Community Wildfire Protection Plan changes on March 8, 2013

After meeting with Administrator Minke and taking Former Land and Zoning Administrator Kurt Schneider's comments into consideration, the following changes have been made to the CWPP.

1. The signature page was changed to reflect pertinent immediate authorities to the plan. (Page 2)
2. The Pine County Land and Zoning department name was removed. (Pages 6, 52, 53 and 73)
3. Removed verbiage that the plan will be placed on the county website. County's best security interest at hand to not post semi-secure documents to general public. (Page 53)
4. Land Use goals were removed and replaced with verbiage that Pine County does not have county wide zoning. (pages 57)
5. "Access management" verbiage was deleted from Transportation goals. 3., E., F., (Page 57)
6. "All" was replaced by "varied" from Recreational goals, 4., E., (Page 58)
7. County Recreational and Cultural goals were deleted, A, B.(Page 58)
8. Environmental goals were removed. A. (Page 58)
9. The Pine County Community Wildfire Protection Plan Coordinating Groups positions remained, but specific names were removed. (Page 73)

PINE COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

Developed:
January 1, 2012

SIGNATORY PAGE

_____

Pine County Emergency Management, Director Date

_____

Pine County Board of Commissioners, Chairperson Date

_____

Department of Natural Resources, Forestry Director Date

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I. Introduction: Pine County Wildland Urban Interface Areas

The "Pine County Community Wildfire Protection Plan" (CWPP) has two objectives. First, it identifies and prioritizes wildland/urban interface areas within Pine County (including State, County, 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 Pine County at-risk communities. The objectives for the aforementioned vegetative and structural treatments are broadly addressed within each wildland urban interface (WUI) community. Every WUI area will be addressed in depth as the coordination group works with WUI communities, their residents and other partners in plan implementation.

Because people and natural elements interact in the wildland/urban interface, expanding development and recreational use creates an increasingly complex landscape in Pine County. The term wildland/urban interface is defined as any area where wildland fuels (trees, brush and vegetative materials) threaten to ignite combustible homes and structures. With increasing WUI 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 Pine County. The threat to life and property, asset loss, and the cost of 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, Pine County communities can work together to combat the wildland fire issue. It is impossible to stop all wildfire ignitions from occurring, but appropriate mitigation measures can make a difference. Planning, mitigating, responding, and recovering from the impact of wildfire is everybody's responsibility.

The Pine County CWPP is a community based plan and was developed collaboratively amongst individuals, the local communities, tribal government, local volunteer fire departments, the sheriff's office, 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. The goal of the Healthy Forest Restoration Act (HFRA) is to reduce wildland fire risk to emergency responders, communities, and important landscapes while keeping with the overall goal of improved forest health on a landscape scale. 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.

Completion of a CWPP helps communities tap into national funding resources such as The National Fire Plan, which annually provides millions of dollars to help states and communities with community fire planning, hazardous fuel reduction, and wildfire prevention across the nation. It also earns communities priority for funding of hazardous fuels reduction projects carried out under the auspices of the Healthy Forest Restoration act of 2003. A county

or community at risk must prepare a Community Wildfire Protection Plan if it is to take full advantage of these new opportunities within the Healthy Forest Restoration Act.

The Pine County Community Wildfire 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 11 local Wildland/Urban Interface communities, which it serves. The coordination group (which is responsible for plan implementation) will actively seek community input to help develop localized hazard reduction and mitigation projects. Community members wishing to provide written comment to the implementation of this plan should contact the Pine County Sheriff/Emergency Manager at 320-629-8380.

This plan will be implemented through the guidance of the Pine County CWPP Coordination group composed of a Pine County Sheriff/ Director of Emergency Management Representative, a Mille Lacs Band Representative and Department of Natural Resources Representative. Adjunct coordination group members may also include: a Fire Chief from the specific WUI being addressed, a "Firewise" representative, local affected property owners and other technical specialist representatives as deemed necessary.

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 structural 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.

The Pine 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

This plan is based on local needs of 11 WUI areas. These eleven areas were collaboratively defined by Pine County based communities with support from land management agencies.

This county wide plan addresses issues such as fire response, community preparedness, and structure and infrastructure protection along with mitigation measures for potential wildland fire fuel hazards. On the broad scale, the need for safety and notification of fire or other emergencies is critical for the entire county, both for the residents and those who are traveling through the county to other destinations. Education and awareness of the fire potential due to the

increased fuel loading (particularly on the east side of the county) must be addressed. The localized priorities for the county are fuels mitigation through fuels reduction, ingress/egress in particular areas and completion of Level 2 assessments where dramatic changes have occurred since the initial assessments completed through 2008. Finally, the plan will address fire department priorities for equipment, infrastructure, and evacuation planning. In development of the Pine County Community Wildfire Protection Plan communities discussed, and refined priorities for protecting life, property, and critical infrastructure within their County.

Three focus areas surfaced from the eleven WUI communities. These three WUI focus areas will become priorities as the coordination group works toward plan implementation. The focus areas are: ***Duxbury/Danbury/Mille Lacs band Area, Hinckley Area, Willow River Area.***

Development of this plan has been a valuable process. County communities and stakeholders worked together discussing and defining issues with community leaders, members and local land management agencies. These discussions have led to the completion of this Community Wildfire Protection Plan, which lists common goals, and fire management options for Pine County communities and their surrounding ecosystems.

II. ROLES AND ACTIONS FOR DEVELOPMENT AND IMPLEMENTATION OF THE PINE COUNTY COMMUNITY WILDFIRE PROTECTION PLAN:

State Foresters:

The HFRA (Healthy Forest Restoration Act) gives State Foresters a unique and critical role by designating them as one of the three entities, along with local government and the local fire authority, who must agree on the final contents of the Pine County Community Wildfire Protection Plan.

To provide statewide leadership in encouraging local, state, federal, and non-governmental stakeholders in development of the Pine County Community Wildfire Protection Plan and facilitate the participation of state personnel in the development process. Through established relationships with Pine County city and county officials, tribal government, local fire chiefs, state and national fire organizations, federal land management agencies, private homeowners, and community groups:

- Assist in bringing together diverse community partners
- Initiate the planning dialogue, if necessary
- Facilitate the implementation of priority actions across ownership boundaries

Bring specialized natural resource knowledge and technical expertise into the planning process.

- Provide statewide leadership in developing and maintaining a list, or map, of communities at risk within the state and work with partners to establish priorities for action

- When allocating federal grant funds (such as the mitigation portion of State Fire Assistance) for projects on nonfederal lands, to the maximum extent possible give priority to communities that have adopted a Community Wildfire Protection Plan.

