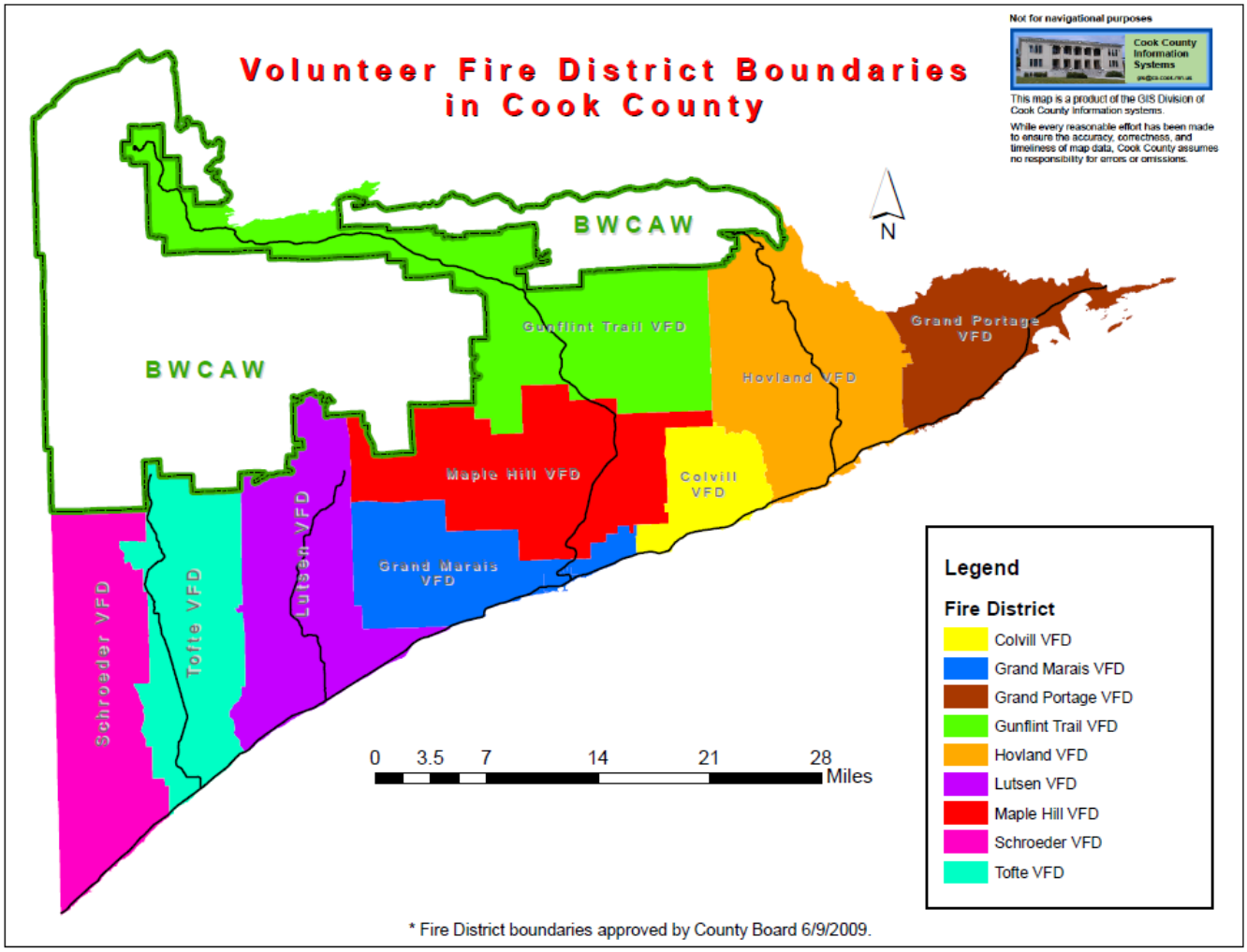
Fire Districts

Because fire recognizes no boundaries several land management agencies (BIA, DNR, and USFS) and local volunteer fire departments provide wildland fire protection coverage to meet the needs of the public. The state maintains responsibility for these areas for areas on state land or areas not covered by VFD areas. Federal wildland firefighters are not trained to provide structure protection and can only apply minimal exterior structural protection efforts according to agency policy.

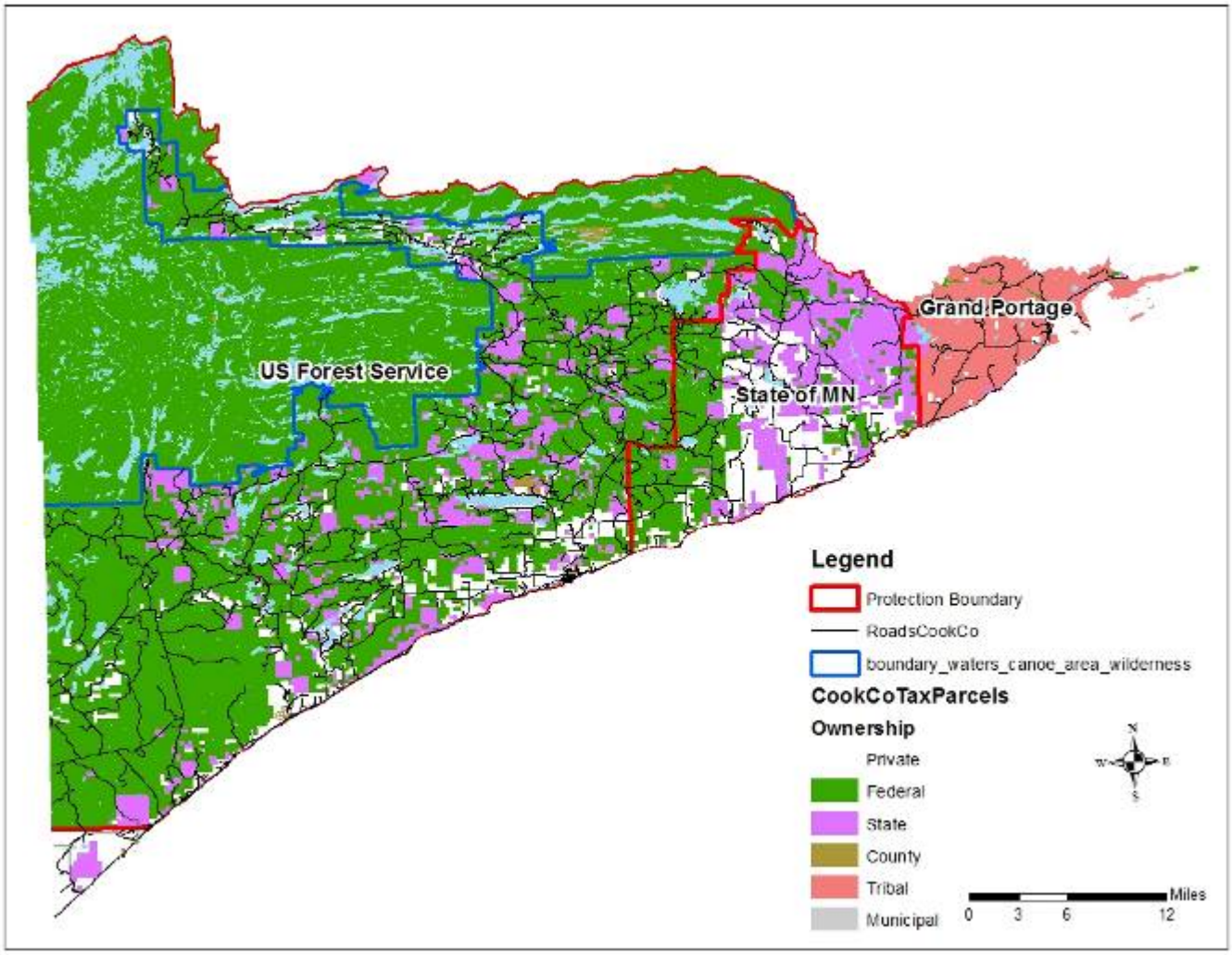
Cook County is covered by nine volunteer fire departments which provide structural fire protection services within their jurisdictional boundaries. Areas immediately outside specific fire department jurisdictions are sometimes provided coverage if mutual aid agreements are in place. Structural fire suppression, which includes exterior and interior actions on burning structures, is the responsibility of local volunteer fire departments. The map on page 19 shows jurisdictional protection boundaries for Cook County fire departments.

The United States Forest Service is responsible for wildland fire protection on lands within their jurisdictional boundaries. The Minnesota Department of Natural Resources is responsible for wildland fire protection on state and private lands. Cooperative fire suppression agreements exist between the Superior National Forest and the MN Department of Natural Resources (Agreement No. 02-CA11090903-008). Under this Operating Plan the Agencies agree to provide fire protection to the other agency's fire protection lands within the boundaries of the agreed on fire protection boundaries, as they would to their own protection lands. The map on page 20 shows wildland fire suppression boundaries for the United States Forest Service (Federal) and The Minnesota Department of Natural Resources (State). Each agency owns suppression resources; but they also share each others suppression resources and equipment through interagency agreements. Mutual aid and equipment rental agreements can exist with various private, contract, and fire department wildland suppression resources.

Fire Department Map - Cook County fire departments protection boundaries.



Wildland Fire Protection Map- Protection boundaries of land management agencies having wildland fire suppression responsibilities



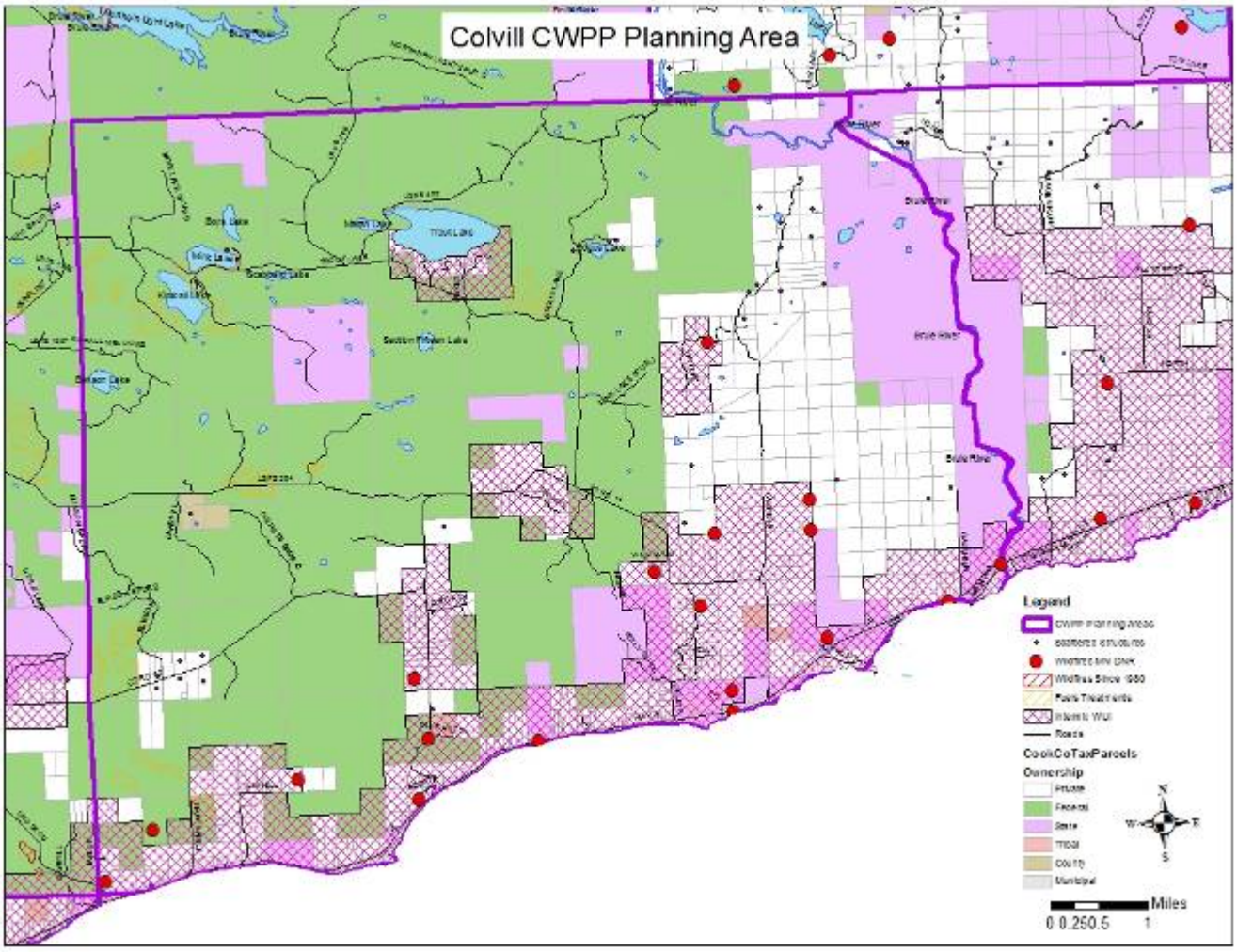
Descriptions of Planning Areas

A core group of interagency and community based personnel discussed and formulated 15 Wildland Urban Interface (WUI) area descriptions for Cook County. The 15 areas were originally based on structural fire department jurisdictions. After several meetings and much discussion, boundaries were expanded. This was done to enhance options for communities during future planning efforts. During the 2016 CWPP update, the WUI boundaries were renamed as Planning Areas. WUI areas were refined based on new research to mirror the national standard of a WUI defined as an area having at least 6.17 structures per square kilometer. Each Planning Area has its own description and the number of WUI areas located within it as described on the following pages.

The following is a list of individual Planning Areas/WUI descriptions and definitions:
(Example)

Name of Planning Area **Priority**: Rating (low, moderate or high) of community as it relates to safety and risk factors, evacuations, population density and economics as defined by risk.	**Location**: Legal description of the defined wildland urban interface area. **County Funding**: $ Dollars provided by the County for structural fire protection.
Access	Condition or class of a road as it relates to acceptable access or egress for emergency evacuation, ambulance, fire engines and access for essential emergency services and community planning projects.
Topography	Local configuration of the earth's surface, including its relief and the position of its natural and man made features.
Fuel Hazards	A fuel complex defined by kind arrangement, volume, condition and location that forms a special threat of ignition or of suppression difficulty
Fire Occurrence	The number of wildland fires started in a given area over a given period of time.
Homes	General location and density of homes plus the number of defined Wildland Urban Interface (WUI) areas.
Businesses	Numbers of businesses and economic constraints
Jurisdiction	Defines structural and wildland fire protection responsibilities for the area
Infrastructure Risk	Defines infrastructure risks within the WUIs
Community Values	Important values at risk within the WUIs
Local Preparedness Capability	Emergency protection capabilities (equipment, resources) available for community protection.
Other	Any concerns not captured in previous categories.
Fire Department Needs	List of any outstanding fire department needs
Fire Department Concerns	Top 3 concerns of the VFD in a particular area.
Fuels	Describes the fuels components found in this community.
Fire Hazard and Risk Rating	Determines the priority rating for this area.
Fire Regime Condition Class	Describes the variability of fuels from the historic range.
Mitigation Activities	
Vegetation treatments	Clearing, burning, chipping mitigation projects.
Sprinkler Systems	Number of properties with exterior sprinkler systems.
Firewise Assessments	Number and year of most recent Level 2 Firewise Assessment.

Colvill Priority: Moderate risk	Location: T61N R2E County VFD Level: $41,200
Access	Good roads west of Colvill to Durfee Creek with multiple exits. Manitou Trail, which parallels Hwy 61, is an access road with historic homes on it. Only have two roads, county road 14 and the Manitou Trail that have multiple access while all other roads are dead ends and all are gravel (other than 14 and MT). Trout lake area is seasonally limited.
Topography	Gradual sloping, some areas are more extreme—between County 67 and County Road 14 is steep. A fire truck cannot go up this road in the winter it is too steep.
Fuel Hazards	No blowdown; predominately maple and birch fuel component.
Fire Occurrence	Occasional human caused fires along the shore.
Structures	25+ structures per square mile in the Colvill Fire protection area. 165 primary structures/permanent and seasonal. Trout lake area is limited seasonal access.
Businesses	Several resorts and cabin businesses on Trout Lake; Motels, Youth Camp on Mink Lake.
Jurisdiction	Colvill VFD, wildland USFS
Infrastructure risk	Power and phone communications, electrical substation in east Colvill; Key microwave communication towers for law enforcement (sheriff), EMS and DNR and NOAA; USFS campground.
Community values	Manitou trail, historic buildings and homes.
Local Preparedness Capability Colvill ISO – 9	See Colvill VFD resource list on page 74.
Other	
Fire Department Needs	Dry hydrant by County Rd 14 or Trout Lake area. Newer wildland brush rig w/slip-on. 0 or 1 dry hydrants in the area.
Fire Department Concerns	
Fuels	This area is made up primarily of hardwood vegetation types including aspen, birch, and maple. There are areas of conifer stands with some balsam, but they make up a very small component of the area. Hardwood stands generally fall into fuel model 8 with low fire behavior associated with them. In the spring fires can spread through the understory of stands at low and moderate rates of spread. In the summer fire rarely spreads in these stands.
Fire Hazard and Risk Rating	This area rated out as a moderate fire hazards and risk. This area has low to moderate fuel hazards, some economic values at risk, fairly good access to structures, good response times from suppression resources, and adequate suppression resources available.
Fire Regime Condition Class	This area is composed mainly of Condition Class 2. Historically fires burned with mixed severity on intervals of 150 years. The fire regimes and vegetation composition are moderately departed from what they were historically. The vegetation was historically composed of more spruce/fir and less hardwoods.
Mitigation Activities	
Vegetation Treatments	There is substantial private property in this area that could have dead and down cleared through piling and burning or mechanical removal. The decadent stands of birch could be regenerated through mechanical harvesting or prescribed burning.
Sprinkler Systems	0
Firewise Assessments	200 completed in 2016-2017.


Colvill CWPP Planning Area
Legend
CWPP Planning Areas
Wildfires Since 1980
Roads
CookCoTaxParcels
Ownership
Private
Federal
State
Tribal
County
Municipal
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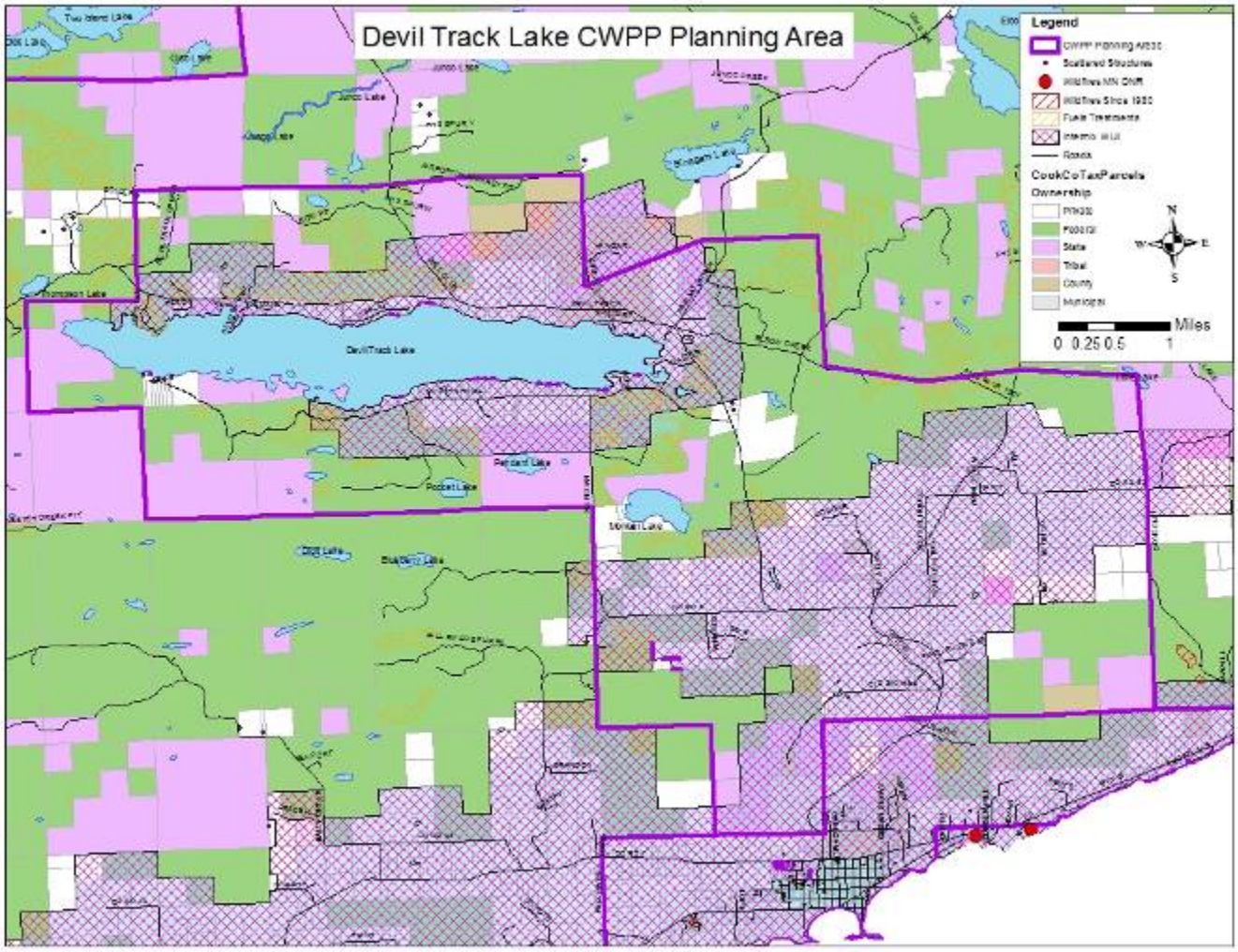
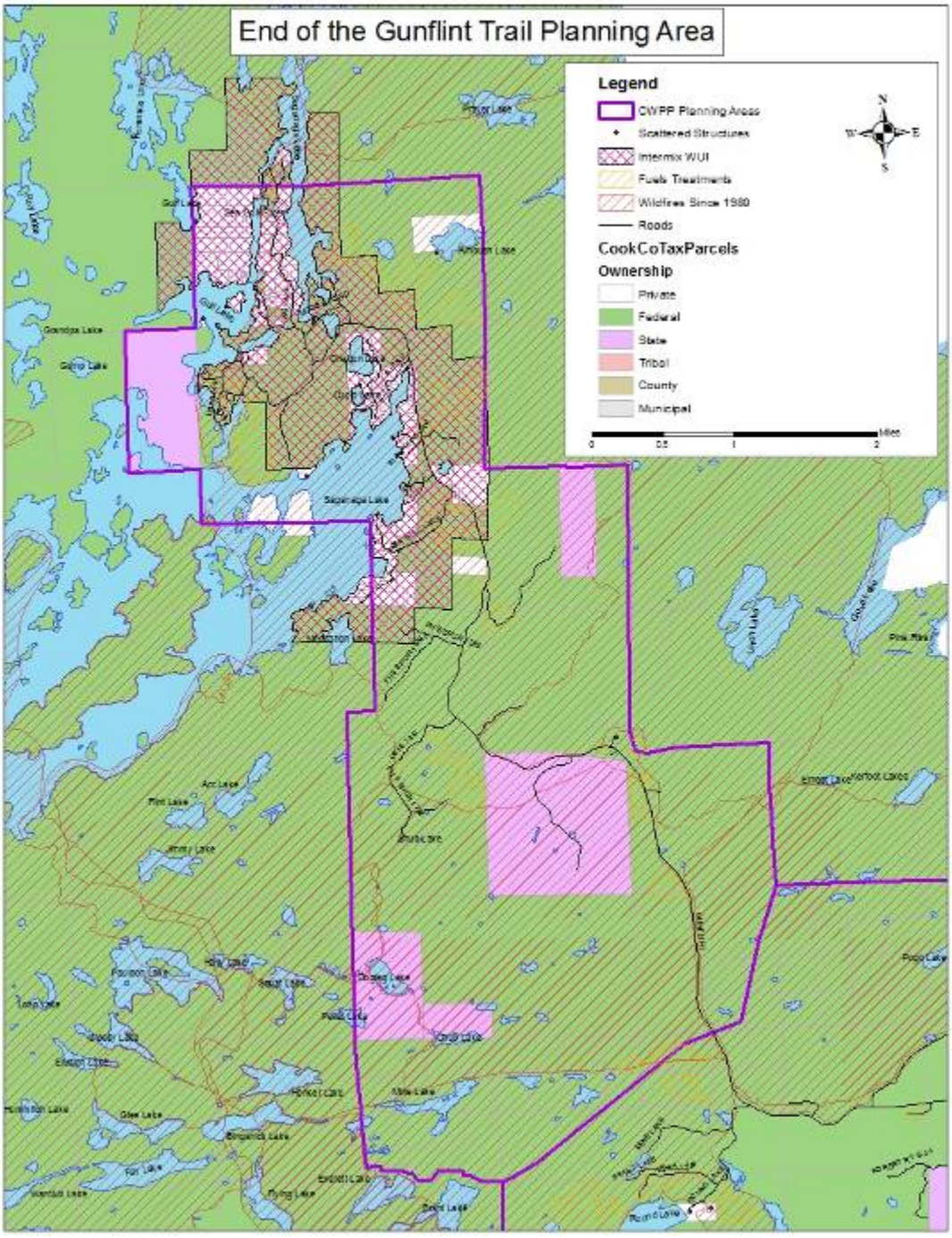
Devil Track Lake Priority: Moderate risk	Location: T62N R1W County VFD Levy: $50,000
Access	Good roads mostly, although some areas have limited access. County road 8, Gunflint trail, and county road 18 are asphalt – all other roads are gravel or dirt. The south shore drive is only one way in and one way out—it is a dead end road. There are many other dead end roads in the area.
Topography	Rocky in some areas, mostly rolling type ridges.
Fuel Hazards	Dense stands of red pine, mixed conifer species, and mixed hardwoods.
Fire Occurrence	Low
Structures	300 year-round plus seasonal properties
Businesses	Significant businesses, condos, vacation rentals, general store, Devil Track Landing. Gunflint Golf Course with hazards of fertilizer storage—hazmat storage, Hedstrom lumber mill, which is the largest employer in Grand Marais.
Jurisdiction	Maple Hill VFD, wildland USFS.
Infrastructure risk	Electric sub-station, solid waste facility, Cook County Airport, several major communications towers. Major power transmission lines for the Gunflint Trail. Forest Service Sea Plane Base.
Community values	USFS Campground at Devil Track, Pine Mountain, Campground, Gravel pits, Hedstrom lumber mill largest employer in Grand Marais. DNR fish hatchery.
Local Preparedness Capability	Maple Hill VFD has two fire halls – Gunflint Trail and Devil Track 4-dry hydrants (Sand Point, The Landing, Devil Track River at Devil Track Road, and Hedstrom Mill-DTR). See Maple Hill VFD resource list on page 75.
Other	Largest lake community.
Fire Department Needs	Exhaust systems for both halls-OSHA Required
Fire Department Concerns	
Fuels	This area is predominantly mixed hardwood vegetation. The hardwood stands have a large amount of balsam and spruce fir that has grown up in the understory. Much of the balsam is dead and dying. These areas are considered to be a fuel model 10 where crown fire can exist under drier, winder conditions. This area is primarily composed of hardwood vegetation types that fall within fuel model 8. There are also a few mixed hardwood stands with balsam that fall within fuel model 10.
Fire Hazard and Risk Rating	This area rates out as a moderate fire hazard and risk. It does have some hazardous fuels and several values at risk, including the county's only airport. However, it has good suppression capabilities, response times, and access.
Fire Regime Condition Class	This area is falls within Condition Class 2. Fire regimes and vegetation composition are moderately departed from what they were historically. Fires historically burned with mixed severity every 150 years. Fires today would burn with higher intensities. Vegetation was composed of more conifer species and less hardwoods historically.
Mitigation Activities	
Vegetation Treatments	This area needs vegetation management treatments to reduce hazardous fuels. There is a large component of dead and live balsam build-up in the understory of stands that poses a fire hazard. Both on state and federal lands, there have been several timber sales within the area. Many parcels of private property could use hazardous fuel clean-up. **Projects:**