USDA FS Regional Foresters, BLM State Directors, and Regional Directors of the US Fish & Wildlife Service and National Park Service:

Provide federal leadership in encouraging Pine County to develop a Community Wildfire Protection Plan.

- Convey the importance of Community Wildfire Protection Plans to federal line officers and encourage their active participation in their development and implementation
- In planning fuel reduction projects on federal land:
    - Ensure full collaboration with local communities, state agencies, and all interested parties
    - Give priority to projects that provide for the protection of at-risk-communities or watersheds, or that implement recommendations in a Community Wildfire Protection Plan
- Bring specialized natural resource knowledge and technical expertise into the planning process, particularly in the areas of GIS and mapping, vegetation management, assessment of values and risks and funding strategies
- Assist the community in identifying and prioritizing areas for hazardous fuel reduction treatments on federal lands, and in determining the types and methods of treatment that, if completed, would reduce the risk to the community. Provide funding priority to projects and activities identified in a "Community Wildfire Protection Plan"
- Promote economic opportunities in rural communities where possible

Bureau of Indian Affairs (BIA) Regional Foresters:

- Encourage Tribes to develop and implement, as appropriate, Community Wildfire Protection Plans (often referred to as wildland fire prevention plans) for landscapes at high-risk to wildland fire
- Collaborate with Tribes to plan and implement WUI and/or HFRA treatments that meet tribal goals
- Facilitate coordination with local communities and state and other federal agencies with land adjacent to reservation/tribal boundaries
- Communicate the unique role of tribal governments to partners involved in developing Community Wildfire Protection Plans and assist with appropriate incorporation of tribal participants and interests in the resulting documents

County and City Government Officials:

The HFRA gives local government officials a unique and critical role by designating them as one of the three entities, along with state land management agencies and the local fire authority, which must agree on the final contents of a Community Wildfire Protection Plan.

Convene the core decision-making team that will be responsible for either developing the plan, or guiding its development. Engage local community leaders and stakeholders in the planning process.

- Along with local fire chiefs, provide local leadership in assessing community fire protection needs and determining the complexity of planning necessary
- Enlist state and federal agency assistance and support for the planning effort
- Ensure that the Community Wildfire Protection Plan is collaboratively developed. Local officials must meaningfully involve state government representatives, federal agencies that manage land in the vicinity of the community, and other interested parties
- In conjunction with local fire chiefs, clearly communicate to home and business owners their responsibility to reduce the ignitability of their homes and other structures, and to create defensible space around them

Local Fire Chiefs:

The HFRA gives local fire chiefs a unique and critical role by designating them as one of the three entities, along with local government and the state forestry agencies, which must agree on the final contents of a CWPP. As trusted community members and leaders, take the lead in encouraging diverse local understanding of and support for the development of a CWPP, in organizing the planning process, and in ensuring meaningful participation from other community leaders and diverse stakeholders.

Use local fire protection expertise to lead the assessment of community fire protection needs and to determine the necessary complexity of fire preparedness and response planning. In conjunction with local government officials, clearly communicate to home and business owners their responsibility to reduce the ignitability of their homes, other structures, and to create defensible space around them. Consider using The "Leaders Guide for developing a Community Wildfire Protection Plan", developed by the International Association of Fire Chiefs (IAFC), to guide the process.

III. Fire Policies 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.

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 requirements, as well as related county, state and federal programs.

1. Healthy Forest Initiative

The Federal Healthy Forest Initiative of August 2003 was the impetus for:

- Streamlining the administrative review process for NEPA
- 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, allowing Federal agencies to enter into long-term (10 years) contracts with small businesses, communities and nonprofits to reduce wildfire risk and improve forest health. 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 are:

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 disturbance
- Reduce hazardous fuels posing 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. Hazardous Fuels Reduction Act (2003)

Act Key provision:

- 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 out breaks

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 wild-fire 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. It was

developed in collaboration with governors and in consultation with a broad range of stakeholders. The scope includes federal, 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

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.

IV. Background and History of Fire and Fire Risks in Pine County

1. History of Fire Occurrence/Community Impacts

The Great Hinckley Fire was a major conflagration on September 1, 1894, which burned an area of at least 200,000 acres. The towns of Hinckley, Mission Creek, Brook Park and Sandstone were completely destroyed, killing an estimated 418 people. Some scholars believe the actual figure to be nearly 800. If so, this was the deadliest fire in the history of Minnesota.

The fire was the result of a two-month drought, combined with high temperatures. Several small fires started in the pine forests south of what is now Brook Park. The fires' rapid

spread was due to the then-common method of lumber harvesting, in which trees were stripped of their branches, littering the ground with flammable debris. Also contributing was a temperature inversion that trapped the hot gases from the fires close to the ground.

The scattered blazes united into a firestorm. The temperature rose to at least 2,000 °F, barrels of nails melted together, and wheels of train cars fused with the rails. Some residents were able to escape by climbing into wells, or by reaching ponds or the Grindstone River. Others clambered aboard two crowded trains that were able to leave the threatened town. James Root, an engineer on a train heading south from Duluth, rescued nearly 300 people by backing up a train nearly five miles to Skunk Lake, where the passengers were able to escape the fire.

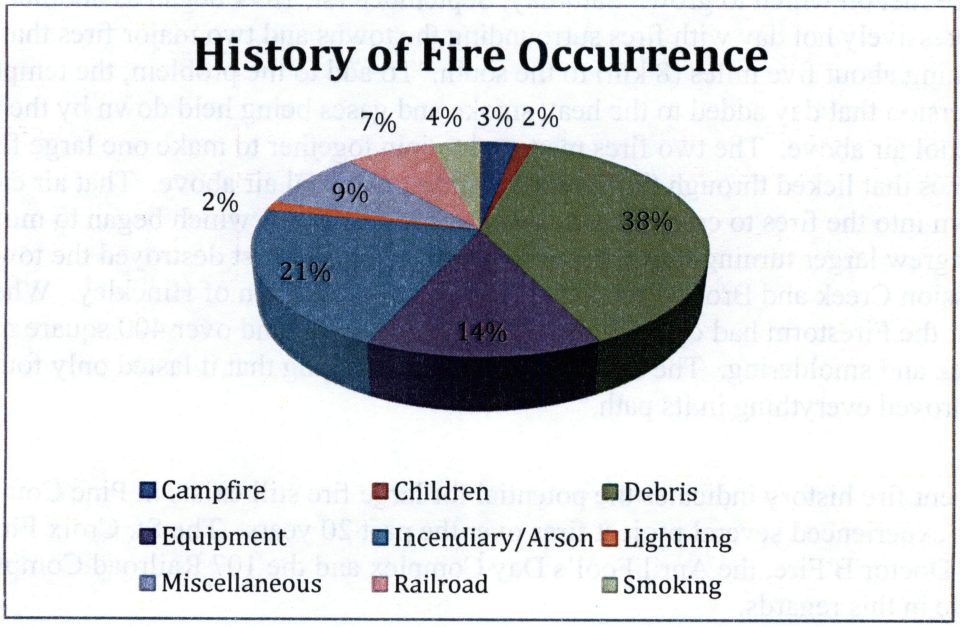
According to the Hinckley Fire Museum:

> "Because of the dryness of the summer, fires were common in the woods, along railroad tracks and in logging camps where loggers would set fire to their slash to clean up the area before moving on. Some loggers, of course left their debris behind, giving any fire more fuel on which to grow. Saturday, September 1st, 1894 began as another oppressively hot day with fires surrounding the towns and two major fires that were burning about five miles (8 km) to the south. To add to the problem, the temperature inversion that day added to the heat, smoke and gases being held down by the huge layer of cool air above. The two fires managed to join together to make one large fire with flames that licked through the inversion finding the cool air above. That air came rushing down into the fires to create a vortex or tornado of flames, which began to move quickly and grew larger turning into a fierce firestorm. The fire first destroyed the towns of Mission Creek and Brook Park before coming into the town of Hinckley. When it was over the Firestorm had completely destroyed six towns, and over 400 square miles lay black and smoldering. The firestorm was so devastating that it lasted only four hours but destroyed everything in its path."

Recent fire history indicates the potential for large fire still exists in Pine County. Pine County has experienced several project fires over the past 20 years. The St. Croix Fire, Willow River Fire, Doctor B Fire, the April Fool's Day Complex and the 107 Railroad Complex have all been notable in this regards.

The main causes of wildfires in Pine County are debris burning, which accounts for 38% of total fires in recent history, incendiary or arson is the cause for 21% and equipment use accounts for 14% of all wildfires. In 2008, Pine County was added to the DNR's electronic Burning Permit System in addition to the use of local Fire Wardens. This internet based systems provides increased flexibility in monitoring permitted fires such as not allowing activations on high fire danger days. But the majority of wildfires in Pine County are not started from permitted, legal fires.

Cause	Count	Percent
Campfire	79	3%
Children	38	1%
Debris	971	38%
Equipment	363	14%
Incendiary/Arson	540	21%
Lightning	38	1%
Miscellaneous	227	9%
Railroad	190	7%
Smoking	106	4%
	2552	100%