	• Maple Hill EA: 1,000 acres of treatments expected to be completed by 2013 including: understory hazardous fuels removal, harvesting, and precommercial thinning on federal lands adjacent to private lands. • Fire Hydrants: Two dry fire hydrants were installed on the north and south side of Devil's Track Lake using grant funding. • Firewise: Assessments are planned for properties in the area in 2017. • Slash Disposal Site: The site provides an area for homeowners to dispose of hazardous fuels materials from their property.
Sprinkler Systems	17
Firewise Assessments	Last completed in 2008/2009. Approximately 500 planned for 2017.

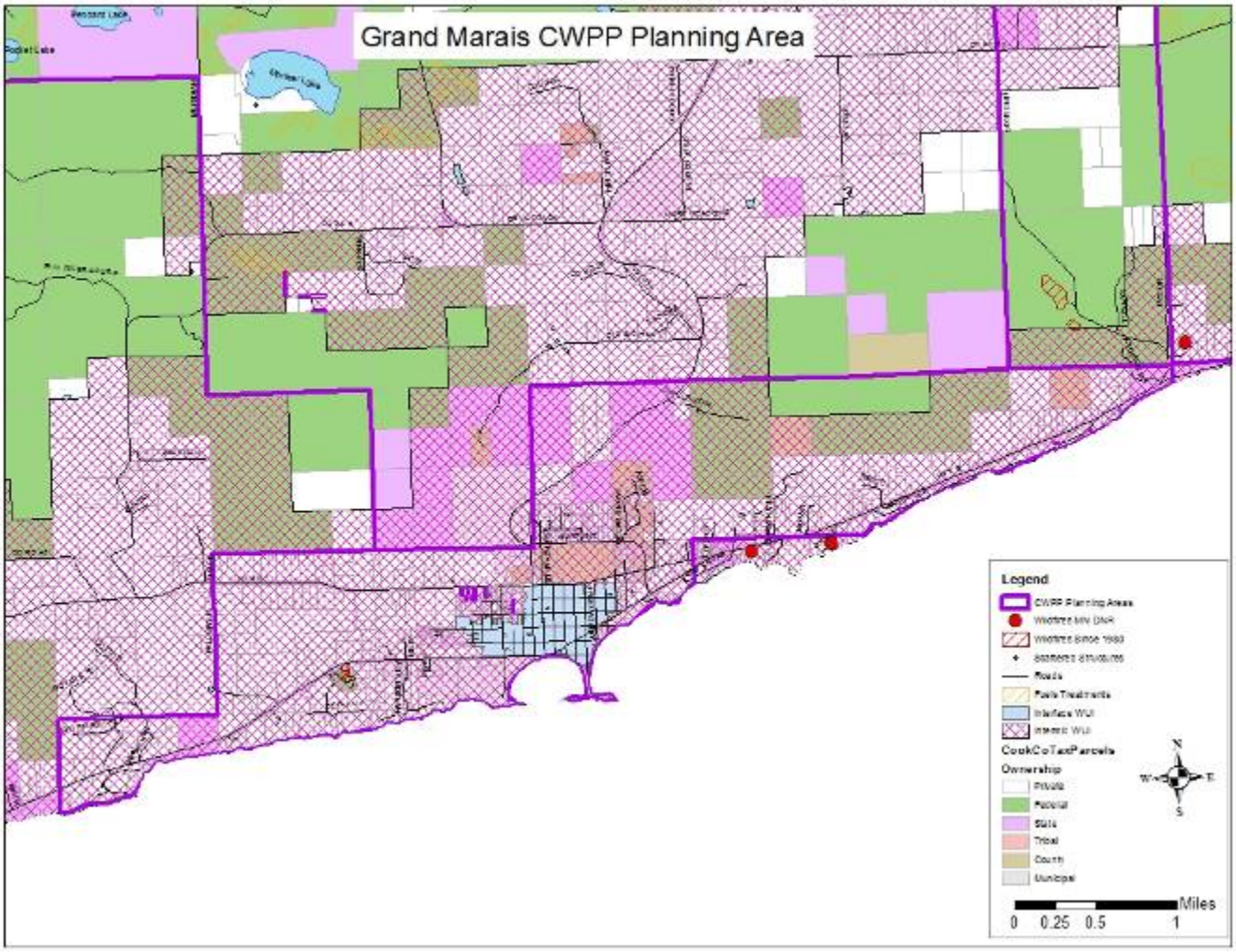


End of the Gunflint Trail Priority: Moderate risk	Location: T66N & T65N & R4W & R5W County VFD Levy: $80,000
Access	One way in and out – although can go out by boat through Canadian waters. ***Priority to improve ingress/egress-specify areas of one way in and out***
Topography	Some hills, rocky rugged areas, flat areas.
Fuel Hazards	Burned over Jack pine fuel type increased grass component, poor moisture retention soils, drier fuel moisture regime
Fire Occurrence	Lightning fires, high incidence of human caused fires. History of major fires, Ham Lake Fire 2007(structures lost); Cavity Lake 2006; Alpine Lake 2005; Sag Corridor 1995; Roy Lake 1976; Prayer Lake 1974. (Two human caused.)
Structures	Large number of Canadian homes are accessed through this area. High housing density and values in the congested peninsula area. Year round homes.
Businesses	Youth camp, numerous resorts and outfitters
Jurisdiction	Gunflint VFD, wildland USFS
Infrastructure risk	Fire Hall, Guard Station, Helispot
Community values	Aesthetics, Campgrounds, Watersheds, Chik-wauk Historical Structure
Local Preparedness Capability	See Gunflint Trail VFD resource list on page 74.
Other	Access point into the Canadian Quetico Provincial Park Wilderness, Surrounded by the BWCA Wilderness area. High recreational use area.
Fire Department Needs	
Fire Department Concerns	Inadequate radio communications in the Sag/Seagull area. Poor road access.
Fuels	This area is primarily composed of conifer vegetation types and primarily jack pine stands. The area contains very shallow soils that dry out quickly. The combination of dry site conditions and conifer species create a very hazardous fuel situation. This area is characterized as fuel model 10. There have been fires in the area that have exhibited extreme fire behavior with rapids rates of spread, high fire intensity, and crown fires. This area does also have some blowdown remaining. The area however, has had quite a bit of mechanical and prescribed fire treatments done for fuels reduction purposes. The hazardous fuel areas that do exist are fairly small and broken up by fuels reduction area so that the area as a whole has fairly low to moderate fire danger at the time. There is now a large component of grass fuels after the large fires from 2005-2007.
Fire Hazard and Risk Rating	This area initially rated out with the highest fire hazard and risk area. This is primarily because the area is in the jack pine/black spruce ecosystem type which has historically supported a high occurrence of fire, of which many have been large fires. Additionally, the area has a large accumulation of fuel hazards, has economic and infrastructure values at risk, and has poor access to many structures. The area however, does have good response times for suppression resources and adequate suppression resources. With the various fires that have occurred, fire hazards and risk have been significantly reduced.
Fire Regime Condition Class	This area was historically composed of a jack pine/black spruce ecosystem and historically burned every 65 years with high intensity fires (75-100% crown kill). The jack pine/black spruce area was historically composed of more pine in the young and mid-aged classes, but with the recent fires there has been a large component put in the younger age classes. This jack pine ecosystem is considered a condition class 2 because it is moderately departed from its historical fire regime and vegetation conditions.
Mitigation Activities	

Vegetation Treatments	Work was completed within the blowdown areas based on the the BWCAW EIS to help protect the area from a large catastrophic fire threatening homes, residents, and visitors. Additional treatments could focus on private land where creating defensible space would be the focus through removal of hazardous fuels. **Projects:** Cook County Firewise Sponsored two brush pick up days at Wilderness Canoe Base and vegetation maintenance along their driveway.
Sprinkler Systems	76
Firewise Assessments	86 completed in 2015



Grand Marais Priority: Low risk	Location: T61N R1E County VFD Levy: $50,728
Access	Good Access – hwy 61 runs NE/SW
Topography	Lake Superior borders Grand Marais.
Fuel Hazards	Cover type change has changed the moisture regime of the soil.
Fire Occurrence	Low
Structures	Older homes; many are historic
Businesses	Numerous businesses, county seat
Jurisdiction	Grand Marais VFD, wildland USFS
Infrastructure risk	County seat, Emergency Operations Center; community water supply, waste water treatment, power and phone systems.
Community values:	Major economic center
Local Preparedness Capability ISO – 6 (CITY) ISO – 9 (Outlying Areas)	See Grand Marais VFD resource list on page 74.
Other	
Fire Department Needs	New wildland brush truck.
Fire Department Concerns	Highway 61 is a major travel route. Limited ingress/egress in certain areas. Limited water supply outside of city limits.
Fuels	This area is primarily composed of hardwood vegetation types that fall within fuel model 8. There are also a few mixed hardwood stands with balsam that fall within fuel model 10. There are very few hazardous fuel areas within this community area.
Fire Hazard and Risk Rating	This area rated out as a moderate fire hazard and risk. The area has low fire hazards and historically has experienced very few fires. The area has good response times, good access, and adequate suppression resources. However, it does have several values at risk with the highest population density in the county, many businesses, and many community infrastructure components.
Fire Regime Condition Class	This area is falls within Condition Class 2. Fire regimes and vegetation composition are moderately departed from what they were historically. Fires historically burned with mixed severity every 150 years. Fires today would burn with higher intensities. Vegetation was composed of more conifer species and less hardwoods historically.
Mitigation Activities	
Vegetation Treatments	This area once was more of a conifer vegetation type that has been converted to more of a hardwood type.
Sprinkler Systems	2
Firewise Assessments	429 completed in 2015-2016.


Grand Marais CWPP Planning Area
Legend
CWPP Planning Area
Roads
Fuels Treatments
Interface WUI
Intermix WUI
CookCoTaxParcels
Ownership
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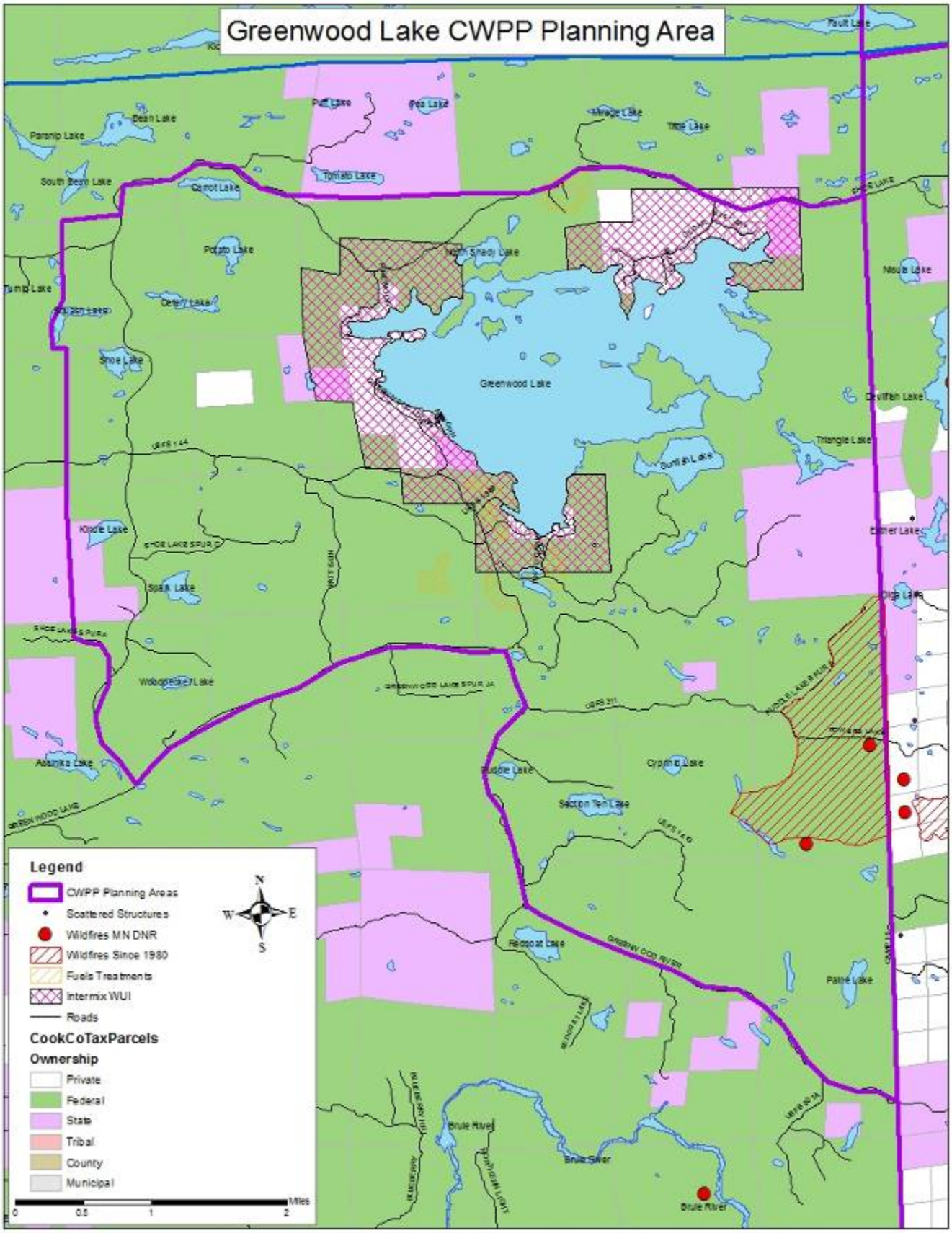
Greenwood Lake Priority: High risk	Location: T64N R2E County VFD Levy: $ 80,000
Access	Fair gravel road access with more than one way to exit.
Topography	Rugged, rocky, steep terrain
Fuel Hazards	Dead and down timber hazards. Balsam ladder fuels. Area hit hard during the 1992 blowdown. Some blowdown was cleaned up, but pockets needing clean-up still exist on private lands.
Fire Occurrence	Low to moderate
Structures	Seasonal and year round residents. Greenwood Lake Association on NE side of lake. Expect increase in population density here.
Businesses	None
Jurisdiction	Gunflint Trail VFD, wildland USFS
Infrastructure risk	Evacuation area is a helispot with no sprinkler system. No Power or phones in this area. Limited cellular telephone coverage. One radio phone in this area.
Community values	Economic values, commercial timber area, one of the best water quality areas.
Local Preparedness Capability	See Gunflint Trail VFD resource list on page 74.
Other	Medical evacuations via helispot; private lands need fuels treatments.
Fire Department Needs	
Fire Department Concerns	Fuel load buildup. Road access.
Fuels	This area consists primarily of a mixed hardwood vegetation type that includes aspen stands with a significant amount of balsam fir and spruce in the understory. Much of the balsam is dead within the stands. Fuel models are NFDRS 10 and FPB M3. There is high potential for crown fire due to the balsam component in the stands.
Fire Hazard and Risk Rating	This area rated out as high due to the hazardous fuel situation, presence of many structures, remote access to the area, and lack of suppression resources to respond to the area.
Fire Regime Condition Class	This area primarily falls within Condition Class 3. Fires historically burned with mixed severity. In the pine ecosystems, fires burned with low intensity in the understory, every 50 years with killing less than 25% of the overstory. In the hardwood ecosystems, fire burned in the spring and fall when leaves were not present and dry conditions existed. Fire burned every 150 years. Fires burned in areas where fuel had accumulated due to blowdown or insect and disease or where conifer species were found. This created a patchwork of lightly and severely burned areas. Due to the growth of balsam and presence of blowdown in the area, the fire regime has been significantly altered. Fires would burn much more intensely under current conditions. The majority of the overstory would be affected by wildfire under current conditions. Historically there were more mature pine and spruce and less hardwoods in this area. Insect killed balsam in addition to the altered fire regime contributes to an unhealthy forest situation and deterioration of condition class.
Mitigation Activities	
Vegetation Treatments	Pile and burning or removal of balsam near private property with structures, harvesting of aspen stands that contain a large balsam component, and crushing of balsam in understory. Upcoming USFS Shokoshoe project – 4,650 acres. A variety of timber harvest, understory fuels reduction, underburning, broadcast burning, planting, seeding and slash disposal.
Sprinkler Systems	7
Firewise Assessments	Last completed in 2009.


Greenwood Lake CWPP Planning Area
Legend
CWPP Planning Areas
Scattered Structures
Wildfires MN DNR
Wildfires Since 1980
Fuels Treatments
Intermix WUI
Roads
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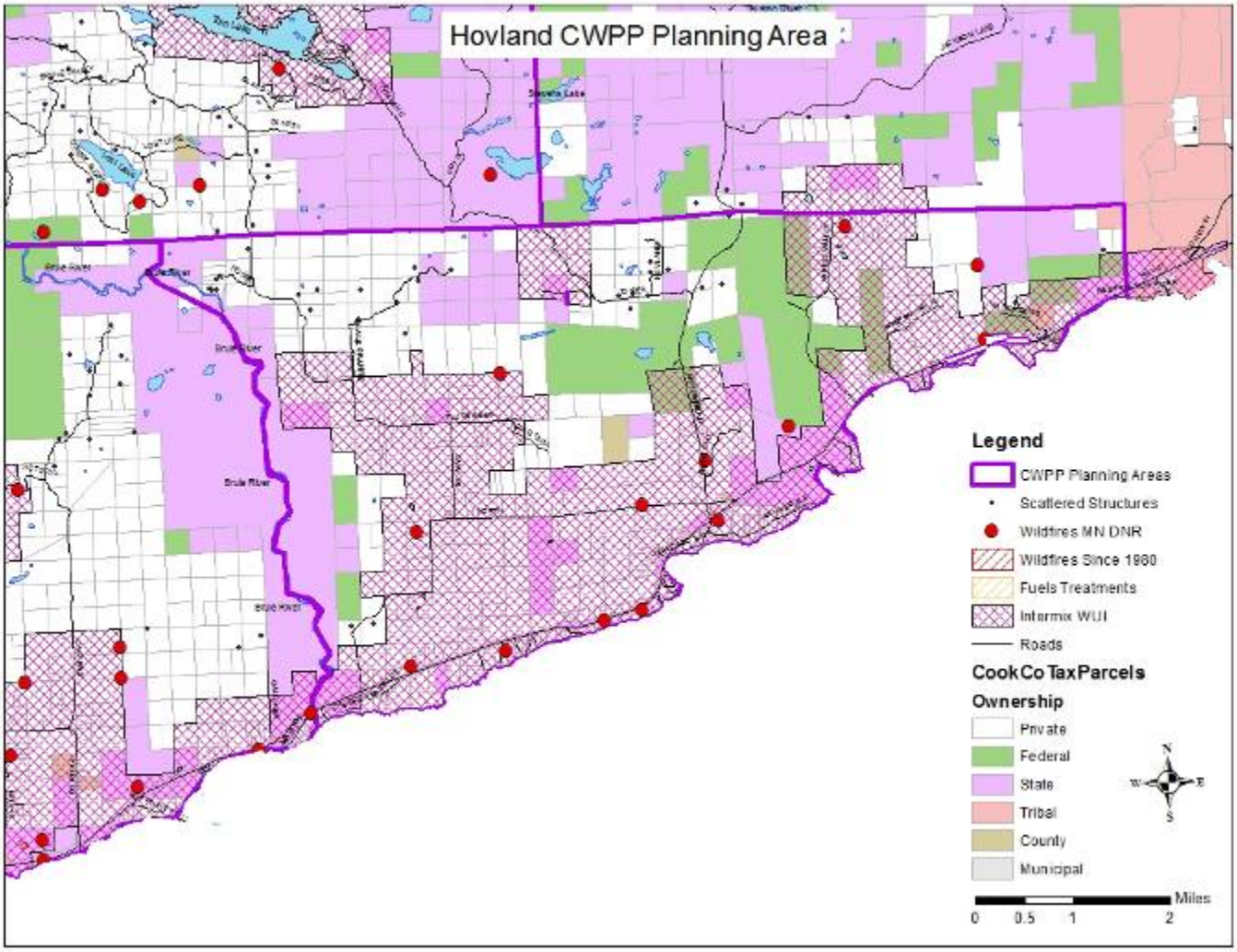
Greenwood Lake
Fault Lake
Bean Lake
Parsnip Lake
South Bean Lake
Carrot Lake
Tomato Lake
Pea Lake
Mirage Lake
Little Lake
Potato Lake
North Shady Lake
Niaula Lake
Turnip Lake
Shoe Lake
Devilfish Lake
Triangle Lake
Bunfish Lake
Kindle Lake
Spark Lake
Woodpecker Lake
Assinika Lake
Puddle Lake
Cyprinid Lake
Section Ten Lake
Redcoat Lake
Pathe Lake
Brule River
Brule River
Brule River

Hovland Priority: High risk	Location: T64N R4E County VFD Levy: $79,000
Access	Highway access, interior roads are dead ends for the most part after heading north or south off of Hwy 61. County Rd 69 and 70 (Camp 20 Road) have good access.
Topography	Shoreline slopes upward from Lake Superior.
Fuel Hazards	Dead spruce, balsam, and birch. Also dead and downed timber hazards.
Fire Occurrence	Low
Structures	Mainly private ownership.
Businesses	Resorts and summer cabin businesses along the shore of Lake Superior. The Nanibejiou Resort is listed on the Historical Register.
Jurisdiction	Hovland VFD, wildland DNR
Infrastructure risk	Highway 61. Power line through Hovland on the north side. Phone lines exist in parts of the area. There is a major communication site located in Hovland which serves DOT, DNR and Sheriff's office.
Community values	Area actively managed for commercial forest—economic value. Tourism based economy along the Shore. State Scientific Natural Area of Tower Road, Stone gate community, Trinity Lutheran Church on historic register.
Local Preparedness Capability	See Hovland VFD resource list on page 75.
Other	Mostly private land with lots of potential for development
Fire Department Needs	Larger fire hall
Fire Department Concerns	
Fuels	This area is composed primarily of hardwood stands. Many of the stands have dead spruce and balsam in the understory. There is a large component of birch along the shore that is dead and dying. Birch can pose a fire hazard due to the flammability of bark. The bark can also be lofted into the air easily, creating an ember that can start additional fires. FPBS fuel model 10 and FPB fuel model M1 represent this area. Fires generally burn with lower intensities in hardwood stands, but with the presence of dead conifer and birch, fires in this area have the potential to burn with high intensities.
Fire Hazard and Risk Rating	This area rated as a moderate fire hazard and risk. There are some fuel hazard risks in the area with the dead spruce and balsam and there are some economic values at risk within the area. However, there is good response times and adequate suppression resources available to respond to fire occurrence.
Fire Regime Condition Class	This area falls primarily into Condition Class 2. The fire regimes and vegetation conditions been moderately altered. Fires historically burned on long rotations of 150-500 years with mixed severity killing 50-75% of the overstory depending on drought conditions. Vegetation was historically composed more of older age classes in the sugar maple areas where it is presently composed of young and mid-aged classes. In the hardwood areas the area was historically composed of more spruce-fir and less hardwoods.
Mitigation Activities	
Vegetation Treatments	There is much private property in this area that could have dead and down cleared through piling and burning or mechanical removal. The decadent stands of birch could be regenerated through mechanical harvesting or prescribed burning.
Sprinkler Systems	2
Firewise Assessments	140 completed in 2009. Anticipate conducting assessments in 2018.


Hovland CWPP Planning Area
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CWPP Planning Areas
Scattered Structures
Wildfires MN DNR
Wildfires Since 1980
Fuels Treatments
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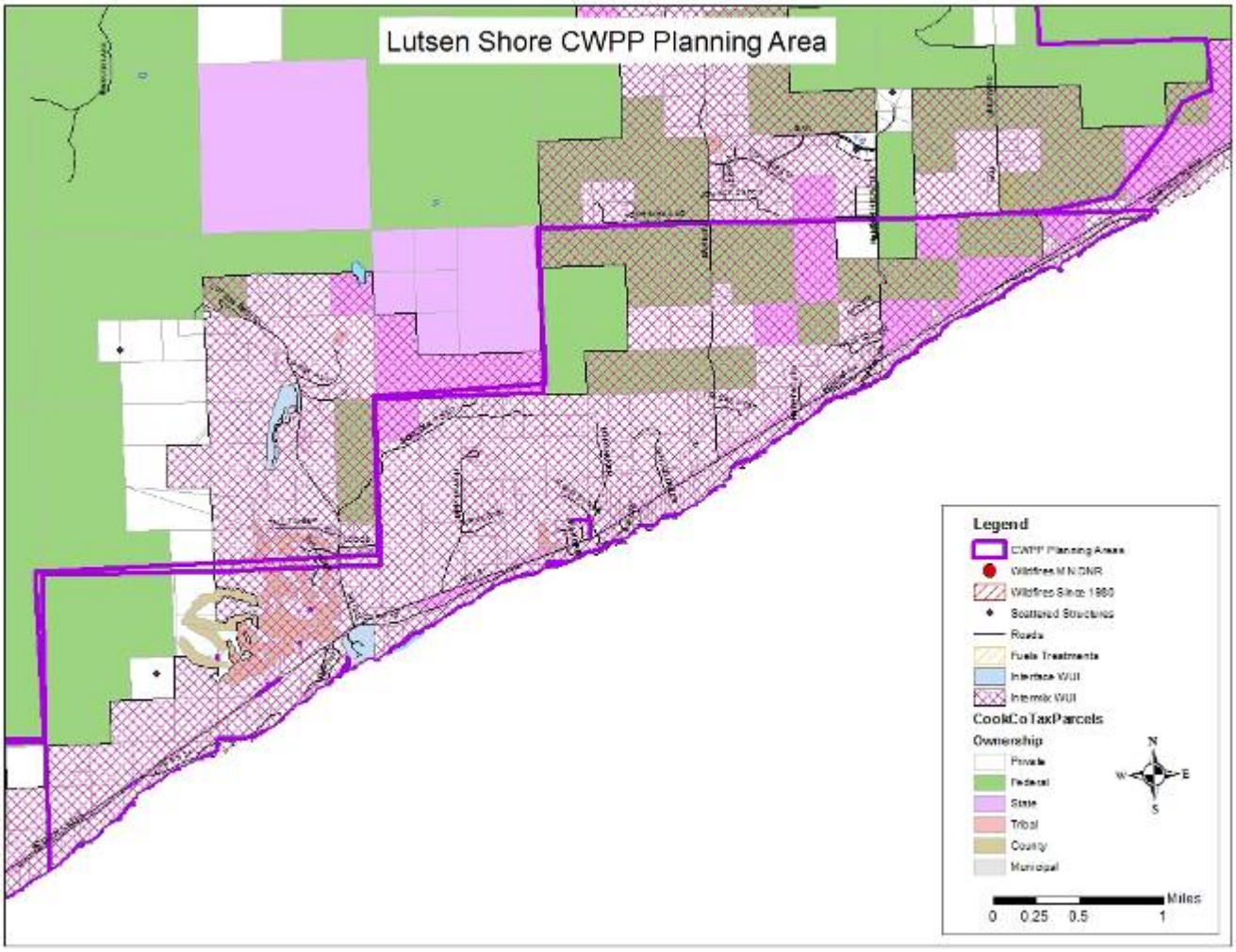
Lutsen Shore Priority: Moderate risk	Location: T6N R3W County VFD Levy: $32,138
Access	On Hwy 61 with good access.
Topography	Rocky rugged country, shallow organic soils – poor moisture retention.
Fuel Hazards	The Cascade Beach area (shore) is higher risk than the rest of this area because of the dead and down aspen and birch and the private home density.
Fire Occurrence	Low
Structures	Year round vacation homes, condos, and town houses, year round homes.
Businesses	Well-developed area, large resorts, ski hill, golf course, maple syrup businesses, hotels, Lutsen resort, USFS Campground, proposed housing development (300 homes) by golf course. Major economic center.
Jurisdiction	Lutsen VFD, wildland USFS
Infrastructure risk	Major electric service provider located here (Arrowhead Electric). Communications for emergency services and law enforcement.
Community values	Superior Hiking Trail in this area, high end tourist destination to resorts & condominiums. A year round vacation destination.
Local Preparedness Capability	See Lutsen VFD resource list on page 75.
Other	Economic Development Group is active. Largest economic recreation resource in Cook County. Cascade Lodge and Lunde Home on historic register.
Fire Department Needs	Need 10,000 -20,000 gallon holding tank at the fire hall.
Fire Department Concerns	High fuel loads. Poor access roads. Poor access to homes via steep and/or narrow driveways.
Fuels	Along the shore area there is predominately birch and aspen. Away from the shore 1-2 miles is a band of maple. On the northern end of the area, there is a combination of conifer and hardwood stands. Much of the northern portion of the area has a large amount of balsam in the understory of the stands. There are also timber harvest and dead balsam areas that did not regenerate and are presently a brush type. These areas would be categorized a fuel model 8 along the shore and in the maple stands, fuel model 10 in the northern part, and fuel model 5 in the brush areas. Fire behavior in fuel model 8 and 5 exhibit slower rates of spread and lower intensity. In fuel model 10, more fire intensity and spread rates can be expected. One concern in the fuel model 10 is the potential for crown fires. Overall, fire hazards in this area would be considered moderate. Near the shore it is fairly low and in the northern part of the area it is high.
Fire Hazard and Risk Rating	This area rated out as a moderate fire hazard and risk. There are good suppression capabilities, decent access, and low to moderate response times.
Fire Regime Condition Class	This area falls within Condition Class 2 near the shore and Condition Class 3 near the BWCAW. Near the shore, the fire regimes and condition classes have been moderately altered from what they historically were. Fires historically burned with mixed severity every 150-500 years. Currently, fires would burn with higher severity than what they historically would due to the balsam component in the stands. Currently, fires would burn with much greater severity killing 75-100% of the overstory, where historically fires only burn 25% of the overstory. Conifers were a much larger vegetation component on the landscape historically than today.
Mitigation Activities	
Vegetation Treatments	Harvesting, piling and burning, crushing of balsam. Harvesting of conifer stands. Burning and regenerating dead birch stands. Site preparation and regeneration of brushy areas. Thinning of pine stands is needed.
Sprinkler Systems	0
Firewise Assessments	422 completed in 2016.


Lutsen Shore CWPP Planning Area
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CWPP Planning Area
Wildfires MN DNR
Wildfires Since 1980
Scattered Structures
Roads
Fuels Treatments
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Intermix WUI
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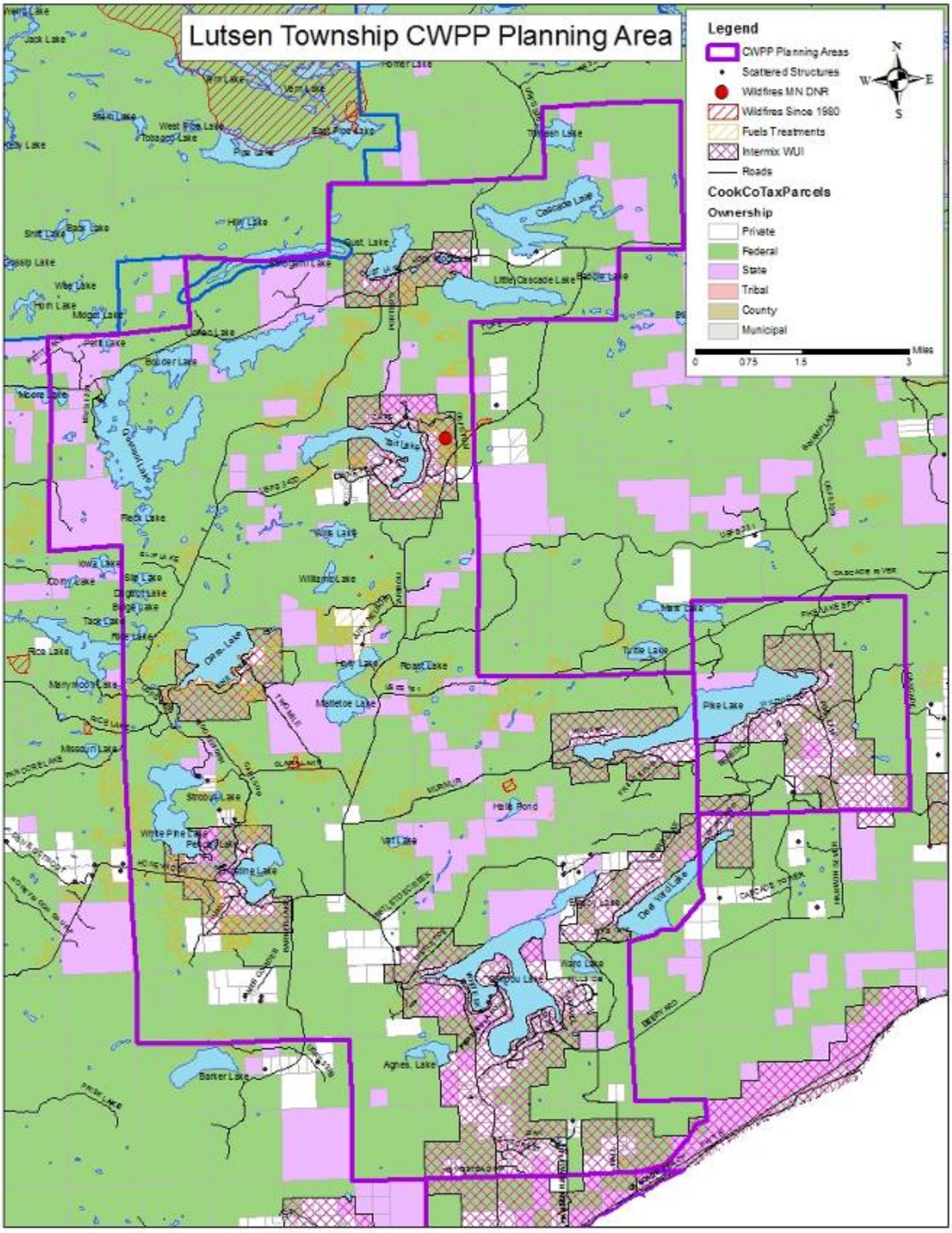
Lutsen Township Priority: High risk	Location: T61N R3W County VFD Levy: $32,138
Access	Mostly one way, narrow roads with poor access to lakes. The "Grade" cuts east west across the forest and can be used for access.
Topography	Lakes include Caribou, Holly, White Pine, Clara, Tait, Gust, Crescent, Cascade, Ward, and Bigsby.
Fuel Hazards	Significant dead balsam, blow down areas from 1992. Caribou and Tait Lakes are high risk due to population density & homes. Blowdown exists within this area. Holly, White Pine, Clara are high due to Balsam fuels. Tait Lake is high due to both blowdown area and balsam fuels.
Fire Occurrence	Moderate, South Temperance Fire in 1996, Famine/Redeye Fires 2006.
Structures	360+ homes in this area. There is new and proposed development in the area.
Businesses	USFS Campgrounds: Poplar and Temperance River, Crescent, Baker and White Pine Lake. Church Camp on Caribou Lake.
Jurisdiction	Structural-Lutsen VFD, Wildland-USFS
Infrastructure risk	Partial power and phone service. Gust lake has no power or phone service. Caribou Lake has power and phone. Holly, Clara, Tait, White Pine, and Christine Lakes have power only. Some areas have cell service.
Community values	Recreational area, structures.
Local Preparedness Capability ISO – 9	Lutsen VFD, wildland USFS. See Lutsen VFD resource list on page 75.
Other	Close to BWCAW boundary
Fire Department Needs	Need 10,000 – 20,000 gallon holding tank at the fire hall.
Fire Department Concerns	High fuel loads. Poor access roads. Poor access to homes via steep and/or narrow driveways.
Fuels	This area is predominantly mixed hardwood vegetation. The hardwood stands have a large amount of balsam and spruce fir that has grown up in the understory. Much of the balsam is dead and dying. These areas are considered to be a fuel model 10 where crown fire can exist under drier, winder conditions. There also exists some red and white pine stands within the area. These pine stands have not seen fire and have a dead and down fuels build up in the understory. The potential for crown fire in this area is high due to the amount of dead and down in the understory. These stands would also be considered a fuel model 10 due to the amount of ladder fuels present.
Fire Hazard and Risk Rating	This area rated out as a high fire hazard and risk area. This is due to the hazardous fuels present, poor access, and longer response times to some remote lake communities.
Fire Regime Condition Class	This area falls primarily into condition class 2. Both fire regimes and vegetation conditions have been moderately altered from their historical conditions. Fires historically burned every 150-500 years. Presently, fires would burn somewhat more severely. In the hardwood and conifer areas, fires would cause 75-100% mortality to the overstory. Historically, fires burned 25-75% of the overstory. The Sugar Maple areas historically were composed more of older age classes. In the hardwood types, there was historically more conifer.
Lutsen Township Area Continued	
Mitigation Activities	
Vegetation Treatments	This area has had little fuels reduction treatments over the past decade and is in need of some treatments. Private, state and federal lands could all use some treatments. Harvesting of mixed hardwood stands that have a large amount of balsam in the understory would be appropriate. Thinning and/or

	underburning pine stands is a need. There are many stands of dead balsam and fir that need to be removed. This can be accomplished by crushing, piling and burning, or removing the biomass from the understory of the stands. This area also has several areas that were harvested in the past and regeneration was not successful. These areas have grown up to be brush fields that could use some mechanical site preparation and replanting. On federal land, portions of this area will be the focus of the Clara Lake vegetation treatment project in 2009. The area has also had biomass removal for a demonstration project on federal lands. Tait Lake homeowners have taken an active role in treating private land holdings for fuels reduction benefits. **Projects** Dry Fire Hydrants have been installed in various remote areas of the district. Grant money was obtained to assist with the costs of these. The Clara EA identifies 1,500 acres of fuels reduction treatments on federal lands adjacent to private lands. These treatments include harvesting, understory fuels clean up, and thinning. These treatments are expected to be completed by 2013. The Tait Lake area was identified as one of the priority areas for this area. The Tait Lake area has been the focal point of a fuels reduction project. The project includes hazardous fuels clean up on common property and private property. Some of this work was funded with State and Private Grants through the US Forest Service. A dry fire hydrant was installed with grant money. Firewise assessments were completed on all private properties. An area for brush and slash disposal was identified near Caribou Lake and is now in operation. This has given homeowners a place to dispose of fuel reduction materials from private property. Cook County Firewise sponsored brush pick up days at Clara and Tait Lakes in 2015 and 2016. A total of 45 private properties participated each year. Another brush pick-up day is planned at each lake in 2017. Cook County Firewise sponsored brush pick up days at Gust Lake, Caribou Lake, and the Honeymoon Trail in 2016. A total of 43 private properties participated.
Sprinkler Systems	41
Firewise Assessments	329 completed in 2015. 422 completed in 2016.


Lutsen Township CWPP Planning Area
Legend
CWPP Planning Areas
Scattered Structures
Wildfires MN DNR
Wildfires Since 1980
Fuels Treatments
Intermix WUI
Roads
CookCoTaxParcels
Ownership
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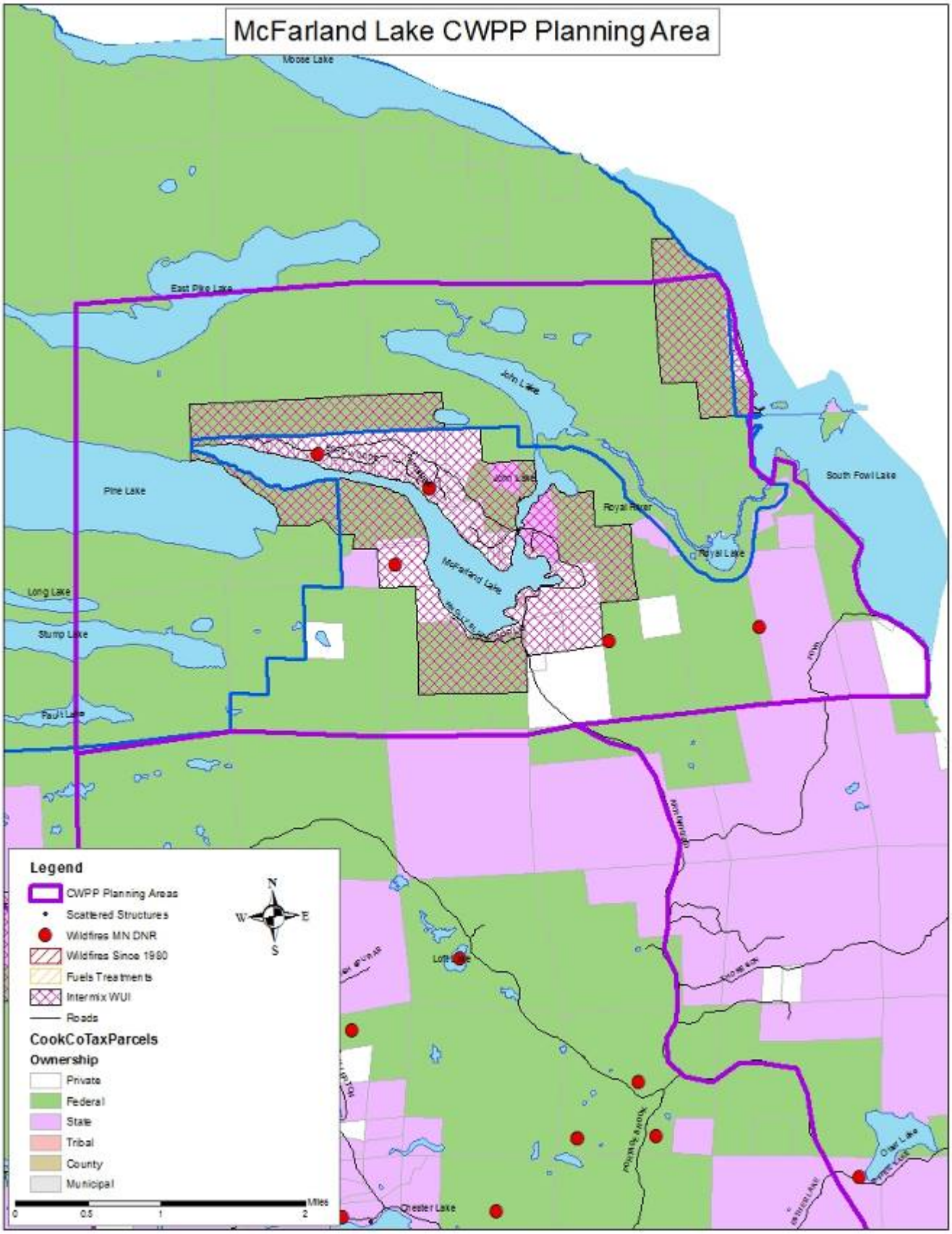
McFarland Lake Priority: High risk	Location: T64N R3E County VFD Levy: $79,000
Access	One way in one way out. Dead end road. Two water access only residents. Arrowhead road to McFarland Lake needs improvement. Part of the road is private. Heavy road use. On busy summer weekends 1000+ people can be found within this area with limited egress for evacuation.
Topography	Rugged terrain, steep slopes to residences.
Fuel Hazards	1999/1992 blowdown areas. Some FEMA clean-up with more to accomplish. Fuels build-up on federal, state and private lands.
Fire Occurrence	Fireworks fire in 2002. Could not find in database.
Structures	Structures on North and South Fowl Lakes, and McFarland Lake.
Businesses	None
Jurisdiction	Hovland VFD, wildland DNR.
Infrastructure risk	Helispot located in a staging area. No power or phones, and poor cell coverage.
Community values	State Campground at McFarland Lake.
Local Preparedness Capability	See Hovland VFD resource list on page 75.
Other	BWCAW entry points for Pine Lake, John Lake, South Fowl, and the Border route trail. East of McFarland by East Pike Lake there are some healthy, mature white pine stands in the BWCAW.
Fire Department Needs	Satellite fire hall.
Fire Department Concerns	
Fuels	Predominantly a conifer vegetation type dominated by red and white pine stands with some mixed hardwood/conifer stands. Classified as FBPS fuel model 9 or FBP fuel model C16. Many of the confer stand are mid-aged (60-80 years old). The stands have seen little, if any fire. So, dead and down fuels are beginning to build up in the understory and lower branches are dying off. This creates enough of a fuel bed and ladder fuels which can carry fire into the crowns of the trees in high winds. There is also light blowdown throughout this area with patches of moderate blowdown. These are very healthy conifer stands which could use treatments to help protect them from future fires.
Fire Risk and Hazard Rating	This area rated out as a high fire hazard due to the fuel hazards present, the presence of many structures, the lack of nearby suppression resources to respond to wildfires, and the poor access within the area.
Fire Regime Condition Class	This area primarily falls within Condition Class 3. Fires historically burned with mixed severity. In the pine ecosystems, fires burned with low intensity in the understory, every 50 years with killing less than 25% of the overstory. In the hardwood stands, fire burned in the spring and fall when leaves were not present and dry conditions existed. Fire burned every 150 years. Fires burned in areas where fuel had accumulated due to blowdown or insect and disease or where conifer species were found. This created a patchwork of lightly and severely burned areas. Due to the growth of balsam and presence of blowdown in the area, the fire regime has been significantly altered. Fires would burn much more intensely under current conditions. The majority of the overstory would be affected by wildfire under current conditions. There was historically more mature pine and spruce and less hardwoods in this area.
Mitigation Activities	
Vegetation Treatments	Treatments should include understory burning of pine stands and piling and burning or removal of flammable materials near private property.
Sprinkler Systems	10
Firewise Assessments	Anticipated in 2018.