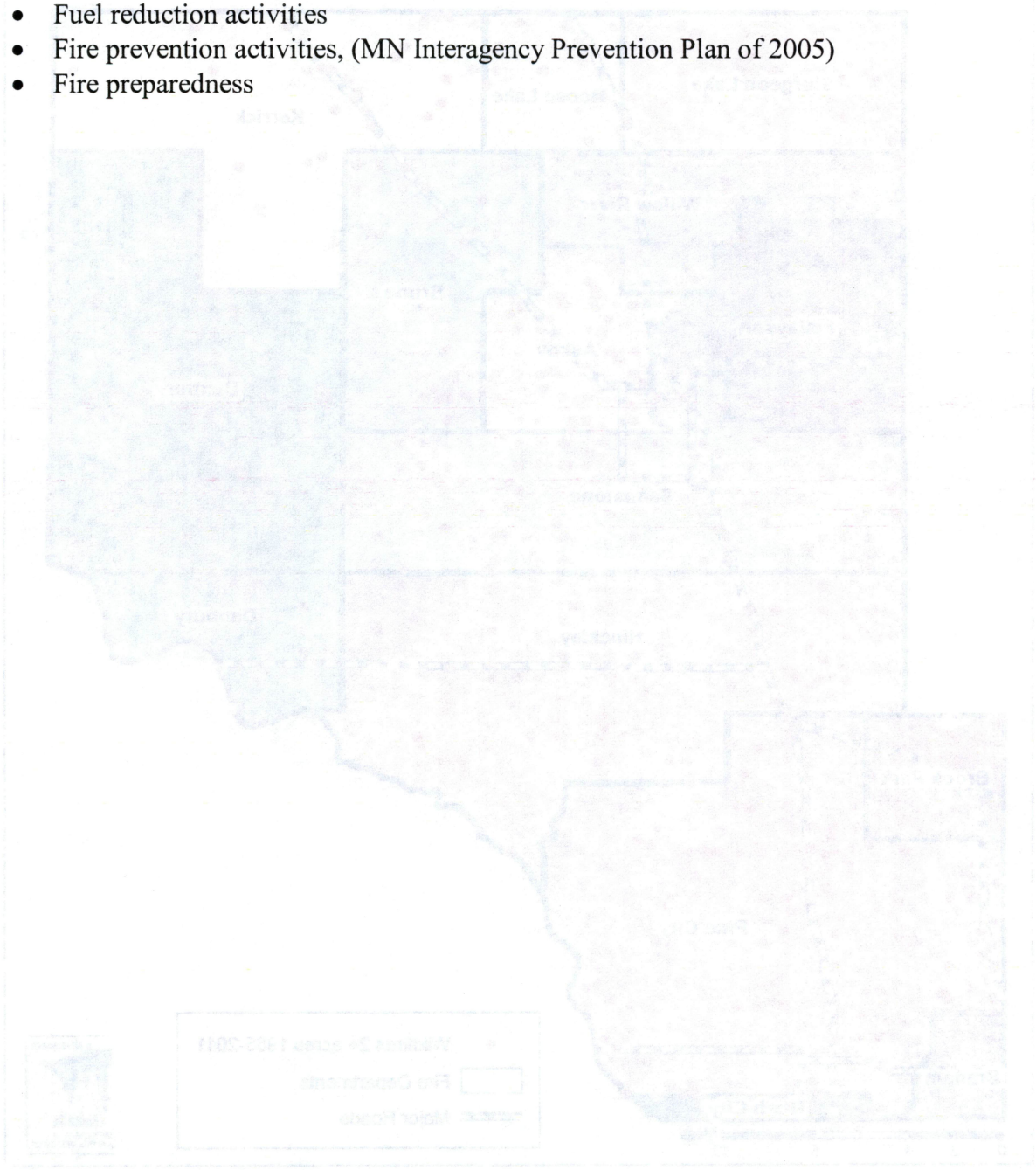


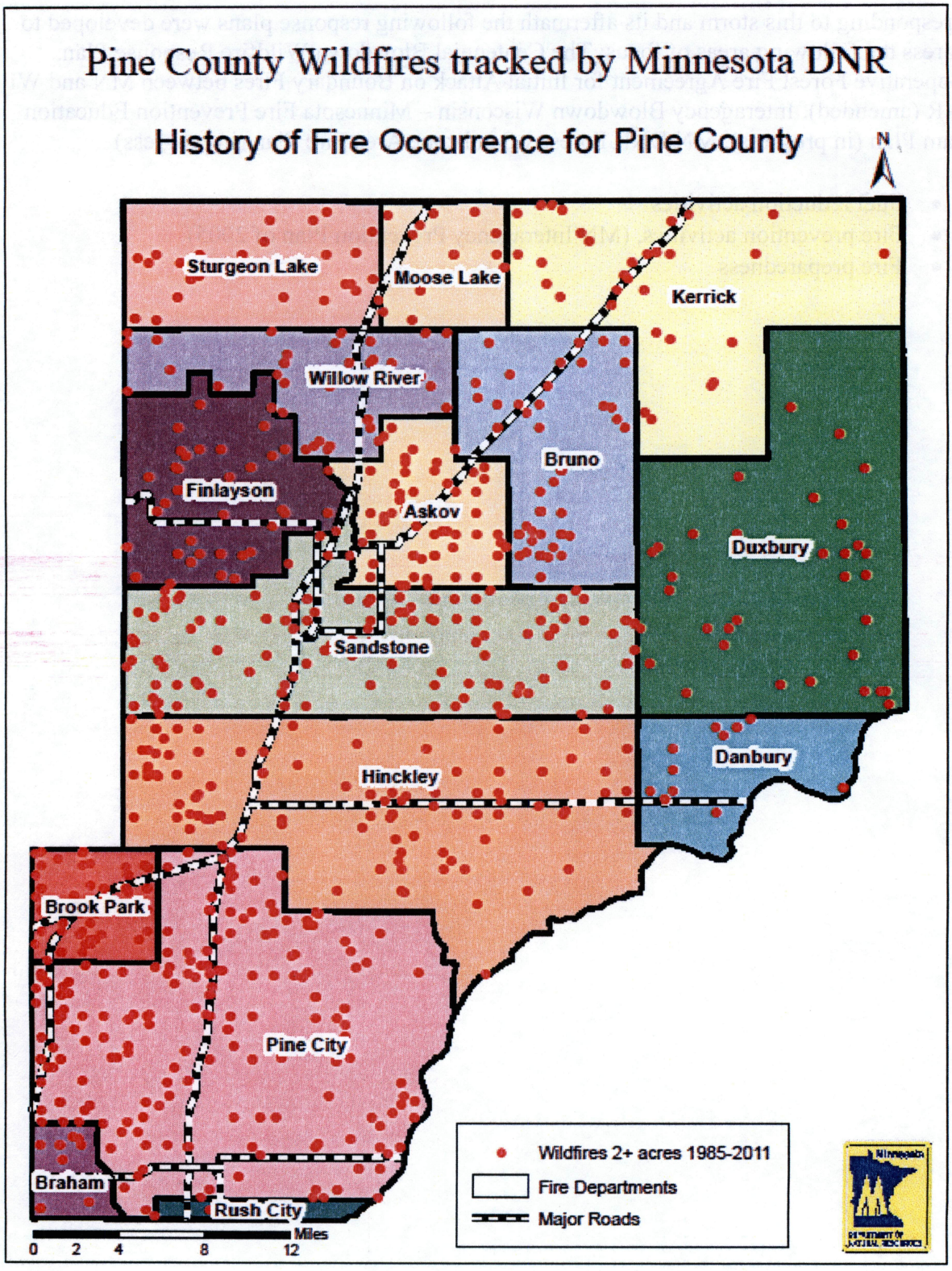
At the time this plan was written, Pine County had two major strikes against it regarding its wildfire danger. First, in July of 2011 a major windstorm swept across eastern Pine County and two joining counties in Wisconsin. This storm impacted 200,000 acres of woodland within Pine County, including a large amount of acreage within the Saint Croix State Forest and State Park. All of the townships located on the east side of Pine County were impacted by this storm, which downed millions of trees. The other condition resulting in an elevated wildfire danger is the fall following the wind events was the third driest on record.

The resulting conditions within the current blowdown area exceed the timber fuel loading of 1894. Several small fires during the fall of 2011 gave responders a glimpse at anticipated firefighting conditions for the next 3-5 years. The severe drought and increased fuel loading allowed these fires, which are normally extinguished during an initial attack, grew into extended attack fires requiring several days to control and mop up. It is evident that practiced firefighting tactics will have to be modified to meet these new challenges.

In responding to this storm and its aftermath the following response plans were developed to address the following areas of focus: The Centennial Blowdown Wildfire Response Plan, Cooperative Forest Fire Agreement for Initial Attack on Boundary Fires between MN and WI DNR (amended), Interagency Blowdown Wisconsin – Minnesota Fire Prevention Education Team Plan (in progress), MN DNR Forestry Sandstone Area Fire Plan (in progress)

- Fuel reduction activities
- Fire prevention activities, (MN Interagency Prevention Plan of 2005)
- Fire preparedness




Pine County Wildfires tracked by Minnesota DNR
History of Fire Occurrence for Pine County
N
Sturgeon Lake
Moose Lake
Kerrick
Willow River
Bruno
Finlayson
Askov
Duxbury
Sandstone
Danbury
Hinckley
Brook Park
Pine City
Braham
Rush City
Miles
0 2 4 8 12
Wildfires 2+ acres 1985-2011
Fire Departments
Major Roads

2. General Fire Behavior Expected

The average fire during Pine County's normal spring and fall fire season is wind-driven in upland and lowland cured grasses. This results in flame lengths of 3-12ft and rates of spread (ROS) of 30 to 90 chains per hour (a chain being 66 feet). When in droughty conditions, wildfires are more likely to move into wooded areas where flame lengths are shorter and rates of spread are slower but fires are more persistent. Typical fires stay on the ground (surface fires) but also have single tree and small group tree torching. During a normal fire season most fires remain fairly small and are caught during initial attack.

Typically it takes very high or extreme fire danger conditions (prolonged drought, low relative humidity and winds greater than 15 mph) for crown fires to develop. These crown fires, where the wildfire moves across the landscape in the canopy of the trees, are the most difficult to extinguish. They typically only stop spreading once they hit a change in fuel type or there is a significant change in the weather.

The wind events of July 2011 in Pine County resulted in a significant change in fuel bed characteristics across the landscape. Crown fuels that were previously available for burning only during periods of extreme fire danger are now on the ground and available for ignition under more moderate conditions. Surface fire intensity will increase dramatically, making suppression difficult and more dangerous. Open areas of blowdown will be more exposed to wind compared to intact timber stands, increasing surface fire rate of spread and the potential for large fire growth. Even areas that have timber salvaged will see an increase in surface fuel loads due to large amounts of slash that will likely remain on site.