McFarland Lake CWPP Planning Area
Moose Lake
East Pike Lake
John Lake
Pine Lake
John Lake
Royal River
South Fowl Lake
Royal Lake
McFarland Lake
Long Lake
Stump Lake
Paul Lake
Chester Lake
Legend
CWPP Planning Areas
Scattered Structures
Wildfires MN DNR
Wildfires Since 1980
Fuels Treatments
Intermix WUI
Roads
CookCoTaxParcels
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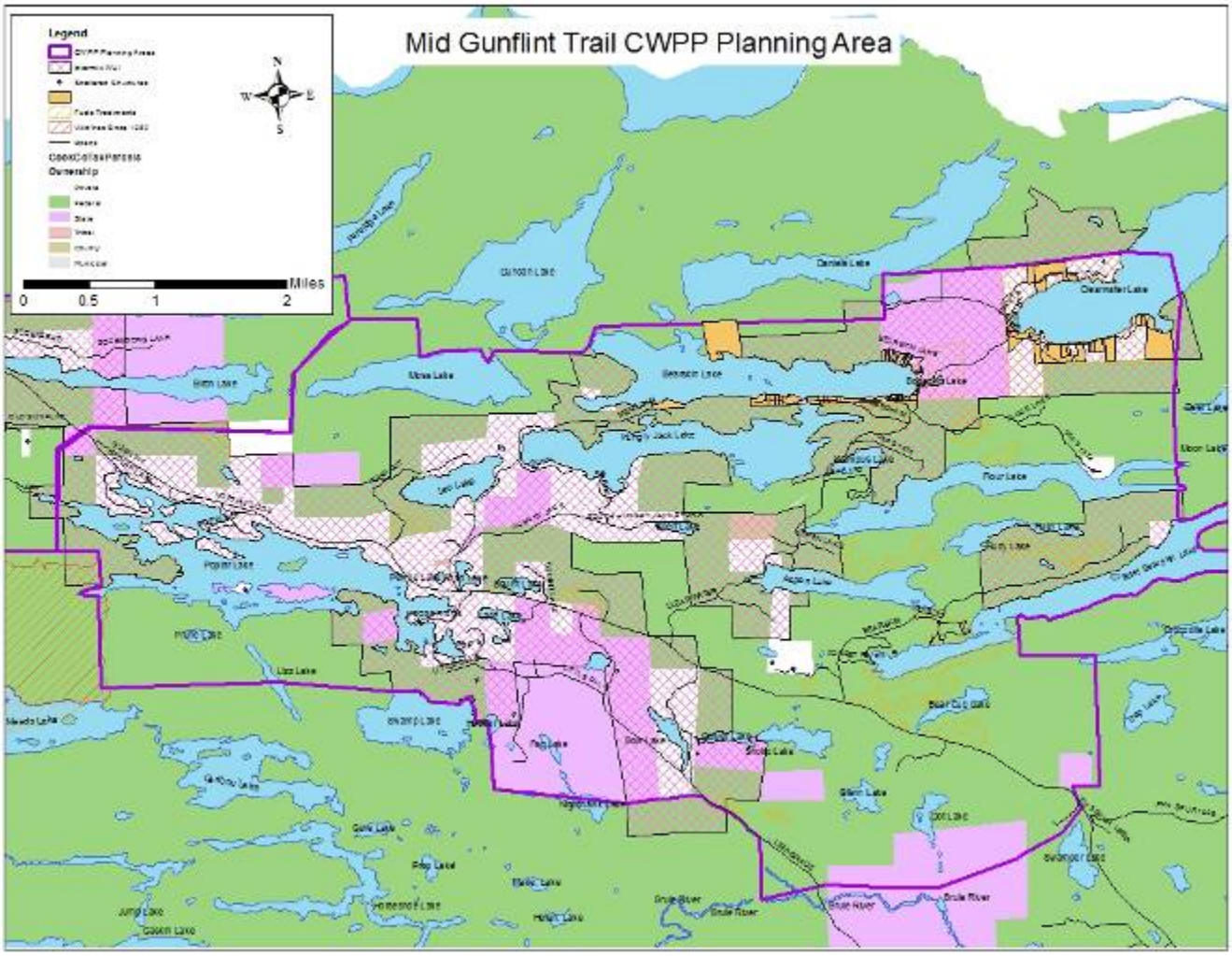
Mid Gunflint Trail Priority: High risk	Location: T64N & T65N R 1W and R1E County VFD Levy: $80,000
Access	The Midtrail area is a bottle neck. Thirteen BWCAW entry points add evacuation complexity for county officials evacuating residents, visitors, and canoeists during wildfires. Some properties are water access only.
Topography	Higher ridges with steep areas.
Fuel Hazards	Major blowdown area adjacent to significant BWCAW blowdown. Area has copious dead balsam and live balsam ladder fuels.
Fire Occurrence	Fire Prone area. Pattern of lightning fires. Redeye/Famine Fires 2006.
Structures	High population area, 60% of the gunflint trail population resides here. Increasing # of year round residents. Homes are high value with 90% of properties next to lakes. New homes in the little Ollie area. Lake associations on Hungry Jack, Clearwater, East Bearskin and Poplar lakes. Evacuation problems in this area.
Businesses	Year round commercial hub. Home-based businesses including telecommunication, resorts & outfitters. Youth camps are located here also.
Jurisdiction	Gunflint Trail VFD, wildland USFS
Infrastructure risk	Major economic values. Phone, electric, Heliports, ski, hiking and snowmobile trails. Communication towers for USFS & DNR.
Community values	Significant recreation based economy. Commercially based road corridor with a significant recreational economic base located between a wilderness area. Adjacent to the Wilderness on both sides of the Trail. USFS campgrounds. Clearwater lodge on historic register. Forest closures can have a high impact on local outfitting businesses. Primary access points to the BWCAW.
Local Preparedness Capability	Evacuation plan exists. Ambulance service out of Gunflint Lake fire hall. One of three fire halls in district. See Gunflint Trail VFD resource list on page 74.
Other	Evacuation staging areas, Lace Lake
Fire Department Needs	
Fire Department Concerns	Road access, especially the Lima Grade Twin Lakes area.
Fuels	Conifer stands are predominant in the area. Including red, white, and jack pine stands, spruce fir stands, and hardwood stands with a large balsam fir understory component. The red and white pine stands are older (75-125 years old) and contain unique characteristics. Most stands have a balsam fir component within them. Most stands fall into NFDRS fuel model 10 and FBP fuel mode C5. Fire behavior is generally moderate, except under extreme fire weather conditions where crown fire can be expected. These fuel models will exhibit extreme fire behavior under high fire indices. The hazardous fuels areas have been broken up by treatments after the 1999 blowdown. Some patches of blowdown still remain.
Fire Hazard and Risk Rating	This area rated out as a high fire hazard and risk. This is because there is a dense population, economic and infrastructure values at risk, hazardous fuels, history of fires in the area, and poor access to many structures.
Fire Regime and Condition Class	This area is composed of both Condition Class 2 and Condition Class 3 areas. Historically there were extensive red and white pine stands that burned with low intensity (25% crown kill) every 50 years). There has been fire excluded from these stands for over 200 years and fires would burn with high severity (75-100% crown kill) today. These areas were also composed of much more pine component historically, especially the older age classes of pine. Today they are composed of much more conifer in the younger age classes. These

	historically red and white pine areas are currently in condition class 3, meaning they are severely departed from their historical conditions. Approximately 1/3 of this area was also historically composed of a jack pine/black spruce ecosystem. This area historically burned every 65 years with high intensity fires (75-100% crown kill). There has been fire exclusion in the area for approximately 150-200 years and fires would currently burn with high severity (100% crown kill). The jack pine/black spruce area was historically composed of more pine in the young and mid-aged classes. Currently there is much more spruce-fir, hardwoods, and mixed conifers than it was historically. This jack pine ecosystem is considered a condition class 2 because it is moderately departed from its historical fire regime and vegetation conditions.
Mitigation Activities	
Vegetation Treatments	The types of vegetation treatments that would be needed to reduce the existing fire hazards include crushing or mechanical removal of balsam fuels, under burning pine stands, and piling and burning of blowdown. **Projects:** Cook County Firewise Clearwater Project: USDA Steven's grant completing understory hazardous fuels reduction on 62 private properties. Through 2016, 119 acres of 235 planned acres have been treated on Clearwater and West Bearskin Lakes. Cook County Firewise Hungry Jack Project: USDA Steven's grant completing understory hazardous fuels reduction on private properties. By the end of 2018, 145 acres are anticipated to be completed on Hungry Jack, Leo, Clearwater, and Road Lakes. Cook County Firewise brush pick up days. Three brush pick up days were sponsored by the Firewise program in 2015 and 2016. A total of 104 private properties participated. Another brush pick up day is planned for 2017. Hazardous fuels clean-up on private property has been occurring on private property. 200 acres of clean-up has been identified and is being funded through a State and Private Grant from the US Forest Service. USFS Lima Green project – 3,924 acres. A variety of timber harvest and silvicultural activities (selective cuts, even-aged cuts, and un-even aged cuts), understory fuels reduction, mechanical and prescribed fire site preparation (for planting/reforestation), underburning, broadcast burning, planting, seeding and slash disposal. Upcoming USFS Shokoshoe project – 4,650 acres. A variety of timber harvest and silvicultural activities (selective cuts, even-aged cuts, and un-even aged cuts), understory fuels reduction, mechanical and prescribed fire site preparation (for planting/reforestation), underburning, broadcast burning, planting, seeding and slash disposal.
Sprinkler Systems	80
Firewise Assessments	Last conducted in 2009.


Mid Gunflint Trail CWPP Planning Area
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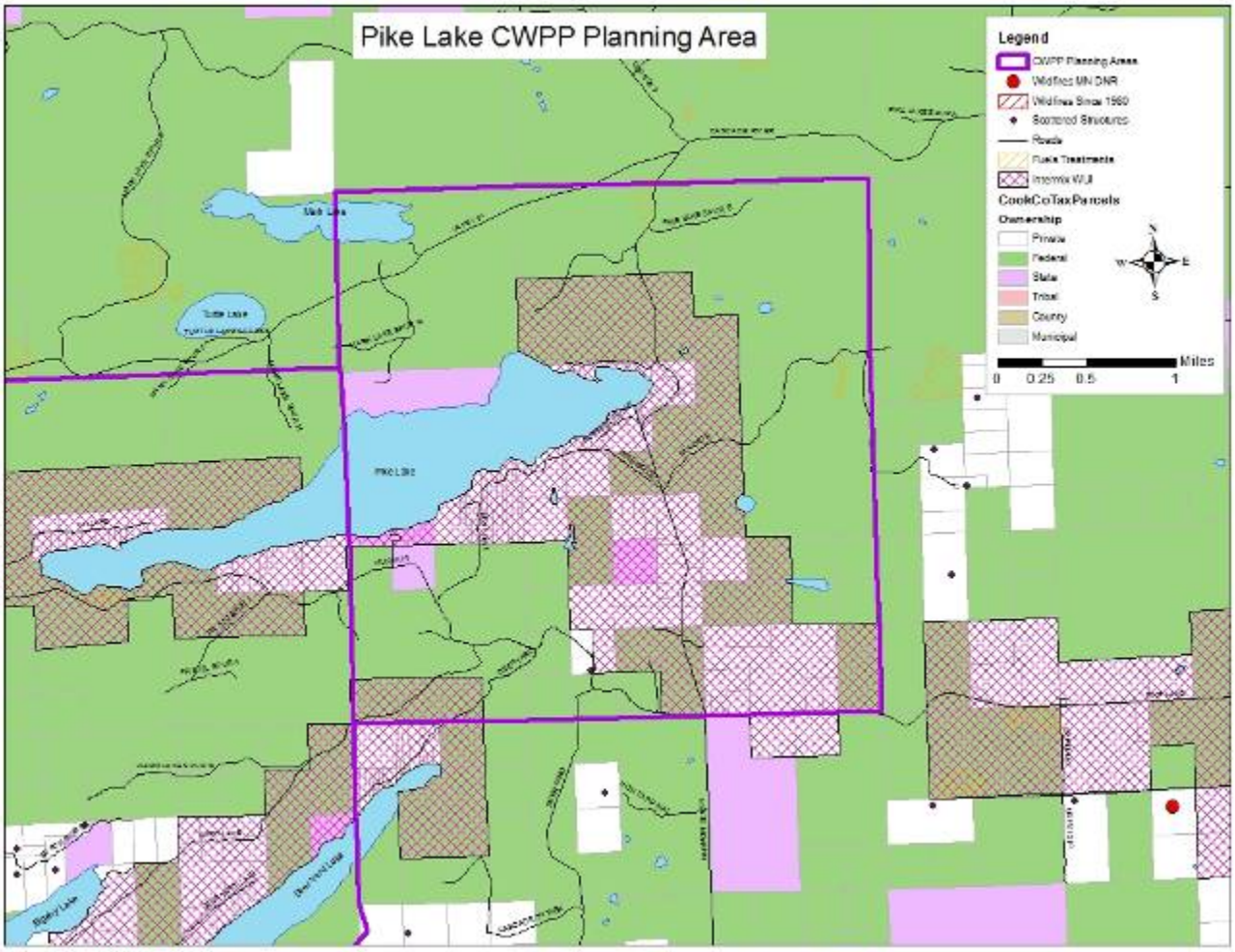
Pike Lake Priority: Medium to High risk	Location: T61N R2W County VFD Levy: $50,728
Access	Poor access, forest roads. West Pike Lake can only be accessed by the Lutsen end for fire protection. Underdeveloped roads, substandard one-way access. Long response for VFD. The west end (south shore) of Pike Lake has very narrow driveways and poor access.
Topography	Rocky rugged country, shallow organic soils – poor moisture retention prone to fire.
Fuel Hazards	Dead, diseased balsam, and downed timber hazards. Balsam ladder fuels. Some blowdown.
Fire Occurrence	Low
Structures	200 to 250 year-round and seasonal properties. Major development in the area.
Businesses	Bed and breakfast, commercial maple sugar business, and vacation rental properties.
Jurisdiction	Grand Marias VFD, wildland USFS.
Infrastructure risk	Entire lake has power with phone lines on the east end only.
Community values	Tourism destination, significant recreation: ski, hiking, and snowmobile trails. Cascade State Park is adjacent and Superior Hiking Trail.
Local Preparedness Capability	See Grand Marais VFD resource list on page 74.
Other	Long response times for structural protection. Large red pine plantations.
Fire Department Needs	New wildland brush truck.
Fire Department Concerns	Response time, remote area, clusters of structures, poor access, structures without defensible space, and limited water supply.
Fuels	Vegetation in this area is primarily a mixed hardwood that falls in fuel model 8. There are some areas of conifer in the area where there is diseased balsam, but they are fairly broken up by mixed-hardwood stands. Fires in the fuel type generally burn with low intensity and slow spread rates.
Fire Hazard and Risk Rating	This area rated out as moderate. The area has a fairly sparse population with very few values at risk outside of the homes and cabins in the area. It does, however, have some hazardous fuels, has poor access to a portion of the structures on the south shore, and has very few suppression resources that are assigned to the area.
Fire Regime Condition Class	This area falls within a Condition Class 2. Fire regimes and vegetation conditions are moderately departed from their historical conditions. Fires historically burned with mixed severity every 150-500 years. Under present conditions, fires would burn somewhat more severely.
Mitigation Activities	
Vegetation Treatments	Some mixed hardwood stands that have some balsam fir build up could be cleaned up through piling and burning, crushing, or other mechanical removal. Private property could also use clean-up of hazardous fuels.
Sprinkler Systems	1
Firewise Assessments	329 completed in 2015.


Pike Lake CWPP Planning Area
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CWPP Planning Area
Wildfires MN DNR
Wildfires Since 1960
Scattered Structures
Roads
Fuels Treatments
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CookCoTaxParcels
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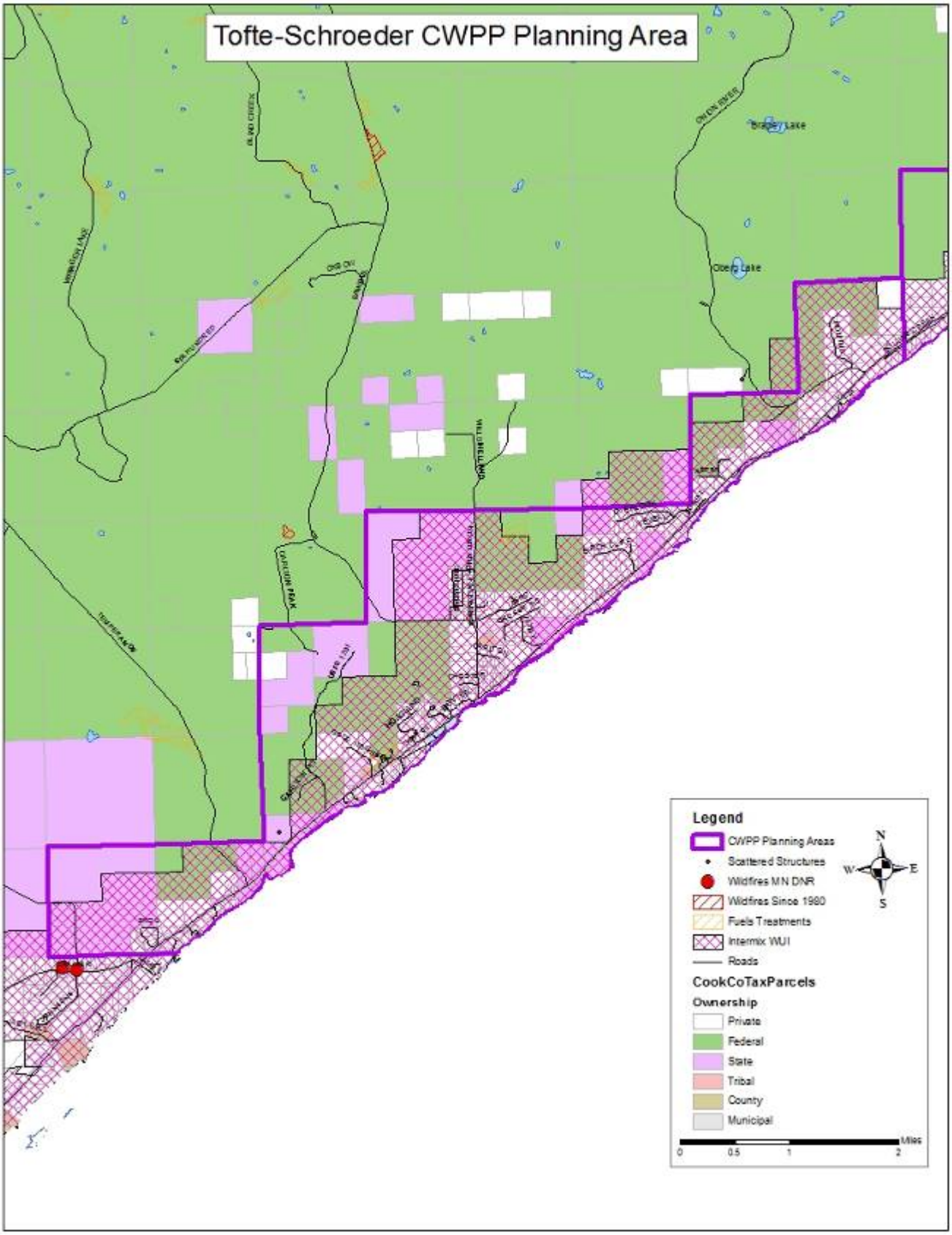
Tofte/Schroeder Priority: Low risk	Location: T59N R4W County VFD Level: $32,000
Access	HWY 61 good accesses. Inland access is limited.
Topography	Conversion to hardwood forest with maple birch predominant along the shore with more conifers inland.
Fuel Hazards	Birch along Lake Superior shoreline; blowdown in Sawbill Lake area.
Fire Occurrence	Grass fires shoreline; timber fires inland.
Structures	Condominiums, year round and seasonal homes.
Businesses	Businesses: hardware, campgrounds, resorts, outfitter's, hotels, condo's, interpretive center. Charter school.
Jurisdiction	Tofte/Schroeder VFD, wildland USFS
Infrastructure risk	Cleveland Cliffs -Mining railroad crosses the entire district. Also an ore dock and harbor. MN Power plant facility.
Community values	Temperance River State Park & campground –major tourist attraction. Historical Site - Father Baraga's Cross- USFS Campground at Sawbill Lake. Significant commercial forest resources (USFS).
Local Preparedness Capability Tofte ISO – 9 Schroeder ISO – 9	See Schroeder VFD resource list on page 75. See Tofte VFD resource list on page 75.
Other	MN Power recently rezoned 3000 acres to residential & commercial. More development is planned throughout the area.
Fire Department Needs	**Tofte** - Pagers, radios, dry hydrant at Tofte Park, underground water storage tank, additional type 1 engine, type 4 brush engine, 1500-gallon water tender. **Schroeder** – Newer grass rig, newer secondary engine, more pagers, more radios, newer slip-on unit. Improve interoperable communications.
Fire Department Concerns	
Fuels	Along the shore area there is predominately birch and aspen vegetation. Away from the shore about 1-2 miles is a band of maple. On the northern end of the area, there is a combination of conifer and hardwood stands. Much of the northern portion of the area has a large amount of balsam in the understory of the stands. There are also timber harvested and dead balsam areas that did not regenerate and are presently a brush type. These areas would be categorized at fuel model 8 along the shore and in the maple stands, fuel model 10 in the northern part of the area, and fuel model 5 in the brush areas. Fire behavior exhibited in fuel models 8 and 5 shows slower rates of spread and lower intensities. In fuel model 10, more fire intensity and spreads rates can be expected. Of particular concern in the fuel model 10 is the potential for crown fires. Overall, fire hazards in this area would be considered moderate. However, near the shore it is fairly low and in the northern part of the area it is high.
Fire Hazard and Risk Rating	This area rated out as a moderate fire hazard and risk. There are good suppression capabilities, decent access, and low to moderate response times.

Fire Regime Condition Class	This area falls within Condition Class 2 near the shore and Condition Class 3 near the BWCAW. Near the shore, the fire regimes and condition classes have been moderately altered from what they historically were. Fires historically burned with mixed severity every 150-500 years. Currently, fires would burn with higher severity than what they historically would due to the balsam component in the stands. Currently, fires would burn with much greater severity killing 75-100% of the overstory, where historically fires only burn 25% of the overstory. Throughout the whole area, conifer was a much larger vegetation component on the landscape historically than it is currently today.
Mitigation Activities	
Vegetation Treatments	Harvesting, piling and burning, removal, or crushing of balsam. Harvesting of conifer stands. Burning and regenerating of dead birch stands. Recommend site preparation and regeneration of brushy areas, and thinning of pine stands.
Sprinkler Systems	0
Firewise Assessments	Both Tofte and Schroeder are planned for 2017. Tofte last completed in 2009; Schroeder last completed in 2010.


Tofte-Schroeder CWPP Planning Area
Legend
CWPP Planning Areas
Scattered Structures
Wildfires MN DNR
Wildfires Since 1980
Fuels Treatments
Intermix WUI
Roads
CookCoTaxParcels
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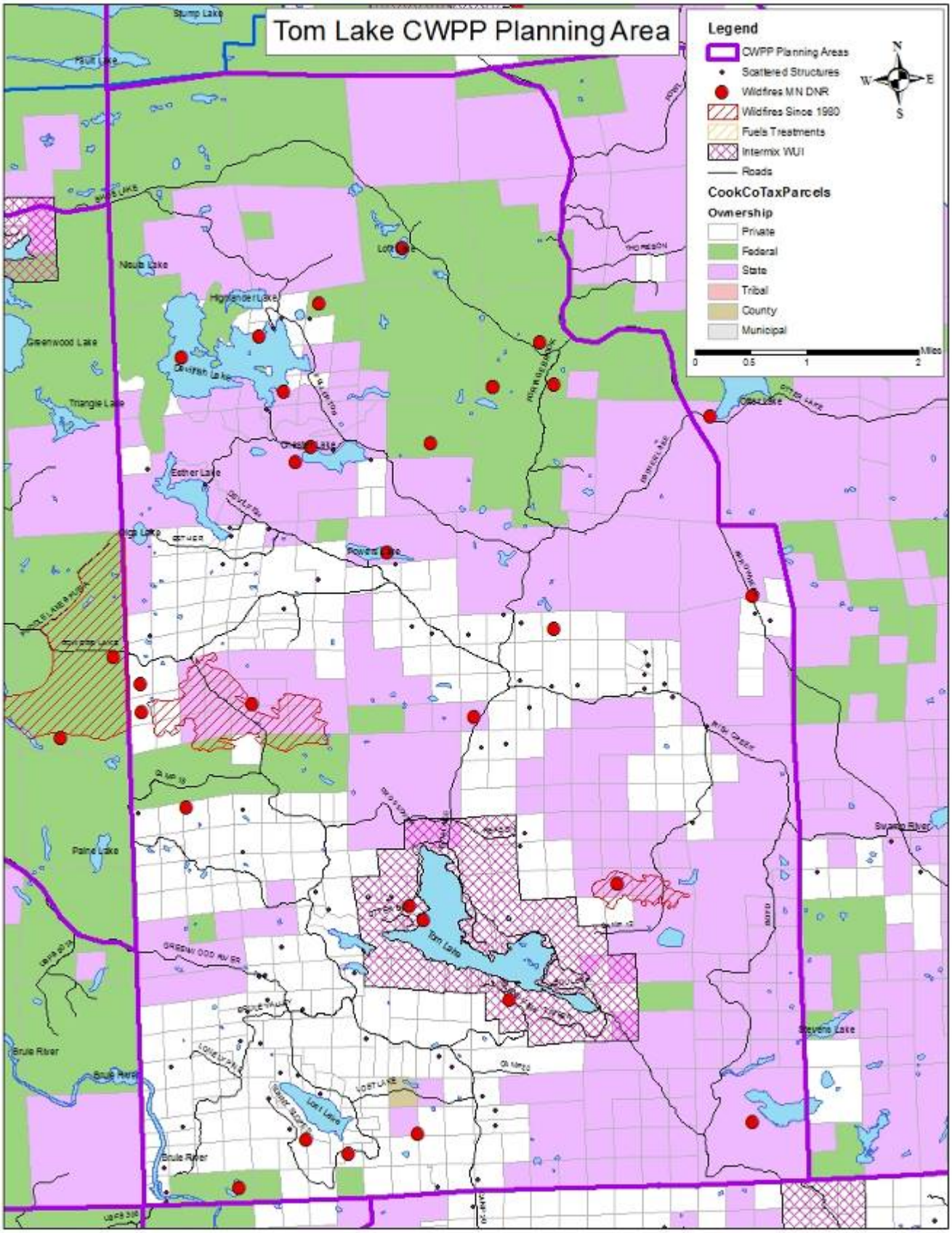
Tom Lake Priority: High risk	Location: T63 and 64N, R3E County VFD Levy: $79,000
Access	Arrowhead Trail is the main access road and is partially paved. Only one road in and out to each of Tom and Esther Lake. Both are substandard roads. Other roads needing improvements are the Irish Creek, Shoe Lake, Greenwood Lake, Camp 20, and west end of the Camp 20 road.
Local Topography	Rocky rugged country, shallow organic soils – poor moisture retention.
Fuel Hazards	Dead standing and downed balsam/spruce fuel hazards. Balsam ladder fuels.
Fire Occurrence	Esther Fire 1998 and Tuesday Fire 2002
Structures	Numerous seasonal residences in Tom Lake and Esther Lake area. Limited full time residences. There are three cabins on Devil's Fish Lake**.** Development is expanding within this area**.**
Businesses	None
Jurisdiction	Hovland VFD, wildland DNR.
Infrastructure risk	Key County/DNR communications tower at Esther Lake. Power along the north side of Tom Lake.
Community values	Economic value, vicinity of the BWCAW entry points, DNR logging area
Local Preparedness Capability	See Hovland VFD resource list on page 75.
Other	Mostly private land with lots of potential for development
Fire Department Needs	New fire hall.
Fire Department Concerns	
Fuels	This area consists primarily of cut over areas that are regenerating to balsam and brush fields. In areas of standing timber, a large component of balsam exists in the understory with a large portions of dead balsam. This puts it in FBPS fuel model 10 or FBP fuel model M3 which is very flammable and has high rates of spread. Where fuel is continuous enough, crown fires can be expected. Young balsam in the understory provide a ladder fuel for fire to move into the crown. Because of poor access, response times are fairly long.
Fire Hazard and Risk Rating	This area rates as a high fire hazard and risk area. This is primarily due to the poor access to the area (narrow, one way, dead end roads), the hazardous fuel conditions (large balsam component), the presence of many structures in the area, and limited suppression resources in the area available for fire response.
Fire Regime Condition Class	This area primarily falls within Condition Class 3 – it is severely departed from its natural fire regime and moderately departed from its natural vegetation composition. Fires historically burned with low severity every 50 years. Due to the growth of balsam in the area, the fire regime has been significantly altered. Fires would burn much more intensively under current high and extreme weather conditions removing the majority of the overstory species. The landscape is presently composed of more of a hardwood mix and less mature pine than historically. The presence of insect killed balsam in addition to the altered fire regime contributes to an unhealthy forest situation and deterioration of condition class.
Mitigation Activities	
Vegetation Treatments	The primary focus is removing the balsam, especially the dead component. This may include crushing where it exists as an understory component, piling and burning, removal of flammable fuels near private property with structures, and/or patch burning stands that have patches of balsam. Regeneration to fire resistant species such as pine should be a priority.
Sprinkler Systems	5
Firewise Assessments	140 completed in 2009.


Tom Lake CWPP Planning Area
Legend
CWPP Planning Areas
Scattered Structures
Wildfires MN DNR
Wildfires Since 1980
Fuels Treatments
Intermix WUI
Roads
CookCoTaxParcels
Ownership
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Tribal
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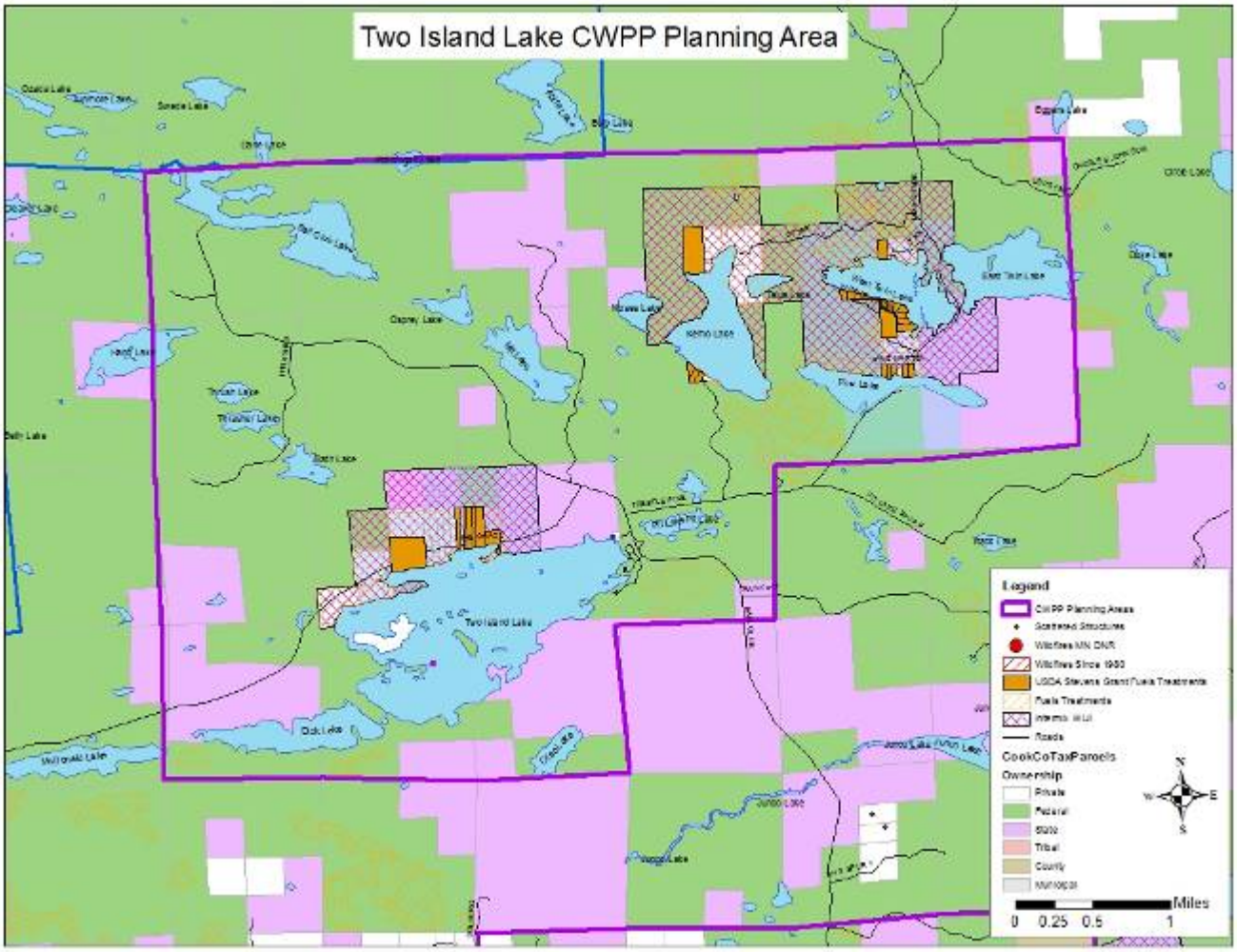
Stump Lake
Fault Lake
Nicola Lake
Highlander Lake
Greenwood Lake
Triangle Lake
Esther Lake
Powers Lake
Paine Lake
Tom Lake
Brule River
Swamp River
Stevens Lake
Otter Lake

Name: **Two Island Lake** Priority: High	Location: T63 & 62 N, R1W County VFD Levy: $50,000
Access	Poor, one way in & one way out. Some areas are water access only.
Topography	Lakes include Kemo, East/West Twin, Two Island, and Trestle Pine.
Fuel Hazards	High hazard fuels, 1992 blowdown.
Fire Occurrence	Swede Fire 1995 and Redeye Fire 2006
Structures	Residents and seasonal cottages at Twin Lakes, Trestle Pine, Two Island, and Kemo Lakes.
Businesses	None
Jurisdiction	Maple Hill VFD, wildland USFS
Infrastructure risk	Power lines, no phone coverage
Community values	USFS Campground at Two Island Lake. Commercial forest resource area.
Local Preparedness Capability	See Maple Hill VFD resource list on page 75.
Other	
Fire Department Needs	
Fire Department Concerns	
Fuels	Some blowdown is found in this area from the 1994 and 1999 blowdown events. There are a lot of mixed conifer/hardwood stands in this area. Balsam understory in stands is prevalent. This area primarily falls into fuel model 10. Extreme fire behavior is possible under high fire indices. Due to longer response times for suppression resources to respond and the fuel hazards, this area has a high fire danger associated with it.
Fire Hazard and Risk Rating	This area rated out as a high fire hazard and risk area. There is sparse population and structures throughout the area. However, there is very poor access, very long response times to the area, very few suppression resources assigned to the area, and hazardous fuel accumulations in the area.
Fire Regime Condition Class	This area is falls primarily within Condition Class 2. The fire regimes and vegetation has been moderately altered from its historical condition. Fires historically burned with mixed severity every 150 years. Fire has been excluded from this area for approximately 200 years and the severity would be more severe if a fire were to burn through with current conditions. Historically there was much more of a conifer component in the area.
Mitigation Activities	
Vegetation Treatments	Due to the proximity to the wilderness and the hazardous fuels in the area, some fuels treatments would help prevent a wildfire exiting the wilderness and causing damage in the area. Clean-up of hazardous fuels on private property is also needed. Fuels treatments could include harvesting and/or burning. **Projects:** Cook County Firewise Twins Project: USDA Steven's grant completing understory hazardous fuels reduction on 40 private properties. Through 2016, 190 acres of 200 planned acres have been treated along The Grade north of Two Island Lake and around West Twin, Trestle Pine, and Kemo Lakes.
Sprinkler Systems	10
Firewise Assessments	Last conducted in 2009. Planned for 2017.


Two Island Lake CWPP Planning Area
Legend
CWPP Planning Areas
Scattered Structures
Wildfires MN DNR
Wildfires Since 1980
USDA Stevens Grant Fuels Treatments
Fuels Treatments
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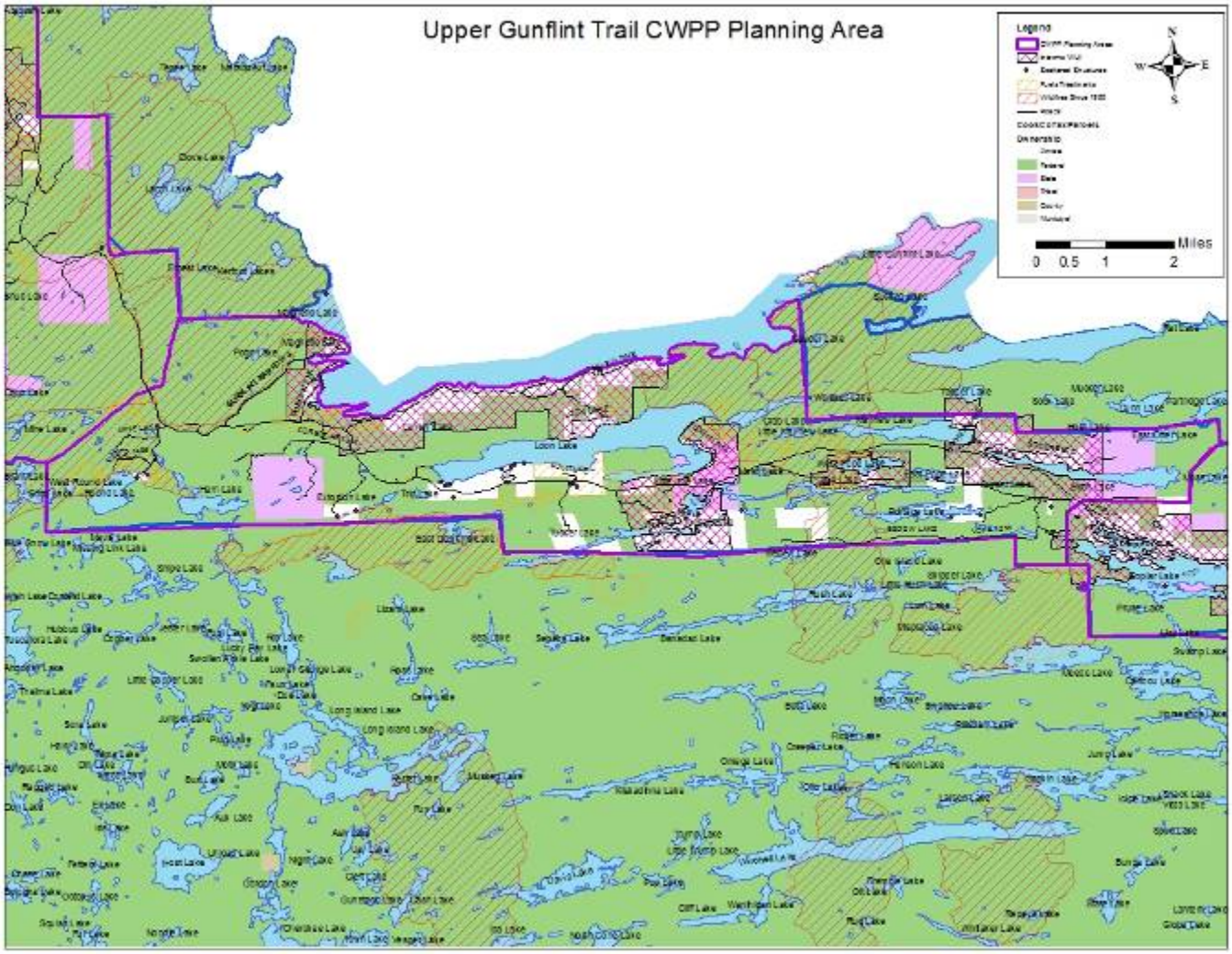
Name: **Upper Gunflint Trail** Priority:	Location: T65N & T64N R3W & R2W & R4 County Funding: $80,000
Access	Poor roads with dead ends, some water access only properties. Canadian homes are accessed from this area.
Topography	Includes Gunflint, Loon, Tucker and Round Lakes.
Fuel Hazards	Blowdown areas with accumulating fuels. Regenerating pine and balsam fir. Grasses and forbs underneath.
Fire Occurrence	Famine/Redeye Fires 2006, Ham Lake Fire 2007
Structures	Year round and recreational homes used all year. Continued back country development.
Businesses	Private Campgrounds and Resorts. High economic value due to large number of visitors to the wilderness and surrounding area.
Jurisdiction	Gunflint Trail VFD; wildland USFS.
Infrastructure risk	Heliport, radio towers for USFS and NOAA.
Community values	*25% of trail population resides here.* USFS ski trial, snowmobile trails, dog sled trails and horse trails
Local Preparedness Capability	Staging area at Larch Creek, Gunflint Lake fire hall w/ambulance. Dry hydrant at gunflint lodge. See Gunflint Trail VFD resource list page 74.
Other	***Priority to improve ingress/egress.*** Canadian border interface.
Fire Department Needs	
Fire Department Concerns	Road access.
Fuels	This area is composed primarily of regenerating conifer stands. There is some blowdown present in the area that was not cleaned up in the 1999 blowdown. There have been significant mechanical and prescribed burning treatments done in this area to protect urban interface areas. A portion of the area was affected by the Ham Lake Fire.
Fire Hazard and Risk Rating	This area rated out as a high fire hazard and risk area for the following reasons: hazardous fuels present, many values at risk (economic, infrastructure, and private residences) dense population, poor access to many structures, and a history of fire occurrence.
Fire Regime Condition Class	This area is composed of both Condition Class 2 and 3 areas. Historically there were extensive red and white pine stands that burned with low intensity (25% crown kill) every 50 years). There has been fire excluded from these stands for over 200 years and fires would burn with high severity (75-100% crown kill) today. These areas were also composed of much more pine component historically, especially the older age classes of pine. Today they are composed of much more conifer in the younger age classes. Approximately half of this area was also historically composed of a jack pine/black spruce ecosystem. This area historically burned every 65 years with high intensity fires (75-100% crown kill). The jack pine/black spruce area was historically composed of more pine in the young and mid-aged classes. Currently there is much more spruce-fir, hardwoods, and mixed conifers.
Mitigation Activities	
Vegetation Treatments	Upcoming USFS Shokoshoe project – 4,650 acres. A variety of timber harvests, understory fuels reduction, underburning, broadcast burning, planting, seeding and slash disposal.
Sprinkler Systems	96
Firewise Assessments	86 completed in 2015.


Upper Gunflint Trail CWPP Planning Area
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Planning Process

Cook County community wildfire protection planning began in June of 2004, led by local County Government officials working with area fire departments; the Minnesota Department of Natural Resources, and the US Forest Service. The core group met to determine interest in developing a Community Wildfire Protection Plan and to initiate an interagency inventory and assessment of fuel hazards and community related infrastructure protection and mitigation needs. Using the background information gathered, an interagency core group proposed 15 different planning (Wildland/Urban Interface) areas to present to Cook County communities for project input, prioritization and review. Additional community meetings have been held to build upon and prioritize projects. **This plan is a work in progress and will be amended by the local community Implementation Team, with continuing input from the public as individual projects are proposed and implemented.**

Private landowners and community members joined in the collaborative community efforts to address wildfire risk in the interface. Community members are encouraged to be active players in the effort, by reducing hazardous fuels on their properties and taking the needed steps to complement the work currently being done on public lands within Cook County. As of 2009 a Community Wildfire Protection Plan Group is active. The group meets once a month and works on projects that were identified as priorities within this plan.

Description of Participants for revising the 2009 plan

Covill Fire Department
Gunflint Trail Fire Department
Hovland Fire Department
Maple Hill Fire Department
Tofte Fire Department
Bureau of Indian Affairs – Grand Portage
Cook County Department of Emergency Management
Cook County Sheriff's Office
Minnesota Department of Natural Resources
MN Incident Command System (MNICS)
MN Firewise Program
Individual Community Members
Grand Marais Fire Department
Grand Portage Fire Department
Lutsen Fire Department
Schroeder Fire Department
Cook County Commissioners
Cook County Land Services
USDA Forest Service – Superior National Forest
Cook County Firewise Committee
Cook County Fire Chiefs Association
Small Business Representatives

Collaboration and Community Outreach

The multi faceted nature of problems addressed by a Community Wildfire Protection Plan necessitates communication and collaboration across private and public lands, administrative boundaries, geographic regions and other special areas of interest. Several meetings were held in the local community during project planning phases. Community meetings were used to address community needs and priorities relating to community fire protection, safety, and healthy forest restoration. The successful implementation of this plan includes stakeholder groups with broad representation including State, Federal, and local agencies, tribes, and the public collaborating to make decisions to establish priorities, cooperate on activities, and to increase the public awareness of the risk of to Cook County communities and their environments. The Cook County Community Wildfire Protection Plan will continue to be a collaborative approach.

Description of Community Meeting Steps

The Following were the steps used to complete the Cook County CWPP for 2005 version

1. **Convene Decision makers**
The community formed a core team made up of representatives from the appropriate local governments, local fire authority, and state agency responsible for forest management.

2. **Involved Federal Agencies**
Identify and engage local representatives of the USFS. Grand Portage Bureau of Indian Affairs was invited to be a part of the county planning efforts. The Community involved other land management agencies as appropriate.

3. **Engaged Interested Parties**
Partners contacted and encouraged active involvement from a broad range of local interested organizations and stakeholders.

4. **Established a Community Base Map**
Partners worked together establishing a community base map that defines the community's WUIs and displays inhabited areas at risk, forested areas containing critical infrastructure, and areas at risk for large-scale fire disturbance.

5. **Developed a Community Risk Assessment**
Community partners worked together to develop a community risk assessment that considers fuel hazards; risk of wildfire occurrence; homes, businesses, and essential infrastructure at risk; other community values at risk; and local preparedness capability. This risk assessment rated the risk for each factor and incorporated the results into the CWPP as appropriate. Incorporate 2017 USFS forest-wide risk assessment.

6. **Established Community Priorities and Recommendations**
Community partners used the base map and community risk assessment to facilitate collaborative community discussions leading to the identification of local priorities for fuel treatment, reduction of structural ignitability, and other issues of interest, such as improving fire response capability. Identify whether priority projects are directly related to protection of communities and essential infrastructure or to reducing wildfire risks to other community values.

7. **Developed an Action Plan and Assessment Strategy**
Community partners developed a detailed implementation strategy to accompany the CWPP and a monitoring plan that will ensure its long-term success.

8. **Finalize Community Wildfire Protection Plan**
Community partners finalized the CWPP and communicate the results to community and key partners.

Updates
Completed in 2009 and 2017 through monthly meetings with committee members
-Patty Johnson, USFS
-Cory Berg, USFS
-Wendy McCartney, USFS
-Aaron Meilke, MNDNR
-Tim Miller, Grand Portage
-Jim Wiinanen, County EMS
-Valerie Marasco, County EMS
-Heidi Doo-Kirk, County Commissioner
-Todd Armbruster, County Firewise Coordinator

Cook County Community Profile

Environment and Natural Resources

The Cook County land base includes relatively large tracts of intact ecological systems. The County lies within a coniferous forest biome; rich and diverse with natural geologic, plant and animal heritage. The county is surrounded by a wealth of natural resources such as Lake Superior, vast tracts of forested lands, numerous inland lakes and streams and healthy populations of various plant and animal communities.

This base of natural resources has been shaped by a variety of factors. Initially forest fires, insects, wind and beavers were major agents of change in this environment. Human activities such as logging, trapping, hunting, fire suppression, road and trail construction, acid rain, mining, and various forms of development from isolated cabins to cities have done much to alter local environments. Even though human activities dominated as environmental change agents, Mother Nature has also played her role with lighting, insect and disease infestations, and a significant wind event.

As a result of and in response to human intervention, forests have undergone tremendous transformations in spatial patterns, composition, and structure. For example, in some areas which were once extensive stands of white pine, red pine, cedar, and northern hardwoods have given way in a large part to quaking aspen and paper birch. These changes in forest vegetation, set into motion over 100 years ago, have been sustained through past forest management policies that emphasized clear cutting, select species reforestation, and fire suppression driven by a shifting focus of market demands.

Population, demographics, socio-economic data

Population: In 2014 Cook County ranked 82nd out of 87 Minnesota counties (MN State Demographic Center). The population grew from 1970 to 1980, declined in the 1990's and rebounded in the 2000's to an estimated 5,231 people in 2014. The Minnesota State Demographic Center estimates the seasonal population at 12,000, a figure that will likely grow in the future. The Minnesota State Demographer estimates that year round residents will grow to 5,417 in 2020.

Demographics: The median age of residents is 49.8 years with 49.9% of the population being male and 51.1% being female (US Census 2010). The majority of the population ranges from 45 to 70 years of age. Based on a size of 1,450.6 square miles and a population of 5,231, Cook County has a ratio of 3.6 (4) people per square mile.

Socio-economics: Cook County's economy has always been based on natural resources, timber, fishing and tourism. Never a rich county, the area attracts people willing to work hard for modest incomes in order to live in a beautiful part of the state. Cook County also attracts retirees who are building primary or secondary homes throughout the county. Service and trade businesses are on the rise, reflecting a trend in growth of tourism-oriented businesses. Changes in the numbers of businesses in Cook County seem tied to changes in the tourism economy more than to changes in the year-round population or seasonal home development.