This increase in available surface fuels will correspondingly elevate potential fire behavior. Wildfire will also become more of a concern during marginal fire weather periods because of the increased amounts of cured fuels available to support fire spread, essentially increasing the length and severity of fire season.

Following are fire behavior model outputs illustrating potential rate of spread and fire intensity of intact timber stands and blowdown/slash.

	Springtime conditions (cured live vegetation)*		Summer conditions (green vegetation)**	
Fuel Model[1]	Rate of spread	Head fire flame length	Rate of spread	Head fire flame length
Long-needle Litter (TL8)	2 ch./hr.	2 ft.	1 ch./hr.	1 ft.
Moderate Load Timber-Grass-Shrub (TU3)	7 ch./hr.	4 ft.	2 ch./hr.	1 ft.
Moderate Slash (12)	12 ch./hr.	8 ft.	10 ch./hr.	7 ft.
High Load Blowdown (SB4)	46 ch./hr.	12 ft.	38 ch./hr.	10 ft.
BWCA Custom model	50 ch./hr.	25 ft.+	24 ch./hr.	16 ft.+

Outputs assume a 20 foot wind speed of 6 mph.
*Spring outputs are based on moisture scenario D2L1, Low Dead/ Fully Cured Herb(6,7,8,30,60)
**Summer outputs are based on moisture scenario D3L4, Moderate Dead, Green Herb (9,10,11,120,150)

Based on the model outputs shown above, rates of spread in blowdown/slash may increase 5 to 20 times that of intact standing timber. Fire intensity in slash/blowdown fires will be 10 to 20 times higher than surface fire intensity in standing timber. Fires that can easily be suppressed with hose lays and hand tools in intact timber will require the addition of heavy equipment and aircraft in blow down stands due to the very high intensities.

As fires become established in blowdown and slash, the very high intensity can create strong convection columns which allow the fire to gain momentum independently of local weather influences. Large fire growth will become a possibility if such plume domination occurs. As the Pagami Creek fire showed in the summer of 2011, when the power of the fire exceeds that of the local weather influences, fire behavior becomes unpredictable. Fire in adjacent areas of standing timber that would normally burn with low to moderate intensity can exhibit extreme rates of spread and intensity when the fire environment becomes plume dominated.

V. Pine County Wildland Urban Interface Community Boundaries

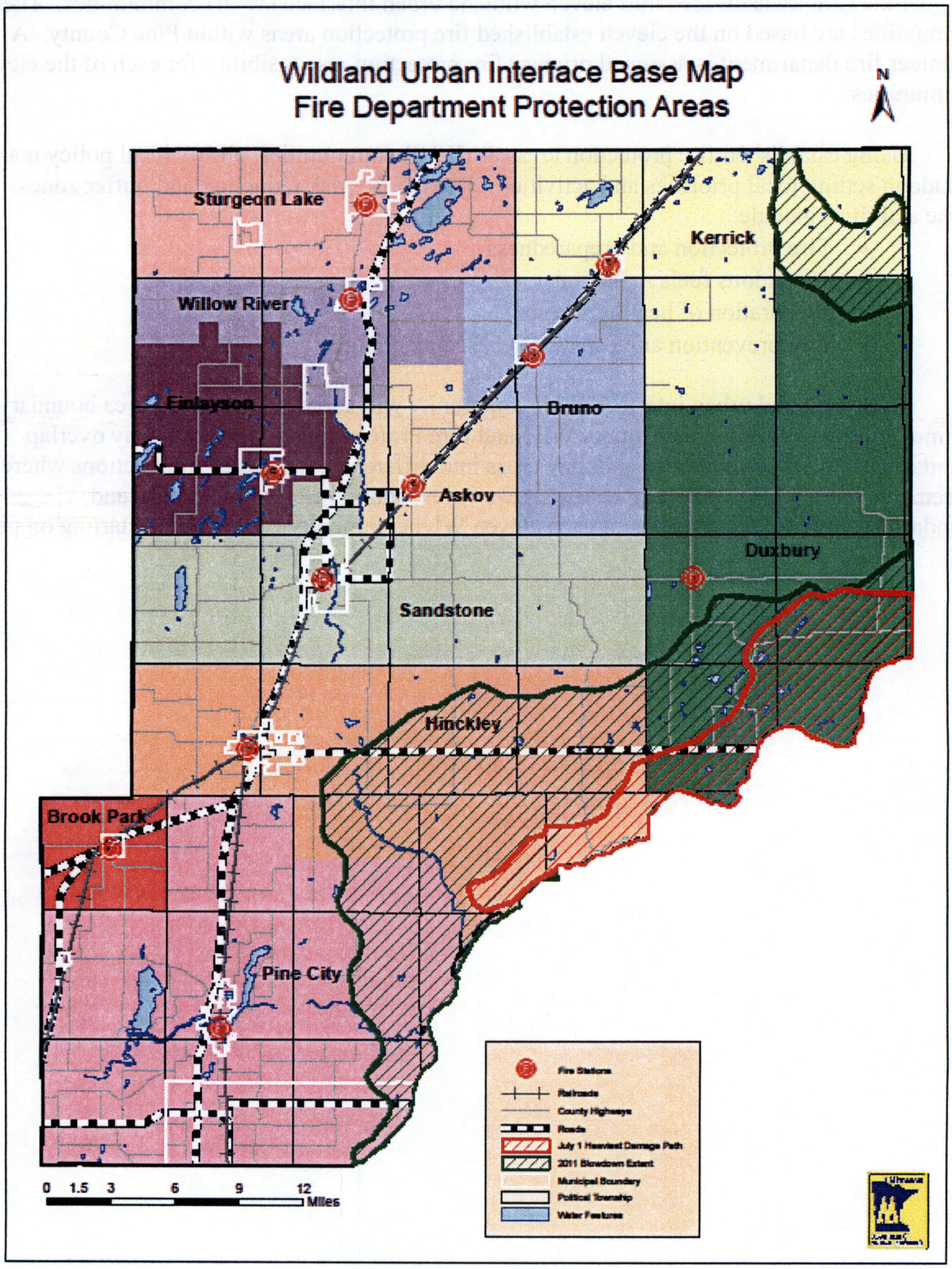
Pine County is divided into eleven wildland urban interface (WUI) communities. These communities are based on the eleven established fire protection areas within Pine County. A volunteer fire department is assigned primary fire protection responsibility for each of the eleven communities.

Using established fire protection areas as (WUI) communities, allows local policy makers latitude in setting local priorities and activities related to fire risk reduction and buffer zones. These activities include:

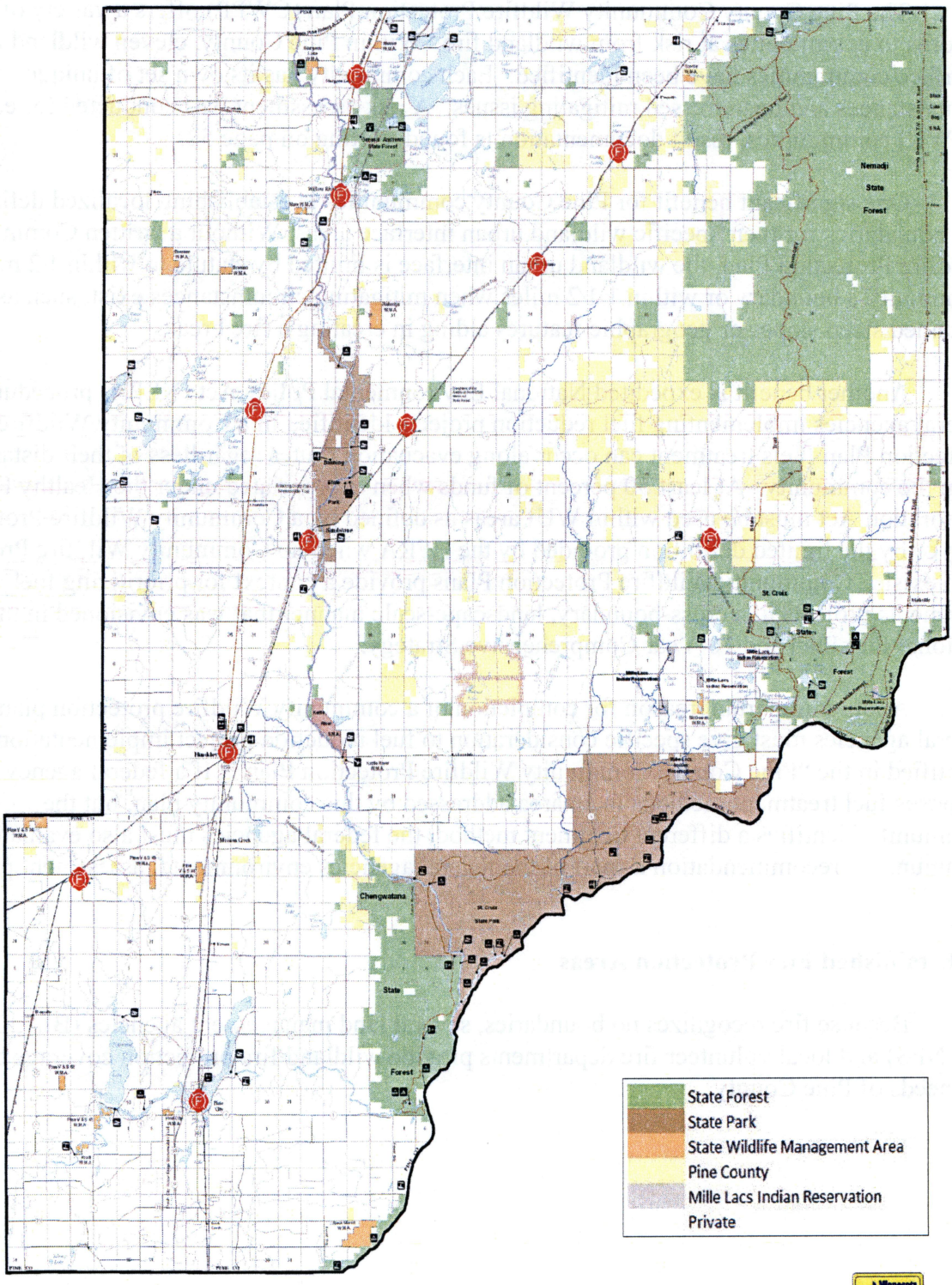
- Fire protection and preparedness
- Hazardous fuels reduction
- Restoration of healthy forests
- Fire prevention and ecosystem based planning

Each wildland urban interface WUI community will serve as a planning area boundary for implementation of the Pine County Wildland Fire Protection Plan. Projects may overlap boundaries of WUI communities and may cross into different (ownership) jurisdictions where agreements are in place. The map below shows Pine County's eleven WUI areas and boundaries. Detailed descriptions of each eleven WUI community can be found starting on page 30.

1. Pine County – Wildland Urban Interface Areas (WUI)



Pine County Base Map



3. Pine County Communities and Neighborhoods

The Pine County Community Wildfire Protection Plan (CWPP) offers a variety of benefits to communities at risk from wildland fire. Within Pine County, eleven wildland urban interface communities have been identified. Each community has its own set of unique circumstances and unaddressed mitigating issues. A risk assessment was conducted for each of the WUI communities, result documentation is found starting on page 52.

One significant benefit for Pine County communities is establishing localized definitions and boundaries for their specific wildland urban interface areas. Without a written Community Wildfire Protection Plan, the wildland urban interface is limited by statute to within 1⁄2 mile of a community's boundary or within 1 1⁄2 miles when mitigating circumstances exist, such as sustained steep slopes or geographic features aiding in creating a fire break.

Another benefit is expedited National Environmental Policy Act (NEPA) procedures for federal agencies implementing fuel reduction projects identified in a Community Wildfire Protection Plan fuels treatment 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 Community Wildfire Protection Plan exists. Community Wildfire Protection Plans provide a context for prioritizing fuel treatments projects in a cross-boundary, landscape-scale manner that was envisioned in the National Fire Plan and 10-Year Comprehensive Strategy.

Another important reason for completion of a community Wildfire protection plan is that federal agencies must give specific consideration to fuel reduction project implementation plans identified in the "Pine 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.

4. Established Fire Protection Areas

Because fire recognizes no boundaries, several land management agencies (BIA, DNR, and NPS) and local volunteer fire departments provide wildland fire protection coverage to meet the needs of Pine County.