According to the US Bureau of Economic Analysis, Cook County had a per capita income of $33,056 in 2015 with 11.1% of people living in poverty. Cook County is considered a retirement destination county by the Economic Research Service of the USDA and 21.8% of households receive retirement income. The number of residents age 65 or older grew by more than 5% between 2010 and 2015 due to in-migration and an aging population.

Housing and Development Trends

According to the County Assessor, Cook County has 2778 seasonal residential units and 1614 permanent residential units. Approximately 74% of housing is owner-occupied in the county. From January 1, 2015 to

December 31, 2015, Cook County Office of Planning and Zoning issued 144 land use permits, an increase of 4 percent over 2014, according to Cook County's Land Use Permits and Wetlands Administrator. Of the 144 land use permits awarded to different districts throughout the county, 41 were for Caribou, 39 for Hovland, 26 for Cascade, 15 for Sawbill, 13 for Maple Hill, 9 for Gunflint and 1 for Grand Portage. Sixty-three percent of all permits were issued within shoreland areas, and 25 percent of those were for Lake Superior. Inland, Caribou Lake received 9 permits, Gunflint Lake 6, Tom Lake 6, Devil Track 3, the tributary to Cut Face Creek 3, Greenwood 4 and 24 were issued to other lakes or rivers.

Nine conditional use permits were granted, two for gravel pits, one for an ARMER Tower, one for a duplex, two for amendments to planned unit developments, one for a commercial building with residence, one for supplemental plat, and one for a 6- to 15-unit development for the town of Tofte.

According to the Land Use Permits and Wetlands Administrator, the county has issued about the same amount of land use permits since 2009, and many of the trends seen today have been fairly consistent with what has happened over the last half dozen years.

Land Use and Projected Trends

The dominant land use is public forest management by federal, tribal and state agencies. Approximately 9% of the land base is in private ownership. The long term population projections for Cook County suggest a stable to slightly declining resident population. Continued population increases are expected for seasonal or part-time residents throughout the privately owned portions of the county. The trends may slow population growth but may lead to a net increase in the number of people using the natural resources of Cook County. This may lead to a more dispersed population in rural areas which in turn will add to the numbers of private wells and on-site sewage treatment systems.

Other trends and changes that will impact the physical environment include:

1. Increased development around Grand Marais, Lutsen and Tofte. The West End is developing various sewage treatment systems and may need additional public water supplies if accelerated growth occurs. Solving a sewage disposal problem and centralized drinking water service may open up more opportunity for increased density growth…which leads to other non-point pollution impacts. For now, the plans for a community sewage treatment system are on hold.

2. Development and re-development of older lots is continuing to increase. Second tier growth in watersheds is occurring along with re-platting and rezoning requests for increased density

3. Recreation is increasing, especially on lakes. The U.S. Forest Service has issued the maximum number of permits allowed during many high use times for the BWCA Wilderness Area. Development may also increase adjacent to recreation facilities such as snowmobile trails, cross-country ski trails, marinas, and golf courses. ATV and off-road recreation vehicle pressure is expected to increase, which may lead to localized erosion "hot spots" and social and politically tension.

4. Under the current economic and social scenario, mining has a low potential to increase

5. Land used for agriculture is expected to remain the same.

6. The transportation system will continue to be upgraded by bridge and road reconstruction, realignments, resurfacing, and right-of-way expansion, etc. More private roads may become part of the system and roads originally designed for very light use will be stressed by increasing development.

7. Development of broadband high-speed internet is expected to boost local productivity and attract new business, especially the re-location of entrepreneurs able to perform their work on-line from home.

Wildfire Risk Assessment

The Cook County Wildland Fire Protection Plan risk assessment displays the potential losses to life, property, and natural resources. The analysis takes into consideration a combination of factors defined below, all of which contribute to fire hazards and risk of fire within the urban interface. The analysis takes each factor and ranks it for each area on a numerical scale. The numerical weights given to each factor are summed at the end to obtain an overall rating for each are of fire hazards and risks within an area. Areas that have a higher sum of points have a higher fire hazard associated with them, meaning the probability of having a fire that will spread quickly and intensely and has the potential to cause significant damage is higher.

Risk: the potential and frequency of wildfire ignitions (based on past occurrences)
Hazard: conditions that contribute to wildfire (fuels, slope, aspect, elevation and weather)
Values: the people, property and resources that could suffer losses in a wildfire event.
Protection Capability: the ability to mitigate losses, prepare for, respond to and suppress wildland and structural fires.
Structural Vulnerability: elements affecting the level of hazardous exposure to the structure (roof type and building materials, structure access, and whether or not there is treated fuel or ignition source reduction around the structure.)

Hazard and Risk

Fire Frequency – How frequent fire occurs on the landscape based on past fire history.
Vegetative Fuel Hazards – Includes living and dead vegetation materials. The amount of heat energy released during a wildland fire is defined by the amount, arrangement, rate of combustion of vegetative fuels.
Crown Fire Potential – The potential for fires to advance from tree top to tree top independent from the surface or ground fire.
Fuel Model – A simulated fuel complex for which all the fuel descriptors required for the mathematical fire spread model have been specified.
Rate of Spread – The relative activity of a fire in extending its horizontal dimensions, usually expressed in chains (66') per hour.
Flame Length – A measure from the base of the flame to its tip, vertical or horizontal.
Hazardous Fuels – Living or dead fuel component defined by kind, arrangement, volume, location or condition that forms a special threat of ignition or suppression difficulty.

COMMUNITY NAME	FIRE FREQUENCY L/M/H	FF Points	Veg Type	Crown Fire Potential Y/N		Fuel Model	HAZARD ROS L/M/H	HAZ ROS Points	HAZARD FL L/M/H	Haz - ROS Points	HAZARD Fuels	HAZ Fuels Points	Total Hazard Points
Tom Lake Area	L	1	Balsam Regen	Y	3	10	H	5	H	5	Bug Kill (BK)	1	15
McFarland Lake Area	L	1	Conifer	Y	3	9	M	3	M	3	BK	1	11
Greenwood Lake Area	L	1	Mixed Hardwds	Y	3	10	H	5	H	5	BK	1	15
Hovland Area	L	1	Hardwood	N	0	10	M	3	M	3	BK	1	8
Colvill Area	L	1	Hardwood	N	0	8	M	3	M	3	None	0	7
Grand Marais Area	M	3	Hardwood	N	0	8	L	1	L	1	None	0	5
Devil's Track Area	L	1	Mixed Hardwds	N	0	8	M	3	M	3	BK	1	8
Pike Lake Area	L	1	Mixed Hardwds	N	0	8	M	3	M	3	BK	1	8
Lutsen Shore Area	L	1	Hardwood	N	0	8	L	1	L	1	None	0	3
Lutsen Township	L	1	Mixed Hardwds	Y	3	10	H	5	H	5	BK,BD	2	16
Tofte/Schroeder	L	1	Mixed Hardwds	N	0	8	L	1	L	1	None	0	3
Two Island Area	L	1	Mixed Hardwds	Y	3	10	M	3	M	3	BK,BD	1	11
Mid-Gunflint Trail	H	5	Conifer	Y	3	10	H	5	H	5	BK,BD	2	20
Upper Gunflint Trail Area	H	5	Grass/Conifer	Y	3	1/10	H	5	H	5	Blowdown (BD)	1	19
End of the Trail Area	H	5	Grass/Conifer	Y	3	1/10	H	5	M	3	Blowdown/BD	1	17

Values

Economics – Relating to the development, production, distribution and management of commodities, values or necessities**.**
Structure Density – The amount or quantity of structures within a given area or square mile.
Building Hazard – The probability of building igniting due to location, access, structural building materials, or vegetative surroundings.
Community Infrastructure – The basic facilities needed for a functioning community i.e. roads, power lines, water supply etc.
Land Ownership – The jurisdictional complexity of land ownerships.
Spiritual, Historical and Cultural Resources –
Ecosystem Values – Ecological values placed on an area, based on importance of watersheds, soils, plant and animal habitat, species, or vegetative composition.
Values Protected –

	Economics L/M/H	Economic Points	Structure Density L/M/H	SD Points	Building Hazard L/M/H	BH Points	Community Infrastructure	CI Points	Impacted Community	IC Points	Land Ownership	LO Points	Spiritual Cultural	SCHR Points	Ecosystem Values L/M/H	ECO Points	VALUES PROTECTED	Values Points
Tom Lake Area	L	1	L	1	H	5	L	1	L	1	M	3	L	1	none	0	M	13
McFarland Lake Area	L	1	L	1	H	5	M	3	L	1	M	3	L	1	none	0	M	15
Greenwood Lake Area	L	1	L	1	H	5	L	1	L	1	H	5	L	1	OG Pine	1	M	16
Hovland Area	M	3	M	3	M	3	M	3	M	3	M	3	L	1	none	0	M	19
Colvill Area	L	3	M	3	L	1	M	3	M	3	M	3	L	1	none	0	M	17
Grand Marais Area	H	5	H	5	L	1	H	5	H	5	M	3	M	3	watershed	1	H	28
Devil's Track Area	H	5	M	3	M	3	H	5	M	3	H	5	L	1	none	0	H	25
Pike Lake Area	L	1	L	1	M	3	L	1	L	1	M	3	L	1	none	0	L	11
Lutsen Shore Area	H	5	H	5	M	3	H	5	H	5	M	3	L	1	none	0	H	27
Lutsen Township	L	1	L	1	L	1	M	3	M	3	H	5	L	1	none	0	M	15
Tofte/Schroeder	H	5	H	5	L	1	H	5	H	5	M	3	M	3	none	0	H	27
Two Island Area	L	1	L	1	H	5	L	1	L	1	H	5	L	1	none	0	M	15
Mid-Gunflint Trail	H	5	M	3	H	5	M	3	M	3	H	5	M	3	OG Pine	1	H	28
Upper Gunflint Trail Area	H	5	L	1	H	5	M	3	M	3	H	5	M	3	OG Pine	1	H	26
End of the Trail Area	H	5	L	1	M	3	L	1	M	3	H	5	M	3	OG Pine	1	H	22

Protection Capabilities

Interagency Partnerships – Positive working relationships with local and other land mgmt agencies.
Numbers or protection Resources – Number of resources available for fire suppression needs.
Access – Ability of emergency service vehicles to gain access to an area and ease of evacuation due to road class or condition.
Response Time – The time it takes an emergency vehicle to get from its station to the emergency.
Prevention Program – A Program designed to reduce wildfire ignitions through education, engineering and enforcement.
Initial Attack Success - The probability of success that initial resources dispatched will suppress the fire during the first 8 hours or burning period.

COMMUNITY NAME	Interagency Partnerships L/M/H	IP Points	# of Protection Resources L/M/H	PR Points	Access L/M/H	Access Points	Response Time Y/N	RT Points	Prevention Program L/M/H	PP Points	IA Success L/M/H	IAR Points	PROTECTION CAPABILITES SUMMARTY L/M/H	PC Points
Tom Lake Area	H	5	H	5	H	5	H	5	H	5	L	1	H	26
McFarland Lake Area	H	5	H	5	H	5	H	5	H	5	L	1	H	26
Greenwood Lake Area	H	5	H	5	M	3	H	5	H	5	M	3	H	26
Hovland Area	M	3	M	3	L	1	L	1	H	5	L	1	M	14
Colvill Area	M	3	M	3	L	1	L	1	M	3	L	1	M	12
Grand Marais Area	M	3	L	1	L	1	L	1	L	1	L	1	L	8
Devil's Track Area	M	3	M	3	L	1	M	3	M	3	L	1	M	14
Pike Lake Area	H	5	M	3	H	5	M	3	H	5	L	1	M	22
Lutsen Shore Area	M	3	L	1	L	1	L	1	M	3	L	1	L	10
Lutsen Township	M	3	M	3	H	5	H	5	H	5	L	1	H	22
Tofte/Schroeder	M	3	L	1	L	1	L	1	L	1	L	1	L	8
Two Island Area	H	5	H	5	H	5	H	5	H	5	M	3	H	28
Mid-Gunflint Trail	L	1	M	3	H	5	M	3	M	3	H	5	M	20
Upper Gunflint Trail Area	L	1	M	3	H	5	M	3	M	3	H	5	M	20
End of the Trail Area	L	1	M	3	H	5	M	3	M	3	H	5	M	20

Community Vulnerability Summary

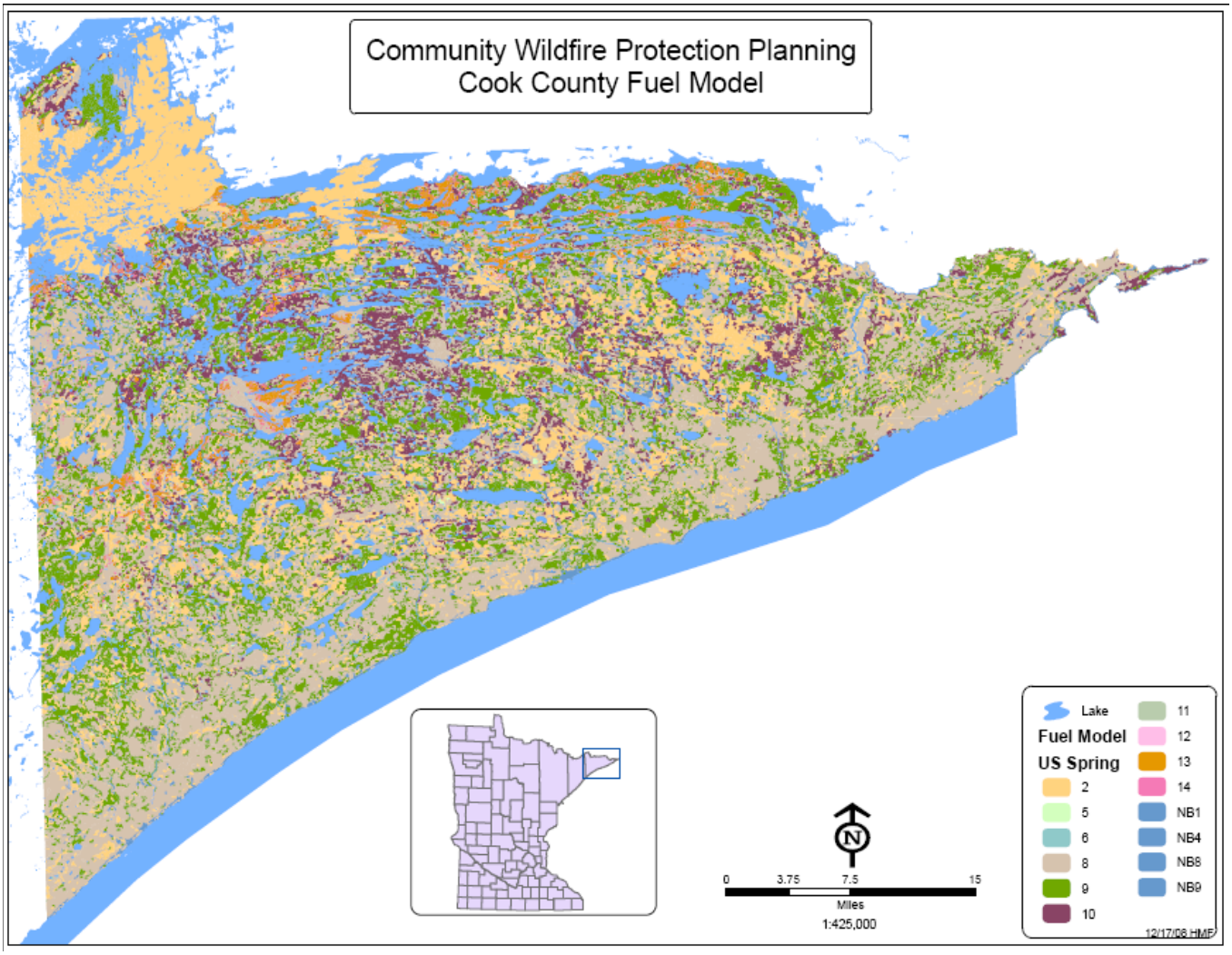
COMMUNITY NAME	Summary Hazard Rating L/M/H	Total Hazard Points	VALUES PROTECTED L/M/H	Values Points	PROTECTION CAPABILITES	PC Points	SUMMARY RATING L/M/H	Total Points
Tom Lake Area	H	18	M	13	H	26	H	57
McFarland Lake Area	H	12	M	15	H	26	H	53
Greenwood Lake Area	H	16	M	16	H	26	H	58
Hovland Area	M	8	M	19	M	14	M	41
Colvill Area	M	7	M	17	M	12	L	36
Grand Marais Area	L	5	H	28	L	8	M	41
Devil's Track Area	M	8	H	25	M	14	M	47
Pike Lake Area	M	8	L	11	M	22	M	41
Lutsen Shore Area	L	3	H	27	L	10	L	40
Lutsen Township	H	19	M	15	H	22	H	56
Tofte/Schroeder	L	3	H	27	L	8	L	38
Two Island Area	H	14	M	15	H	28	H	57
Mid-Gunflint Trail	H	17	H	28	M	16	H	61
Upper Gunflint Trail Area	H	14	H	26	M	16	H	56
End of the Trail Area	H	22	H	24	M	16	H	62

Fuel Hazards

Vegetation Type – Predominant vegetation type for this community.
NFDRS Fuel Model – (National Fire Danger Rating System) a set of numbers that defines fuel input to a fire spread mode.
Fuel Model FBP – A Canadian Fire Behavior Prediction system that defines fuel input into a fire spread model.
Buffer – Any obstruction to the spread of fire such as an area or strip devoid of hazardous or flammable fuels. Buffers are areas around a community (not just a single structure) that would be required to protect structures within the community from a wildfire event. Buffers were developed based on spread rates of fires and response times of suppression resources.
Crown Fire Potential – The potential of a fire to advance from top-to-top of trees or shrubs more or less independently of a surface fire. Sometimes crown fires are classed as either running or dependent to distinguish the degree of independence for the surface fire.

COMMUNITY NAME	Veg Type	Fuel Model NFDRS	Fuel Model FBP	Buffer (ft.)	Buffer (miles)	Crown Fire Potential Y/N
Tom Lake Area	Balsam Regen	10	M3	4173	0.79	Y
McFarland Lake Area	Conifer	9	C6	1196	0.23	Y
Greenwood Lake Area	Mixed Hardwood	10	M3	4695	0.89	Y
Hovland Area	Hardwood	10	M1	463	0.09	N
Colvill Area	Hardwood	8	M1	463	0.09	N
Grand Marais Area	Hardwood	8	M2	384	0.07	N
Devil's Track Area	Mixed Hardwood	8	M2	384	0.07	N
Pike Lake Area	Mixed Hardwood	8	M1	925	0.18	N
Lutsen Shore Area	Hardwood	8	D1	167	0.03	N
Lutsen Township	Mixed Hardwood	10	M3	4173	0.79	Y
Tofte/Schroeder	Mixed Hardwood	8	D1	167	0.03	N
Two Island Area	Mixed Hardwood	10	M3	6260	1.19	Y
Mid-Gunflint Trail	Conifer	10	C5	591	0.11	Y
Upper Gunflint Trail Area	Conifer	10	M2	960	0.18	Y
End of the Trail Area	Conifer	1/10	C3	591	0.11	Y

Cook County Fuel Model Map



Fuel Models

A fuel model is a description of the type of dead and down fuel present in a forest. It is used to predict fire behavior of an area based on the types and amounts of fuel present. Fuel models for Cook County are classified by two fuel model systems. One is the Fire Behavior Prediction System (FPBS), developed and used in the US. The other is the Fire Prediction System (FPS) developed and used in Canada. FPBS is widely known and understood among the fire community in Minnesota. FPBS is based on fuel models that are commonly found in Western states. Therefore, FBP is more representative of the type of fuel models that are present in Northern Minnesota.

US Fuel Models
There are 13 fuel models within the US fuel model system. There are eight (2, 5, 6, 8, 9, 10, 11, 12) of these fuel models found within Cook County. Only the predominant fuel models are described below. For information on other fuel models descriptions see Anderson, 1982.

Fuel Model 8: This model describes closed canopy stands of short-needle conifer and hardwoods that have leafed out. This includes some younger pine plantations, maple, and birch stand types. Typical fires in these stands are slow-burning ground fires with low flame lengths, although the fire may encounter an occasional "jackpot" or heavy fuel concentration that can flare up. Only under severe weather conditions involving high temperatures, low humidity, and high winds do the fuels pose fire hazards.

Fuel Model 9: This model describes both long-needle conifer and hardwood stands that have not leaved out. This includes older red and white pine stands and aspen stands. Long needles from mostly red and white pines and hardwood leaves have recently fallen to the ground to form a loose layer of leaf litter. Typical fires in these stands are low intensity /severity fires that burn with low flame lengths (2-6’). However, with fire exclusion, they now burn more intensely. Crowning, spotting, and torching of individual trees can occur if there are many trees close together and if tree crown layers are low to the ground.

Fuel Model 10: This model describes mature and multi-aged, short –needle conifer stands including jack pine and stands with a heavy balsam fir component. They are beginning to accumulate large-diameter, dead and down woody fuels as a result of trees dying from overcrowding and insect and disease disturbance. Therefore, there is a large amount of dead and down fuel that has accumulated in the understory. Typical fires burn in the surface and ground fuels with high intensity; increasing the potential for fire to spread into the crown easily. Crowning out, spotting, and torching of individual trees are more frequent in this fuel type, leading to potential fire control difficulties.

Blowdown: This fuel type describes the blowdown areas. There are three classifications of blowdown fuels. Light damage areas have less than 33% damage to the overstory (5-20 tons/acre fuel loadings). Moderate damage areas have 33-67% of the overstory damaged (20-50 tons/acre). Heavy damage areas have 67 or more of the canopy showing damage (50-300 tons/acre). Prior to the blowdown, these areas had fuel loadings between 1-15 tons per acre. Fuel Model 10 represents the fire behavior that may be seen from light blowdown areas. A custom fuel model has been developed to represent the fire behavior associated with areas where there is moderate to heavy blowdown. Fuel model 13 can also be used to predict fire behavior in moderate and heavy blowdown, but tends to under predict fire intensities and spread rates for blowdown fuels. Fires burn these fuel models with moderate rates of spread and high intensities under moderate to dry weather conditions. If standing trees are also present, crowning, spotting and torching of individual trees can be expected.

FBP – Fire Behavior Prediction System (Canadian based)

Mixed Wood (M1) and (M2): Mixed boreal (back or white spruce, balsam mixed with hardwoods) stand types are included in this fuel model. The stands typically contain 75% conifer and 25% deciduous component. There is continuous leaf litter in the deciduous portions of the stand and conifer needle litter in the conifer portions of the stand. The presence of balsam and spruce provide latter fuels in these stand types. There is low to moderate amounts of dead and down fuel in the understory. Fires generally burn with low intensity and low spread rates except in early spring and late fall when the trees do not have leaves. During these time periods, fire can burn intensely with moderate to fast spread rates. M1 describes the spring and fall version of the model and the M2 describes the green up version of the model.

Mixed Wood (M3) and (M4): This describes dead balsam fir and mixed wood stands. The stands contain 60% dead balsam fir and 40% live mixed wood species. There is continuous leaf litter in deciduous portions of the stand and needle litter and hardwood leaves in the mixed portions. There is a large fuel loading of dead balsam in the understory that is sometimes covered with lichen on its branches. Fires generally burn with moderate to high intensity in this fuel type; with moderate to high rates of spread. Crown fires can easily occur in these stands under dry, windy conditions. M3 represents the leafless version of the fuel model while M4 represents the green version.

Conifer (C3): This model describes mature jack pine stands. These stands have some understory balsam and spruce in the understory which can act as a ladder for fire to carry into the canopy. These stands typically have light and scattered dead and down fuels. Surface fires are typical in these stands and crown fires can quickly develop with dry, windy weather conditions.

Conifer (C5): This model describes mature red and white pine stands. There is continuous needle cast on the forest floor & moderate to heavy fuel loadings in the understory. Fires typically spread on the surface only with occasional torching of individual and patches of trees where understory fuels have built up.

Conifer (C6): This fuel type describes mature conifer plantations with closed crown canopy and very little understory vegetation. There is typically a continuous layer of needle litter. There are very light fuel loadings in terms of dead and down fuels. Fires are generally surface fires that burn with low intensity and slow spread rates.