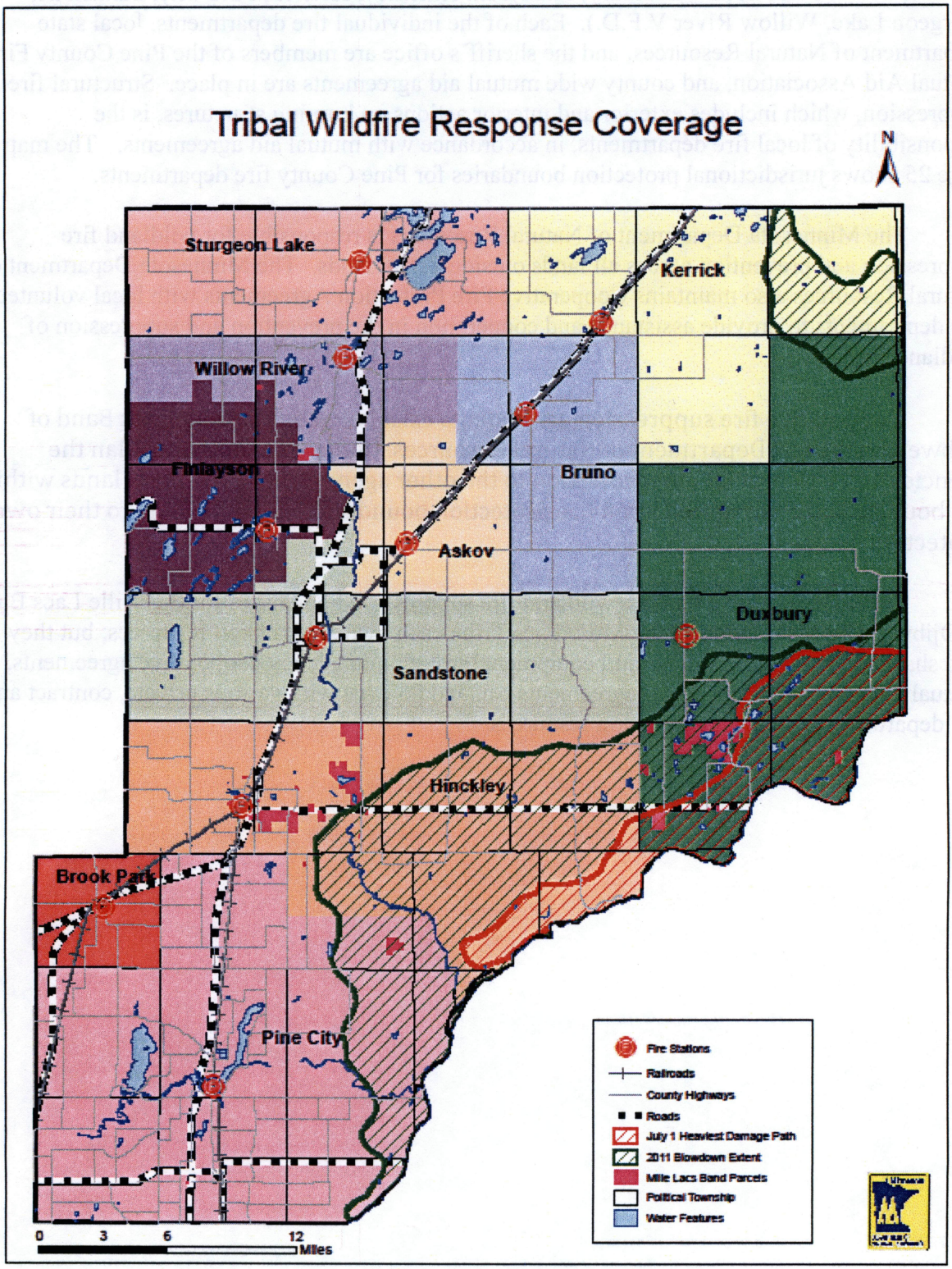
Pine County is covered by eleven volunteer fire departments. These departments provide both structural and wildland fire protection services within their jurisdictional boundaries. (Askov, Brook Park, Bruno, Duxbury, Finlayson, Hinckley, Kerrick, Pine City, Sandstone, Sturgeon Lake, Willow River V.F.D.). Each of the individual fire departments, local state Department of Natural Resources, and the sheriff's office are members of the Pine County Fire Mutual Aid Association, and county wide mutual aid agreements are in place. Structural fire suppression, which includes exterior and interior actions on burning structures, is the responsibility of local fire departments, in accordance with mutual aid agreements. The map on page 25 shows jurisdictional protection boundaries for Pine County fire departments.

The Minnesota Department of Natural Resources is responsible for wildland fire suppression and prevention across all lands outside Tribal lands. The Minnesota Department of Natural Resources also maintains Cooperative Fire Protection Agreements with local volunteer fire departments to provide assistance and cooperation in the prevention and suppression of wildland fires.

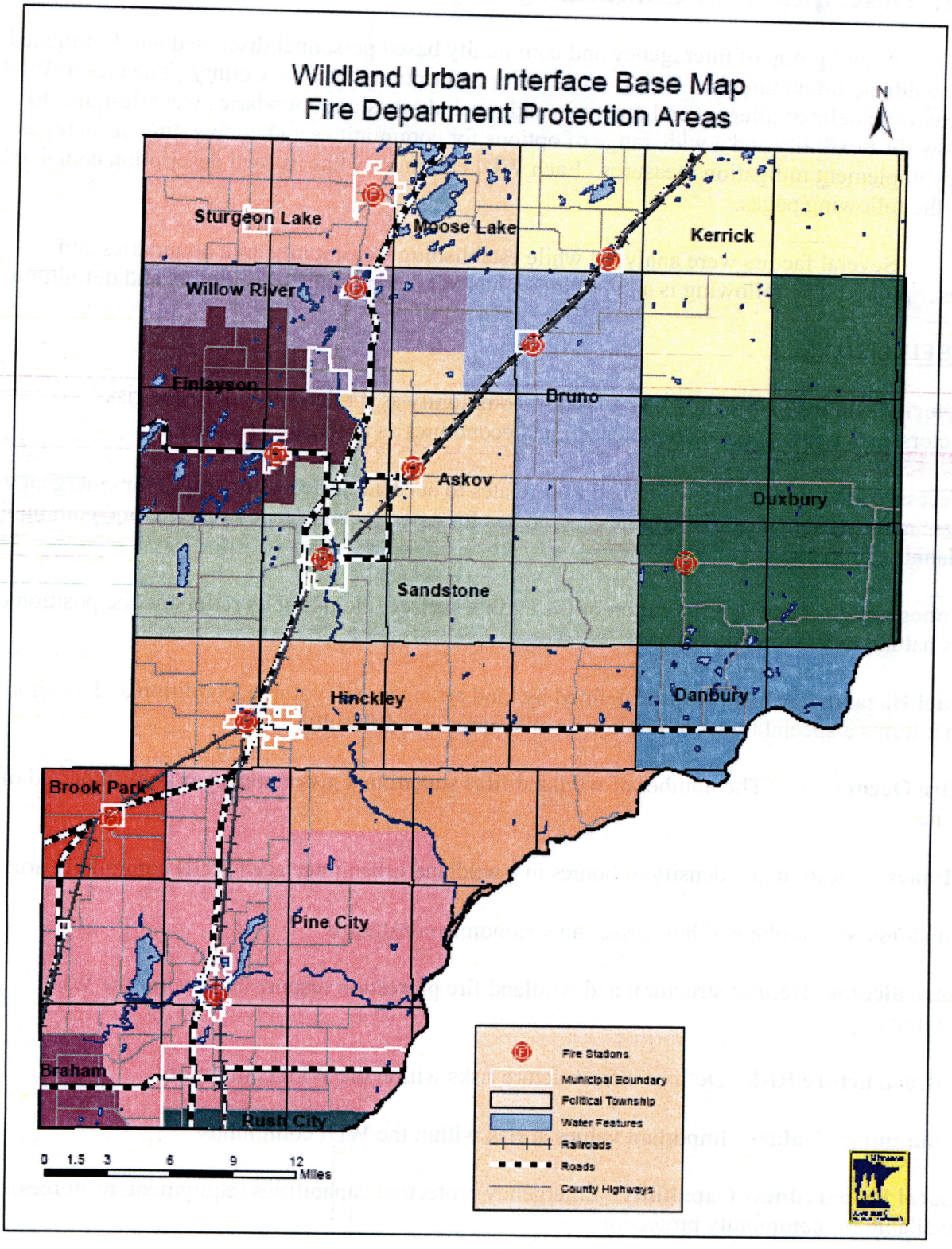
Cooperative fire suppression agreements exist between the Mille Lacs Band of Ojibwe and the MN Department of Natural Resources. Under this Operating Plan the agencies agree to provide fire protection to the other agency's fire protection lands within the boundaries of the agreed upon fire protection boundaries, as they would to their own protection lands.

The map on page 24 shows wildland fire suppression boundaries for the Mille Lacs Band of Ojibwe. The MN DNR and the Mille Lacs Tribe each own suppression resources; but they also share suppression resources and equipment through interagency cooperative agreements. Mutual aid and equipment rental agreements can and do exist with various private, contract and fire department wildland suppression resources.

5. Wildland Fire Protection



6. Fire Department Map - Pine County fire department protection boundaries



VI. Descriptions of Community Wildland/Urban Interface Areas:

A core group of interagency and community based personnel discussed and formulated the wildland urban interface (WUI) community descriptions for Pine County. The eleven WUI areas were defined after several meetings and much discussion; boundaries were designed to allow for flexibility and a wide range of options for communities and cooperating agencies as they implement mitigation measures. Each WUI community has its own description contained on the following pages.

Several factors were analyzed while establishing Community area boundaries and descriptions. The following is a list of individual WUI community descriptors and definitions:

DEFINITIONS

Priority: Rating (1-5 with 1 being low) of community as it relates to safety and risk factors, evacuations, population density and economics as defined by risk.

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 manmade 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: Location and density of homes in a wildland urban interface (WUI) community area.

Businesses: Numbers of businesses and economic constraints

Jurisdiction: Defines structural and wildland fire protection responsibilities for the WUI community

Infrastructure Risk: Defines infrastructure risks within the WUI community

Community Values: Important values at risk within the WUI community

Local Preparedness Capability: Emergency protection capabilities (equipment, resources) available for community protection.

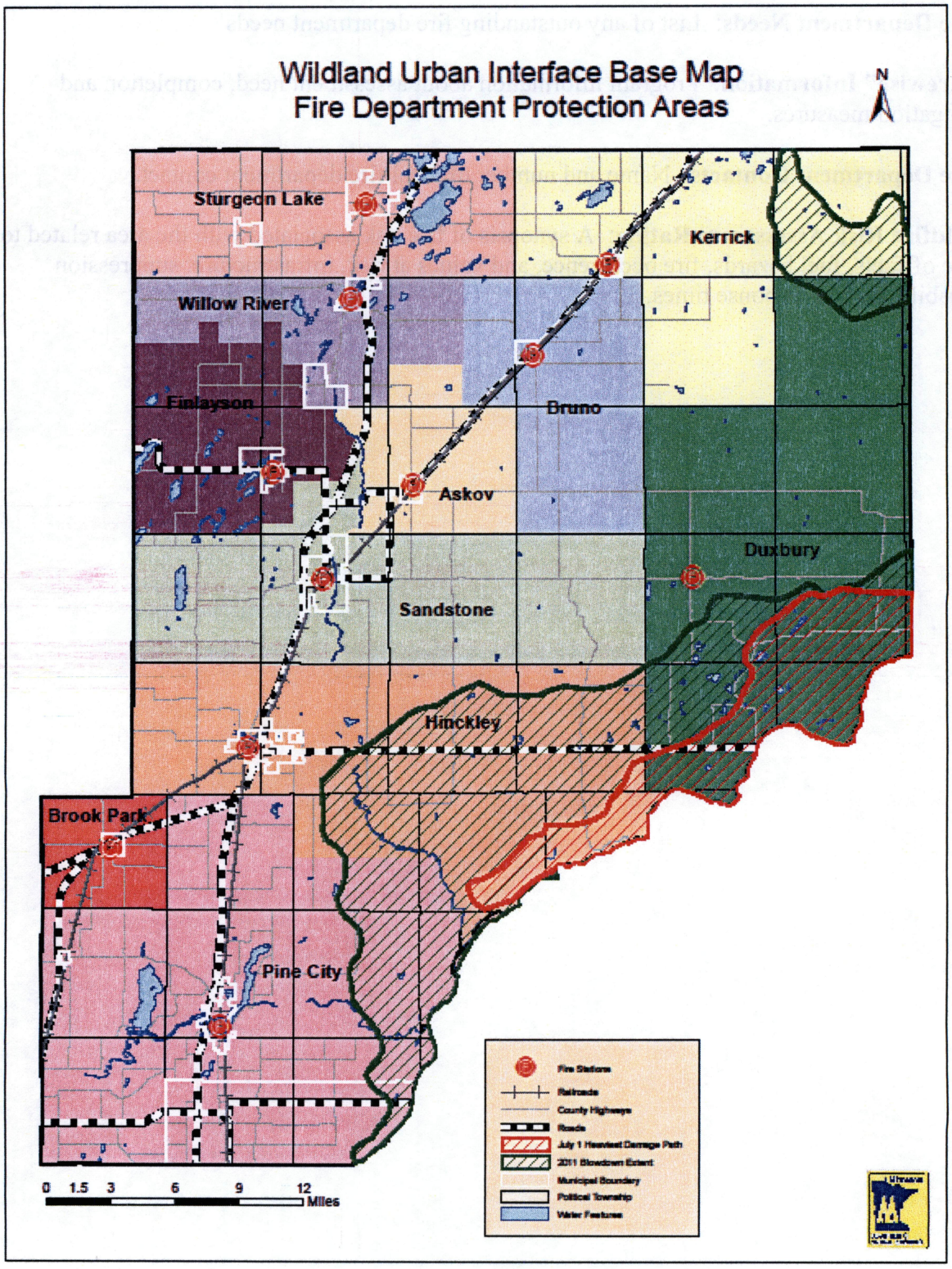
Other: Any concerns not captured in previous categories.