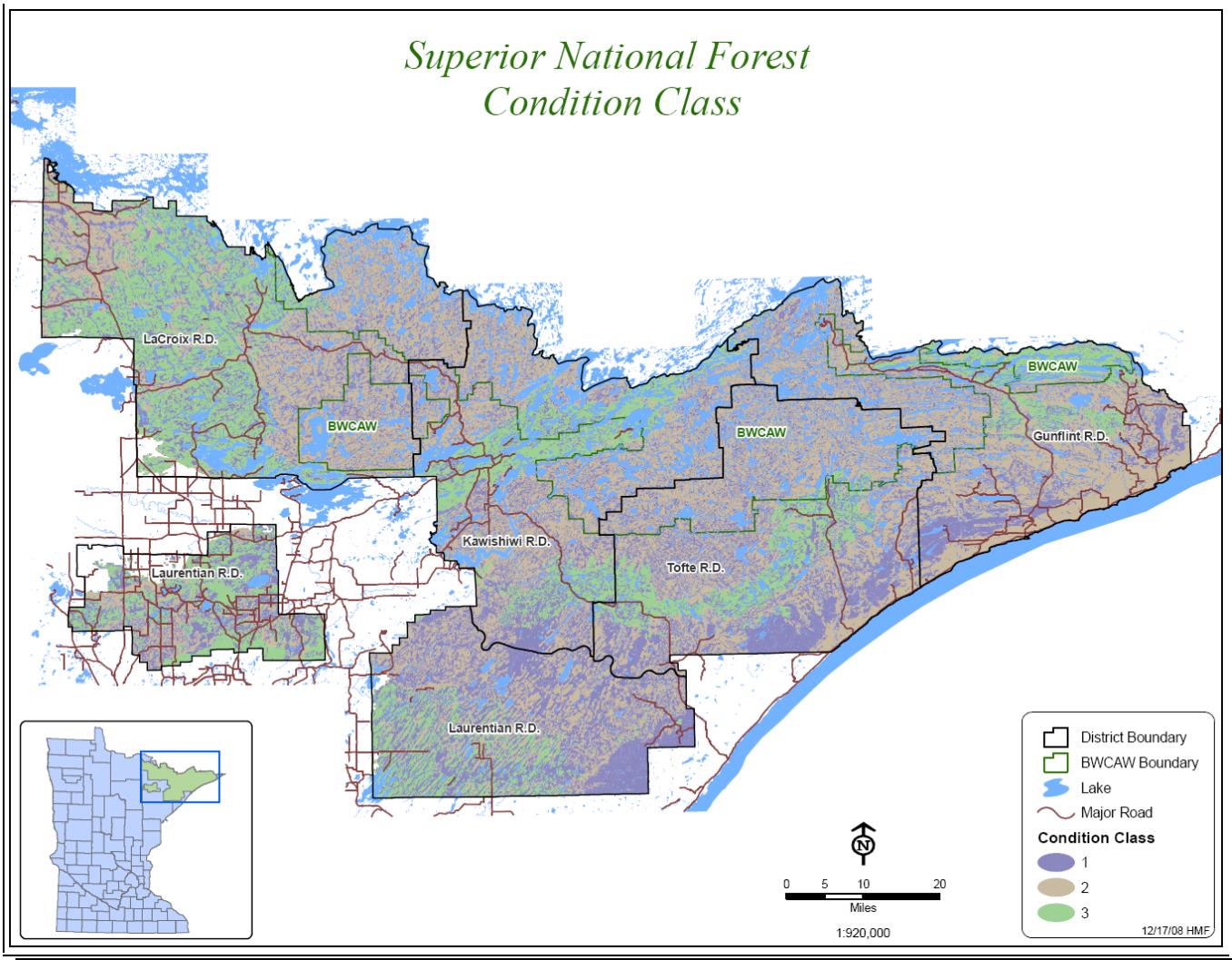
Deciduous (D1): This fuel models describes mature stands of aspen and birch. They generally have continuous leaf litter and very little dead and down fuels in the understory. Fires generally burn in the understory leaf little with little intensity, but can burn more intensely with moderate spread rates under wind events when no leaves are present on the trees.

Buffers

Buffers are areas around a community (not just a single structure) that would be required to protect structures within the community from a wildfire event. Buffers were developed based on spread rates of fires and response times of suppression resources. Estimated spread rates were developed through a fire behavior model (BEHAVE) that predicts fire behavior (spread rates, intensity, flame lengths) based on weather and fuel conditions. Response times are based on the amount of time that is predicted for suppression resource to be able to arrive at a fire in the given area. The faster the spread rates, the large the buffer needed. The longer the response times, the larger the buffer needed. Vegetation treatments that are concentrated within the buffer zones of a community will help prevent fires from spreading rapidly and intensely near community areas.

References: Anderson, H.E. 1982. Aids to Determining Fuel Models for Estimating Fire Behavior. USDA Forest Service General Technical Report INT-122, Intermountain Forest and Range Experiment Station, Ogden, Utah. 22p

Condition Class Map



	Fire regime	*Example management options*
Condition Class 1	Fire regimes are within natural range, and risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within historical range.	Where appropriate, areas can be maintained within the natural regime by treatments such as fire use.
Condition Class 2	Fire regimes have been moderately altered from their natural range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from natural frequencies by one or more return intervals. Vegetation attributes have been moderately altered.	Where appropriate, areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the natural regime.
Condition Class 3	Fire regimes have been significantly altered from their natural range. The risk of losing key ecosystem components is high. Fire frequencies have departed from natural frequencies by several return intervals. Vegetation attributes have been significantly altered.	Where appropriate, areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the natural regime.

Definition of Fire Regime Condition Class (FRCC)

DESCRIPTION: Fire Regime Condition Class is a tool developed to evaluate current against natural landscape characteristics with respect to vegetation-fuel composition and structure, fire frequency, fire severity, and other disturbances.

DEFINITIONS: Fire Regime is the composite result of fire frequency, fire severity, and other disturbances. It describes the type of fire that naturally occurred on the landscape.

Fire Regime	*Fire Frequency**	*Fire Severity***
I	0-35 years	Low severity
II	0-35 years	Stand-replacement severity
III	35-200 years	Mixed severity
IV	35-200 years	Stand-replacement severity
V	200+ years	Stand-replacement severity

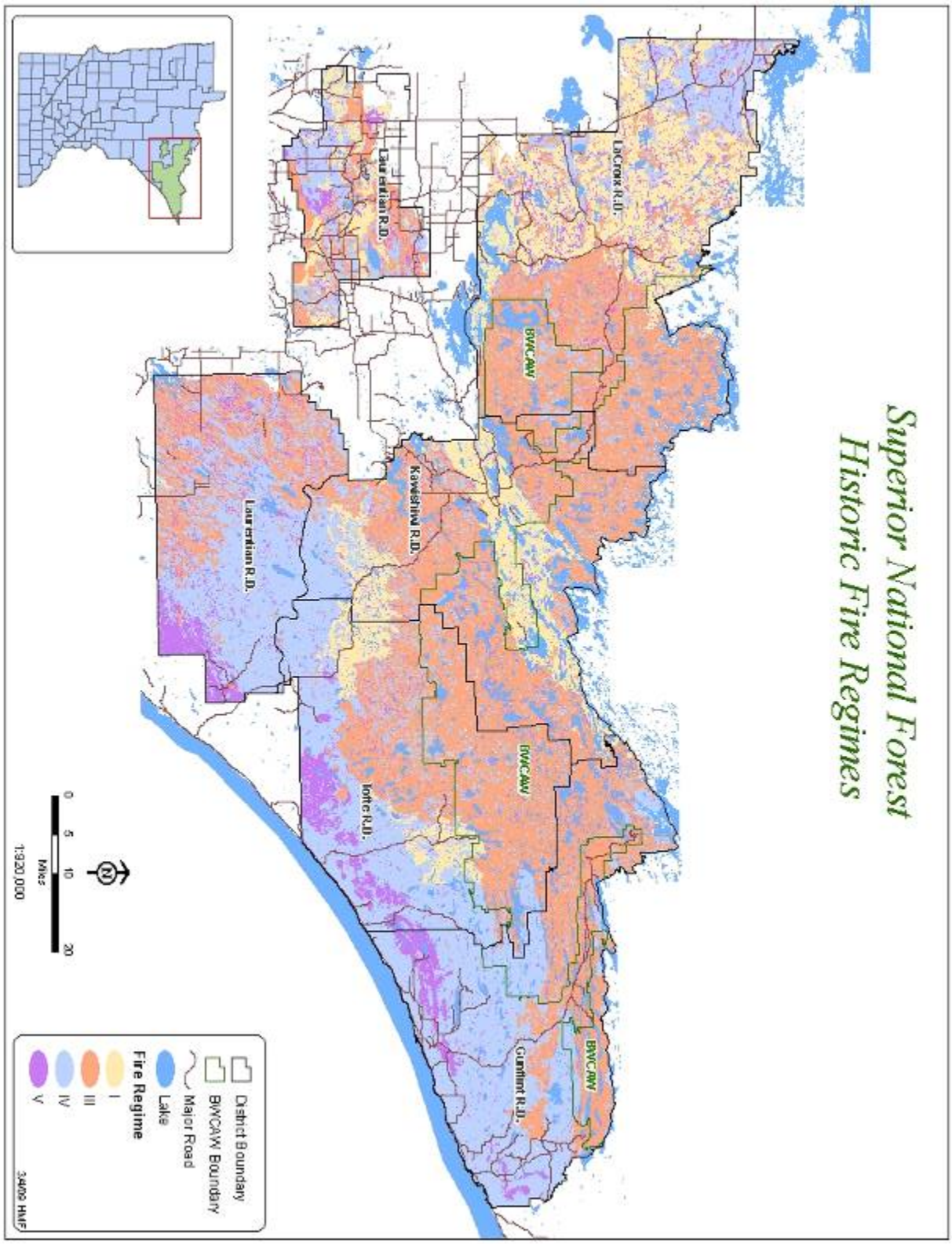
*Fire frequency is the average number of years between fires.

**Fire severity is the effect of fire on the dominant overstory vegetation.

Community Fire Regime/Condition Class

COMMUNITY NAME	Historic Fire Regime	Current Fire Regime	Condition Class
Tom Lake Area	3	4	3
McFarland Lake Area	3	4	3
Greenwood Lake Area	3	4	3
Hovland Area	5	4	2
Paradise Beach/Colvill Area	5	4	2
Grand Marais Area	5	4	2
Devil's Track Area	3	4	2
Pike Lake Area	3	4	2
Lutsen Shore Area	5	4	2
Lutsen Township	3	4	2
Tofte/Schroeder	5	4	2
Two Island Area	3	4	3
Mid-Gunflint Trail	3	4	3
Upper Gunflint Trail Area	4	4	3
End of the Trail Area	4	4	3

Historic Fire Regime Map



Fire Hazard

Most large wildland fires in Cook County are essentially wind-driven. Slower spreading, surface type fires with occasional torching are the norm, with wind speeds less than 15 mph. Short duration “mini-droughts” quickly dry out shallow ridge top soils, and crown fires will develop on ridges if crown closure and wind speeds are adequate. Single burning period runs of 1 1/2 to 7 miles have been documented. While the presence of numerous lakes might make effective firebreaks under low to moderate conditions, during extreme fire conditions, ¼-mile to ½-mile spotting distances make all but the largest lakes ineffective at stopping forward spread.

Fires in blowdown can be expected to burn at higher, prolonged intensities, with increased daily spread rates as compared to fires occurring prior to the blowdown. However, it is not expected to reach the same rapid spread rates achieved by previous standing timber, with crowning and spotting associated with winds exceeding 10 mph (16km/hr). In addition to the normal threat of wind-driven fire, threat of plume-dominated fire has increased due to available fuel loading from the blowdown. Spotting distances for this type of fire can exceed one to three miles.

Over the past 15 years, fuel reduction treatments have been completed on more than 30,000 acres of Superior National Forest land affected by blowdown. Approximately 70 percent of (non-wilderness) fuel treatment was accomplished through mechanical means with approximately 30 percent by prescribed fire. While immense clean-up efforts have been under taken, pockets of fuel needing treatment remain in certain areas.

Seasonal weather patterns affecting fire behavior

Fire Danger thresholds were studied during the *Fuels Risk Assessment of Blowdown in the Boundary Waters Canoe Area Wilderness and Adjacent Lands*; Leuschen and others, 2000. It was felt that significant differences existed between the spring (April-June) and fall (July-October) fire seasons to break out threshold levels accordingly. The following chart indicates 90th and 97th percentile values for NFDRS indices:

Spring Fire Behavior Thresholds (May – June)

Energy Release Component (ERC)	90% = 36	97% = 46
Burning Index (BI)	90% = 46	97% = 56
Relative Humidity (RH)	90% = 20%	97% = 16%
Temperature	90% = 83 degrees	97% = 85 degrees
100 Hour Fuels	90% = 12%	97% = 10%
1000 Hour Fuels	90% = 16%	97% = 14%
20 Foot Wind Speeds	90% = 12 mph	97% = 15 mph

Fire Behavior Thresholds (July – October) Fall

Energy Release Component (ERC)	90% = 32	97% = 37
Burning Index (BI)	90% = 36	97% = 44
Relative Humidity (RH)	90% = 30%	97% = 25%
Temperature	90% = 80 degrees	97% = 84 degrees
100 Hour Fuels	90% = 14%	97% = 12%
1000 Hour Fuels	90% = 18%	97% = 16%
20 Foot Wind Speeds	90% = 12 mph	97% = 15 mph

Canadian Forest Fire Behavior Prediction System
Fire Behavior Thresholds

Fire Weather Index (FWI)	90% = 22	97% = 33
Build-up Index (BUI)	90% = 54	97% = 78
Initial Spread Index (ISI)	90% = 11	97% = 17
Drought Code (DC)	90% = 278	97% = 375
Duff Moisture Code	90% = 41	97% = 64
Fine Fuel Moisture Code (FFMC)	90% = 90.8	97% = 93.1

Emergency Operations

Protection Capabilities

Suppression activities are governed by documents such as The Interagency Agreement for the Minnesota Interagency Fire Center, The MN-DNR Fire Suppression Handbook, National Interagency Mobilization Guide, Eastern Area Interagency Mobilization Guide, National Wildfire Coordinating Group, International Border Agreement Operating Guidelines for Wildfires in the Common Zone, The Governors Executive Order, Superior National Forest Fire Management Plan, Fireline Handbook, and The MNICS Mobilization Plan. These plans and handbooks guide our actions whenever a fire is detected.

Minnesota land management agencies have produced a Fire Preparedness Plan for Northeastern Minnesota and Cook County, which addresses pre-positioning of resources, fuels assessment and reductions, fire prevention, communications infrastructure, and fire department coordination. This preparedness plan is also supported by detailed aviation plans. The Superior National Forest annually revises its Fire Management Plan and Forest Aviation Plan to reflect current suppression strategies, fuel conditions, changing policies, and adjusts resources availability according to current funding levels. The Superior National Forest has almost doubled its staff of experienced wildfire specialists and increased fire safety training for all employees since the blow down event occurred. Grand Portage has completed a Fire Management Plan in accordance with National direction. The members of the Minnesota Incident Command System (MNICS) have also entered into an agreement with the Ontario Ministry of Natural Resources concerning wildfire response along the US-Canadian border. These plans and associated changes have been integrated into standard operating procedures for the wildland fire response agencies and fire departments in northeastern Minnesota. The Gunflint Trail Volunteer Fire Department has acquired 20 portable sprinkler kits for deployment and set up several dry hydrants for emergency response use.

Interagency Agreement R9-9-96-IA-46 (MIFC Agreement) speaks to the purpose of providing effective and economical protection of life and property. An Operating Plan outlines cooperative fire suppression between the Minnesota DNR Forestry, Chippewa National Forest, and the Superior National Forest on intermingled lands. It identifies zones of protection within intermingled lands where an individual agency provides fire suppression response on all lands.

Despite massive changes in fire suppression demands due to a changed condition, these zone agreements will be maintained. This decision will be supported by expanded interagency resources, stronger communication, and as necessary, a unified command structure in addressing wildfire incidents.

Infrastructure Protection*

***See the Northeastern Minnesota Wildfire Integrated Response Plan at www.co.cook.mn.us .*

Inventory of Cook County Volunteer Fire Department Resources: Updated January 2017

Colvill VFD:
Chief: Tom Thompson, Phone: 218-387-2487

- Type 1 Engine: 1979 Ford, 750 gal @ 1000 gpm
- Type 1 Engine: 1992 Pierce 2414, 1000 gallon @1500 gpm w foam
- Type 2 Support Tender: 1995 Kenworth, 3000 gal @ 500 gpm
- Type 3 Support Tender: AM General, 1000 gal
- Portable pumps: Two 150 gpm portable pumps, Honda 300 gpm portable pump
- Rescue Truck
- 12 personnel

Grand Marais VFD:
Chief: Ben Silence, Phone: 218-387-1432

- Type 1 Engine: 2007 Freightliner, 1000 gallon @1500 gpm w foam
- Type 1 Tactical Tender: 2012 Freightliner, 2200 gal @750 gpm w foam, pump and roll, 2500 gal drop tank
- Aerial: 1979 International 50' Telesquirt, 1000 gal @ 750 gpm
- Support Truck: 1994 Ford 4x4
- Portable pumps: One trailer mounted @ 650 gpm
- 16 personnel

Grand Portage VFD: Updated 2009
Chief: Bob Vogel, Phone:

- Type 1 Engine: 1999 GMC, 1000 gal @ 1000 gpm w foam
- Type 1 Engine: 2003 GMC, 750 gallon @1000 gpm w foam and water cannon
- Type 3 Support Tender: 1976 Ford, 1500 gal
- Portable pumps: Two 150 gpm portable pumps, Honda 300 gpm portable pump
- Rescue Truck
- 12 personnel

Gunflint Trail VFD:
Chief: Jim Morrison, Phone: 218-388-0506

- Type 1 Engine: 2001 GMC, 1000 gal @ 1250 gpm
- Type 1 Engine: International, 1000 gallon @1250 gpm
- Type 6 Engine: 2003 Ford F550, 300 gallon @750 gpm
- Type 6 Engine: 2003 Ford F550, 300 gallon @750 gpm
- Type 6 Engine: 2003 Ford F550, 300 gallon @750 gpm
- Type 1 Tactical Tender: 2009 Freightliner, 2000 gal @ 500 gpm
- Portable pumps: Three 750 gpm, three 150 gpm
- Two boats with pumps
- Two Chevy Tahoes
- Ambulance
- 35 personnel; 12 who are also red carded wildland firefighters

Hovland VFD:
Chief: Charlie Laboda, Phone: 218-475-2352

- Type 1 Engine: 1984 Ford, 1000 gal @ 1250 gpm
- Type 6 Engine: 1990 Ford, 200 gallon @200 gpm w foam
- Type 3 Support Tender: 2003 Kensworth, 2200 gal @ 200 gpm
- Portable pumps: Two 500 gpm
- Med Van: 1993 Ford F350
- STOP Vehicle: 1999 Ford F350
- 21 personnel

Lutsen VFD:
Chief: Larry McNeally, Phone: 218-370-9268

- Type 1 Engine: 2005 Freightliner, 1000 gallon @1250 gpm w foam
- Type 3 Support Tender: 2011 Freightliner, 1800 gal @ 750 gpm
- Support Truck: 2013 Ford F550
- Portable pumps: Three
- 15 personnel

Maple Hill VFD:
Chief: Kent Anderson, Phone: 218-387-1353

- Type 1 Engine: 1979 Ford, 1000 gallon @1000 gpm w foam
- Type 1 Engine: 1980 Ford 9000, 750 gallon @1000 gpm w foam
- Type 1 Engine: 1984 Chevy, 750 gallon @1000 gpm w foam
- Type 2 Support Tender: 1998 Freightliner, 3300 gal @ 1000 gpm
- Support Truck: Chevy Pickup for STOP team
- Portable pumps:
- 14 firefighter personnel; 16 STOP team; 1 first responder

Schroeder VFD:
Chief: Phil Bonin, Phone: 218-663-8127

- Type 1 Engine: 1991 Ford F-800, 1000 gallon @1000 gpm w foam
- Type 2 Engine: 1981 Ford, 750 gallon @750 gpm
- Type 6 Engine: 1984 Chevy, 200 gallon @750 gpm
- Type 3 Support Tender: 2005 International, 1500 gal
- Type 3 Support Tender: 2005 International, 1800 gal
- Portable pumps: Two 3 inch
- 12 personnel

Tofte VFD: Updated 2009
Chief: Rich Nelson, Phone: 218-663-7914

- Type 1 Engine: 2007 Freightliner, 1250 gallon @1000 gpm w foam
- Type 2 Engine: 1983 Mack, 750 gallon @500 gpm
- Type 3 Support Tender: 2008 Freightliner Santiago, 1800 gal @500 gpm
- Type 3 Support Tender: Gorman Rupp, 1800 gal @600 gpm
- 1991 Ford F350, Heavy Rescue Chase Truck
- 1980 Ford Ladder Truck-75 feet
- Portable pumps: Two 3 inch
- 12 personnel

Inventory of Wildland Fire Resources: Updated June 2016

Based on a changed forest condition, the USFS, BIA and DNR identified the need for expanded initial attack resources. The following suppression resources are available:

- **4 Fire Boss Aircraft –** These are water scooping aircraft capable of dropping up to 650 gallons of water or foam injected water. They can scoop water from nearby lakes with quick turnaround times.
- **2 Single Engine Air Tankers –** These are small fixed wing aircraft capable of dropping up to 800 gallons of water or foam. They are filled at nearby aircraft facilities.
- **4 DeHavilland Beavers –** These small aircraft detect wildfires, transport crews, and are capable of dropping approximately 125 gallons of water scooped from nearby lakes.
- **Conventional water or retardant delivery aircraft**- These aircraft are dispatched based on national priority at the time an order is placed.
    - 1 Type 1 Helicopter - This is a large helicopter capable of dropping 2,000 gallons of water per drop. It draws water from nearby sources ensuring a short turnaround time. This helicopter, based in Ely, is normally available mid-May through June.
    - 9 Type 3 Helicopters – This is a smaller helicopter capable of picking up and dropping 90 gallons of water from almost any water source. One of these is based out of Ely from June through October. Type III helicopters are also available in Cloquet and Hibbing during the spring fire season and on a call-when-needed basis.
    - 1 Air Attack Platform **–** A small aircraft used to coordinate all aerial operations over an incident. It is also used to guide aerial water or retardant delivery the fire. Depending upon activity this aircraft is stationed in Hibbing or Ely.
- **Hand Crews –** Crews typically available within state are 5 person squads, or 20-person Type 2 hand crews. Type 1 hotshot crews are available nationally, dependent on fire season activity. Crews of this type are available through the MNICS organization.
- **2 to 4 Type 4/6 Engines -** Engines are available through the MNICS organization. They come from throughout Minnesota and are dispatched or propositioned to areas as fire danger increases. Type 4 (approx. 750 gallons) and Type 6 (approx. 300 gallons) engines are generally available within state. Structure engines are available through mutual aid response.
- **2 Cache Vans –** Two Ryder type trucks stocked with equipment and supplies that improve local area fire response capabilities. These trucks can be ordered and propositioned as needed.
- **100 + Sprinkler Systems –** Sprinkler systems are available for structure protection, wet line for back fires or fuel management techniques and staging area protection.
- **4 Mobile Radio Support Systems –** Radio support kits supplement existing radio system infrastructure to provide two-way radio communication for emergency response resources.
- **Staging areas –** These are locations where crews and equipment would be placed or deployed, including fire camps and command posts.
- **Supplies—**The Region 9 Fire Cache is located in Grand Rapids at the Minnesota Interagency Fire Center. Supplies and radio communications infrastructure are available.
- **IMTs—**The Minnesota Incident Command System supports three interagency Type2 Incident Management Teams. The teams are on rotation throughout the year and area available to manage all-risk as well as wildfire incidents.

Mitigation Action Plan

Implementation Team:

The Cook County Firewise Committee is composed of a County Commissioner, the Cook County Emergency Management and Public Information Director, a Department of Natural Resources Representative, a Cook County Fire Chiefs Association Representative, a Cook County Community Firewise Representative, a U.S. Forest Service Representative, and the Cook County Firewise Coordinator. Members of the Firewise Committee can be contacted through the Cook County Administrator at 411 West Second St. Grand Marais, MN 55604; or by phone at 218-387-3687 or e-mail jeff.cadwell@co.cook.mn.us.

The committee will focus on the four top priority Planning Areas/Wildland Urban Interface (WUI) areas listed in the plan, but will consider other projects as needs require. The team will set standards for implementation of fuels reduction and hazard mitigation projects within each Planning Area/WUI. As the team moves towards plan implementation, community involvement will be escalated to ensure the needs of the local community are incorporated in the planning, development, and execution of various projects within any given Wildland Urban Interface area. Implementation of all fuels reduction and hazard mitigation projects will follow State, Federal, and County land management policies and procedures.

As the team looks towards a specific Planning Area or WUI, their first step will be to go to the pages in the plan that outline each community (see pages 16 – 49), these community descriptions were developed by a broad based community group. The following areas were addressed in general and these subjects along with others will be addressed in more specificity as implementation projects are designed. Areas to be addressed include: access; fuels and fire hazard; fire regime and condition class; vegetation treatments; rare habitats; watersheds; biodiversity; infrastructure risks; community values; recreation economics; businesses; preparedness capabilities; and Firewise activities. Additional technical expertise will be brought into the planning and implementation process, including fire departments, home owners and lake associations, emergency management personal, biologists, silviculturists, botanists, fuels and fire specialists, and others on an as needed basis.

Project decisions for implementation will be made on a case by case basis specific to each WUI area. The plan is that each representative Implementation Team member will bring specific information back to the groups and agencies that they represent to make sure the community is informed. Throughout the planning process, Implementation Team members will also seek information and feedback from the public to ensure the best possible actions occur.

The development of this CWPP has built closer relationships between communities, fire departments, the County, State, and Federal partners. This cohesive team effort has sparked new ideas and concepts for furthering the community wildfire protection planning process. The ideas developed in this planning process have further enhanced the capabilities for all hazard and risk planning. In the event of a hazard situation, all entities within the county will be better prepared to work with one another to best meet the needs of local citizens.

Accomplished Activities and Projects.

- Tait Lake Project
  - Dry Fire Hydrants have been installed in various remote areas of the district.
  - 1,500 acres of fuels reduction treatments on federal lands adjacent to private lands.
  - Hazardous fuels clean up on common property and private property

- A dry fire hydrant was installed.

- Maple Hill Project: Within the Maple Hill CWPP area the following has occurred:
  - Firewise assessments for all homeowners.
  - Hazardous fuels clean up on private property.
  - Fuels reduction on 1,000 acres for federal land adjacent to private property.
  - Fuels reduction work on 10 acres of state land where there is high recreation use.
  - Dry fire hydrants have been installed.
- Tom Lake Project: Firewise information was disseminated to homeowners. A meeting was held with property owners to talk about fire hazards and risk and mitigation measures.
- Slash Disposal Sites: The County Board passed a resolution to assist in managing various slash disposal sites across the county. These sites are on State or US Forest Service managed lands. The US Forest Service has an agreement with county to manage the pits. The county has agreement with property owner associations to manage the pits from a debris stand point. The US Forest Service will dispose of debris (burning, chipping, etc). These sites include:
  - East Bearskin
  - Cross River South
  - Ball Club (Airport)
  - Pike Lake
  - Caribou Lake
  - Clara Lake
  - Tait Lake: Private
  - Horseshoe Bay
- Two Island Area: This area is being assessed by the US Forest Service for potential projects on federal lands.
- USDA Steven's Grant understory fuels reduction projects: The Cook County Firewise Committee has received three different grants beginning in 2014 until 2018 for understory hazardous fuels reduction work on private property. The site locations include:
  - West Twin Lake
  - Trestle Pine Lake
  - Kemo Lake
  - Two Island Lake
  - Gust Lake
  - Cascade Lake
  - West Bearskin Lake
  - Clearwater Lake
  - Hungry Jack Lake
  - Leo Lake
  - Road Lake
  - Flour Lake
- Firewise assessments: Beginning in 2015, the Cook County Firewise Committee began a new round of Firewise assessments in the County. Plans call for private properties to have a new Firewise assessment conducted every five years.
- Brush pick up days: Cook county Firewise has sponsored twelve brush pick up days in 2015 and 2016. These projects encourage property owners to remove hazardous fuels on their property and improve defensible space. Property owners pile the materials at the end of their driveway for a truck to pick up and haul to the community brush disposal site.
- Outreach and communications: Cook County Firewise launched an updated website in 2016 along with a Facebook page. In addition, Firewise reminders are frequently printed in Northern Wilds, the Cook County News Herald, and aired on WTIP North Shore Community Radio.

Fire Prevention and Education (Community Outreach)

Ninety percent of Minnesota's wildfires are caused by humans. Twenty percent of these are suspected arson, with the remainder started through unintentional means, such as unattended campfires, pile burning, or sparks from trains. Efforts to decrease the numbers of human caused wildfires have had a noticeable effect on the number of wildfires in the state. As an example, a 35 percent decrease in wildfires has been recorded since the Department of Natural Resources instituted spring burning restrictions.

Historically, Minnesota has recorded fewer fires and smaller acreages burned than in the early part of the century due to prevention strategies and quicker response time. Today, urban interface issues; insect and disease; and the blowdown in the northeast portion of the state continue to be some of the most pressing fire hazard concerns for local fire management officers. Fire management personnel have been working to help landowners mitigate this danger.

To accomplish prevention goals, a combination of strategies will be used including: education, engineering, and enforcement. A brief description of each strategy:

Education: Activities aimed at changing people's behavior by awareness and knowledge.
*Engineering***:** Activities designed to shield an ignition source (ex. spark arrestor) or remove the fuel which may ignite from a spark or fire brand (ex. defensible space around a home).
Enforcement: Activities used to gain compliance with fire regulations and ordinances.

1. Prevention Goals

1. Reduce human-caused wildfires throughout Cook County.
2. Provide a continuing fire prevention and education program.
3. Work with communities to coordinate Firewise activities within the County.

2. Key Prevention Actions:

1. Identify and update successful education programs to promote the fire prevention message.
2. Encourage fire prevention messages at local community celebrations and events. Community member participation at local events is a good way to spread the fire prevention message.
3. Keep fire prevention messages in schools focusing on grades K-2 for Smokey Bear Programs, grades 3-6 for Good Fire Bad Fire messages, and Firewise messages in secondary school. Coordinate school visits so that all the schools are visited by a representative on an annual basis.
4. Promote Firewise at the local level. Work with Cook County fire departments and landowners concerning Firewise and what can be done to improve defensible space. Share Firewise information with homeowners.
5. Develop and use age appropriate fire prevention themes that address fire issues in Cook County.
6. Provide the public alternatives to debris burning such as recycling and composting materials.
7. Educate the public on burning permit requirements, safe burning techniques, weather conditions, and fire use.
8. Foster public, interagency, and interdisciplinary cooperation when identifying and developing hazardous fuels mitigation measures.
9. Work with communities on pilot projects such as brush disposal sites and/or starting a burn barrel amnesty program.
10. Reduce the number of wildfires caused by burning barrels and unattended campfires.

Monitoring and Future: (To be revised and updated by the Cook County CWPP Board)

Projects	Recommended Actions	Who	Timelines
Fuels Treatments	Prioritize Hazardous Fuel Treatments Annually		Annual
	Track grants and utilize risk assessment data in the grant application process.		Ongoing
	Where possible track homeowners fuel mitigation projects		Annual
	Look for stewardship contract opportunities to reduce hazards.		Annual
	Evaluate opportunities for biomass marketing and hazardous fuel reduction and utilization		Annual
Fire Prevention	Track prevention and education programs to document prevention objectives.		Annual
Fire Departments	Identify and provide cross departmental training and opportunities		Annual
Emergency Mgmt	Review emergency management policies/evacuation procedures		Annual
	Evacuation exercise; focus on how well the evacuation procedure functions		2 years
Firewise	Track grant dollars and projects directed to citizens with special needs		Annual
	Work at completing assessments in priority areas, and other areas resources allow.		On going
	Work with Cook County communities on grant processes.		Annual
	Monitor number of evacuation corridors/roads treated for fire protection on county, private, state and federal roads		Annual
	Track fuels reduction grants		Annual

Grants Received

COUNTY FIREWISE GRANT SUMMARIES
2/24/2016

Source	Name	Start	End	Grant	Spent	Remaining
USDA	State Fire Assist	8/1/2001	12/31/2004	$ 94,000.00	$ 94,000.00	$ -
USDA	Economic Action	8/1/2001	12/31/2004	$ 20,000.00	$ 20,000.00	$ -
DNR	Roads/Assessments	10/1/2002	9/30/2005	$ 96,195.00	$ 96,195.00	$ -
DNR	Hovland VFD	3/31/2006	9/30/2007	$ 21,363.00	$ 21,363.00	$ -
DNR	Lutsen VFD	3/28/2006	8/31/2007	$ 12,430.00	$ 12,430.00	$ -
DNR	Maple Hill VFD	6/1/2006	8/31/2008	$ 19,270.00	$ 19,270.00	$ -
DNR	Defensible Space	10/1/2007	9/30/2011	$ 225,000.00	$ 127,352.85	$ -
DNR	Biomass – Gave Back	6/1/2008	12/31/2009	$ 50,000.00	$ -	$ 50,000.00
USDA	CCWPP - Tait Lake	8/23/2007	4/1/2010	$ 21,300.00	$ 21,300.00	$ -
USDA	CCWPP - Holly Lake	8/23/2007	4/1/2010	$ 13,000.00	$ 13,000.00	$ -
DNR	Gunflint Trail VFD	7/1/2007	9/30/2008	$ 17,996.00	$ 17,996.00	$ -
DNR	Countywide Grant	8/15/2008	6/30/2010	$ 51,670.43	$ 51,670.43	$ -
USDA	CCWPP - Midtrail	9/16/2008	7/1/2012	$ 245,000.00	$ 241,780.13	$ -
FEMA	PDM 2008 Sprinkler	12/29/2008	10/31/2012	$ 2,999,865.47	$ 1,918,730.42	$ 1,063,557.60
ARRA	CCWPP – Tait Lake	5/1/2010	9/30/2012	$ 120,000.00	$ 120,000.00	$ -
USDA	CCWPP – Clara Lake	6/30/2010	9/30/2013	$ 180,000.00	$ 179,179.50	$ 820.50
FEMA	PDM 2011 Sprinkler	8/13/2012	8/31/2015	$ 1,727,437.50	$ 503,581.77	$ 1,223,855.73
DNR	Gunflint Trail VFD	9/15/2012		$ 10,525.00	$ 7,293.62	$ 3,231.38
USDA	Twins Fuels Reduction	10/15/2013	9/30/2016	$ 190,000.00	$ 173,106.27	$ 16,893.73
USDA	Clearwater Fuels Red.	8/28/2014	9/30/2016	$ 250,000.00	$ 203,599.82	$ 46,400.18
DNR	County-wide Firewise	11/17/2014	12/31/2015	$ 34,800.00	$ 13,822.58	$ 20,977.42
DNR	County-wide Firewise	5/1/2016	10/31/2017	$ 76,700.00	$ 66,742.87	$ 9,957.13
USDA	Hungry Jack Fuels Re.	5/16/2016	9/30/2018	$ 250,000.00	$ 1,251.25	$ 248,748.75
	TOTAL			**$ 6,726,552.40**	**$ 3,674,591.76**	**$ 2,684,442.42**

APPENDIX:

A. Cook County Base Map
See Cook County Web Site at www.co.cook.mn.us

B. Evacuation Plan
See Cook County Web Site at www.co.cook.mn.us

C. Contact Numbers:

FIRE DEPARTMENT CONTACTS					
FIRE DEPT.	**ADDRESS**	**CITY**	**ZIP**	**CHIEF**	**DAY PHONE**
COLVILL	**3153 E HWY 61**	**GRAND MARIAS**	**55604**	**TOM THOMPSON**	**218-387-2487**
GRAND MARIAS	**516 5TH AVE W**	**GRAND MARIAS**	**55604**	**BEN SILENCE**	**218-387-1432**
GRAND PORTAGE	**PO BOX 428**	**GRAND PORTAGE**	**55605**	**BOB VOGEL**	**218-475-9999**
GUNFLINT TRAIL	**7633 GUNFLINT TRAIL**	**GRAND MARIAS**	**55604**	**JIM MORRISON**	**218-388-0506**
HOVLAND	**5059 E HWY 61 PO Box 268**	**HOVLAND**	**55606**	**CHARLIE LABODA**	**218-475-2352**
LUTSEN TWP	**116 CARIBOU TRAIL**	**LUTSEN**	**55612**	**LARRY MCNEALLY**	**218-370-9268**
MAPLE HILL	**1469 GUNFLINT TRAIL**	**GRAND MARIAS**	**55604**	**KENT ANDERSON**	**218-387-1353**
SCHROEDER TWP	**124 CRAMER ROAD**	**SCHROEDER**	**55613**	**PHIL BONIN**	**218-663-8127**
TOFTE TWP	**7240 TOFTE PARK ROAD**	**TOFTE**	**55615**	**RICH NELSON**	**218-663-7914**

D. Emergency Contacts

Cook County Sheriff

Pat Eliason
143 Gunflint Trail
Grand Marais, MN 55604-2307
218-387-3030 Fax 218-387-3032
pat.eliason@co.cook.mn.us

Cook County Emergency Management and Public Information Director

Valerie Marasco
143 Gunflint Trail
Grand Marais, MN 55604-2307
218-387-3059 Fax 218-387-3032
valerie.marasco@co.cook.mn.us

E. Fire Policy and Programs

The State of Minnesota's Department of Natural Resources is governed by State Statues that provide fire protection direction; followed by Minnesota Department of Natural Resources internal policies.

The fire policy and program for the Superior National Forest is outlined within the Forests' Forest Land and Resource Management Plan which is tiered to policies and guidelines set forth in the revised (2004) Superior National Forest Land and Resource Management Plan.

Various local, state, and federal programs and policies relate to fire protection and community fire planning. The Healthy Forest Restoration Act of 2003 calls for the development of Community Wildfire Protection Plans. This section describes these requirements, as well as related county, state and federal programs.

1. Healthy Forest Initiative (2002)

The Federal Healthy Forest Initiative of August 2002 was the impetus for:

- Streamlining the administrative review process for NEPA and
- Creating new regulations under the Endangered Species Act for National Fire Plan projects to streamline consultation with federal regulatory agencies.
- It set the stage for discussion between the administration and Congress resulting in new legislation addressing forest health.
- Establishing new procedures provided for under the National Environmental Policy Act to allow priority fuel treatment (thinning and prescribed fire) and forest restoration (reseeding and planting) projects, identified through collaboration with state, local and tribal governments and interested persons, to proceed quickly without the need for lengthy environmental documentation.
- Improving the agencies' administrative appeal rules to expedite appeals of forest health projects and encourage early and more meaningful public participation.
- Providing guidance to Federal agencies to make consultations under the Endangered Species Act timelier while emphasizing long-term benefits to threatened and endangered species, and proposing new regulations under the Endangered Species Act (Section 7) to expedite consultation for forest health projects that are unlikely to harm threatened or endangered species or their habitat.
- Providing guidance from the Council on Environmental Quality to improve environmental assessments for priority forest health projects by preparing assessments for fifteen pilot fuels treatment projects.

The Healthy Forest Restoration Act of 2003 contains a variety of provisions to expedite hazardous-fuel reduction and forest-restoration projects on specific types of Federal land that are at risk of wildland fire or insect and disease epidemics. The act helps rural communities, States, Tribes, and landowners restore healthy forest and rangeland conditions on State, Tribal, and private lands.

2. Stewardship Contracting (Expanded in 2003)

On the legislative front, in 2003, Congress enacted legislation expanding 1999 stewardship contracting authority, which allows Federal agencies to enter into long-term (up to 10 years) contracts with small businesses, communities and nonprofit organizations to reduce wildfire risk and improve forest health. Stewardship contracting is a promising and potentially transformative package of new contracting authorities that help to re-define the way work is done on public lands. Stewardship contracts emphasize the vital role of local residents, though strong partnerships with federal land managers in formulating the

goals of forest stewardship while accomplishing the necessary work. Stewardship contracts focus on desirable end results on the ground that improve forest health and provide benefits to communities. Part of the President's Healthy Forests Initiative, stewardship contracting will improve the health of the land, ensure thriving landscapes and contribute to the development of dynamic economies by assisting land managers to enhance and restore forest and rangeland health while strengthening the role of communities and others who contribute to such efforts.

The expanded 2003 stewardship contracting, which Congress approved will help agencies achieve key land-management goals to:

- improve, maintain, and restore forest and rangeland health;
- restore and maintain water quality;
- improve fish and wildlife habitat;
- re-establish native plant species and increase their resilience to insects, disease and other natural disturbances; and
- Reduce hazardous fuels that pose risks to communities and ecosystem values through an open, collaborative process.

Stewardship contracts allow private companies, communities and others to retain forest and rangeland products in exchange for the service of thinning trees and brush and removing dead wood. Long-term contracts (up to 10 years) foster a public/private partnership to restore forest and rangeland health by giving those who undertake the contract the ability to invest in equipment and infrastructure. This equipment and infrastructure are needed to productively use material generated from forest thinning, such as brush and other woody biomass, to make wood products or to produce biomass energy, at savings to taxpayers.

3. Healthy Forest Restoration Act (2003)

Act Key provisions:

- Provide tools and additional authorities to treat acres quickly in order to expedite restoration goals. Strengthen public participation and provided incentives for local communities to develop community protection plans.
- Limit environmental analyses complexity for hazard reduction projects
- Provide a more effective appeal process
- Instructs the Courts when considering legal challenges to halt projects, to balance the short-term effects of implementing the projects against the harm from undue delay and long-term benefits of a restored forest.
- Encourages biomass removal from public and private lands.
- Provides technical, educational, and financial assistance to improve water quality and address watershed issues on non-Federal lands.
- Authorizes large-scale silvicultural research.
- Authorizes acquisition of Healthy Forest Reserves on private land to promote recovery of threatened and endangered species, and improve biodiversity and carbon sequestration.
- Directs the establishment of monitoring and early warning systems for insect or disease outbreaks.

4. National Fire Plan (2001)

The National Fire Plan implementation began in FY 2001. The plan is multi-faceted strategy designed to manage the impacts of wildland fire to communities and ecosystems, and to reduce wildfire risk. It

encompasses the Departments of Agriculture (Forest Service) and Interior (National Park Service, Fish and Wildlife Service, and the Bureau of Land Management). Accountability and collaboration at the local level are stressed. The strategy focuses on five areas:

- Improving fire preparedness
- Restoring and rehabilitating burned areas
- Reducing hazardous fuels
- Assisting communities
- Research needs

5. 10-Year Comprehensive Strategy (2001)

This is a coordinated ten-year strategy to comprehensively manage wildfire, hazardous fuels, and ecosystem restoration. The implementation plan was developed in 2002 in collaboration with governors and in consultation with a broad range of stakeholders. The scope includes federal and adjacent state, tribal, and private lands. The primary goals are:

- Improve prevention and suppression
- Reduce hazardous fuels
- Restore fire-adapted ecosystems
- Promote community assistance
- Collaboration, priority setting, and accountability.

6. Federal Emergency Management Agency Disaster Mitigation Act (2000)

Federal Emergency Management Agency (FEMA) lists requirements under Title 44 CFR Part 201 of the Disaster Mitigation Act of 2000. This legislation specifies criteria for state and local hazard mitigation planning which require local and Indian tribal governments applying for Pre-Disaster Mitigation funds to have an approved local mitigation plan. These may include county-wide or multi-jurisdictional plans as long as all jurisdictions adopt the plan. Activities eligible for funding include management costs, information dissemination, and planning, technical assistance and mitigation projects.

FEMA Pre-Disaster Hazard Mitigation Program

- Establishes a National Pre-Disaster Mitigation Fund for a 3-year period
- Governors may recommend 5 or more local communities annually for assistance
- Funds are provided for technical assistance to communities
- "Small impoverished communities" may receive increased federal shares
- Federal Emergency Management Agency (FEMA) to establish an interagency task force to coordinate Federal pre-disaster mitigation
- Cook County received a $3 million PDM grant for wildfire sprinklers in December 2008.

FEMA Mitigation Planning

- Requires local and Tribal governments to develop and submit mitigation plans.
- Allows 7% of Hazard Mitigation Grant Program (HMGP) funds for planning purposes.
- Increases HMGP from 15% to 20% for states meeting enhanced planning criteria.
- Cook County secured a hazard mitigation grant to revise the county All Hazard Mitigation Plan in January of 2009.

7. Biomass Committee

This committee is a subcommittee of the County Firewise Committee. The primary focus of the committee is developing a local market to handle the bi-products of fuel reduction projects in the county.

8. Firewise

The National Firewise Communities program is a multi-agency effort to reach beyond the fire service by involving homeowners, community leaders, planners, developers, and others in the effort to protect people, property, and natural resources from the risk of wildland fire-before a fire starts. The Firewise Communities approach emphasizes community responsibility for planning in the design of a safe community as well as effective emergency response, and individual responsibility for safer home construction and design, landscaping, and maintenance.

The national Firewise Communities program is intended to serve as a resource for agencies, tribes, organizations, fire departments, and communities across the U.S. who are working toward a common goal: reduce loss of lives, property, and resources to wildland fire by building and maintaining communities in a way that is compatible with our natural surroundings.

Firewise Communities is part of the National Wildland Urban Interface Fire Program, which is directed and sponsored by the Wildland Urban Interface Working Team (WUIWT) of the National Wildfire Coordinating Group, a consortium of wildland fire organizations and federal agencies responsible for wildland fire management in the United States. The WUIWT includes: USDA Forest Service, USDI Bureau of Land Management, USDI Bureau of Indian Affairs, USDI Fish and Wildlife Service, USDI National Park Service, Federal Emergency Management Agency, US Fire Administration, International Association of Fire Chiefs, National Association of State Foresters, National Emergency Management Association, and the National Fire Protection Association.

For an electronic copy of the CWPP Handbook visit:
www.forestsandrangelands.gov/communities/cwpp.shtml
For more information about Community Wildfire Protection Plans and their development see:
www.forestsandrangelands.gov/communities/documents/CWPP_Report_Aug2008.pdf
Additional Information Resources on the Web:
Cook County Community Wildfire Protection Plan: http://www.co.cook.mn.us/index.php/wildfire-protection-plan
Local Fire Information: www.mnics.org
Healthy Forest Initiative Implementation Guide: www.fs.fed.us/projects/hfi/field-guide/
Communities at Risk Field Guide: www.stateforesters.org/reports/COMMUNITIES AT RISKFG.pdf
The National Fire Plan: www.fireplan.gov
Fire Safe Councils: www.firesafecouncil.org
Firewise: www.firewise.org
National Association of State Fire Marshals: www.firemarshals.org
Federal Emergency Management Agency: www.fema.gov
Cook County Firewise: http://cookcountyfirewise.org/

For localized information about Minnesota fire activity and fire conditions log onto *www.mnics.org*. This interagency website contains state and national daily wildfire situation updates, wildfire location maps, fire weather forecasts, National Weather Service homepages, statewide fire danger ratings, BWCAW blowdown history, wildland fire training courses, and other wildfire related links such as the MNICS (Minnesota Incident Command System) agencies, Firewise, and the Smokey Bear website.

F.Glossary

Crown fire – a fire advancing from top to top of trees or shrubs more or less independent of a surface fire.

ISO – Insurance Services Office – ISO collects information on a community's public fire protection and analyzes the data using our Fire Protection Rating Schedule. It then assigns a Public Protection Classification from 1-10. Class one represents the best public protection and class 10 indicates less than the minimum recognized protection.

Mitigation - Mitigation activities are those activities that aim to reduce the risks from natural and man-made hazards in a community.

NWCG – National Wildfire Coordinating Group – a federal interagency group comprised of those federal agencies with land management and fire management responsibilities.

Preparedness – (1) Condition or degree of being ready to cope with a potential fire situation. (2) Mental readiness to recognize changes in fire danger and act promptly when action is appropriate.

Response – Movement of an individual fire fighting resource from its assigned standby location to another location or to an incident in reaction to dispatch orders or to a reported alarm.

RFD – Rural fire department or district – An organization established to provide fire protection to a designated geographical area outside of areas under municipal fire protection. Usually has some taxing authority and officials may be appointed or elected.

Risk – The chance of fire starting from any cause.

Suppression – The most aggressive fire protection strategy, it leads to the total extinguishment of a fire.

Surface fire – a fire that consumes fuels lying on or near the surface of the ground, including leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low stature living plants.

Urban Interface – Where wildland fuels threaten to ignite combustible homes and structures located there.

VFD – Volunteer fire department – A fire department of which some or all members are unpaid.

Wildland – An area in which development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any are widely scattered.

Wildland fire – Any fire occurring on the wild lands, regardless of ignition source, damages or benefits.

Wildland fuels - trees, brush and other vegetative materials.

Wildland Urban Interface - An area where wildland fuels threaten to ignite combustible homes and structures. The Interface Community exists where structures directly abut wildland fuels. There is a clear line of demarcation between residential, business, and public structures and wildland fuels. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually 3 or more structures per acre, with shared municipal services.

Wildland Urban Intermix - An area where wildland fuels threaten to ignite combustible homes and structures. The Intermix Community exists where structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres.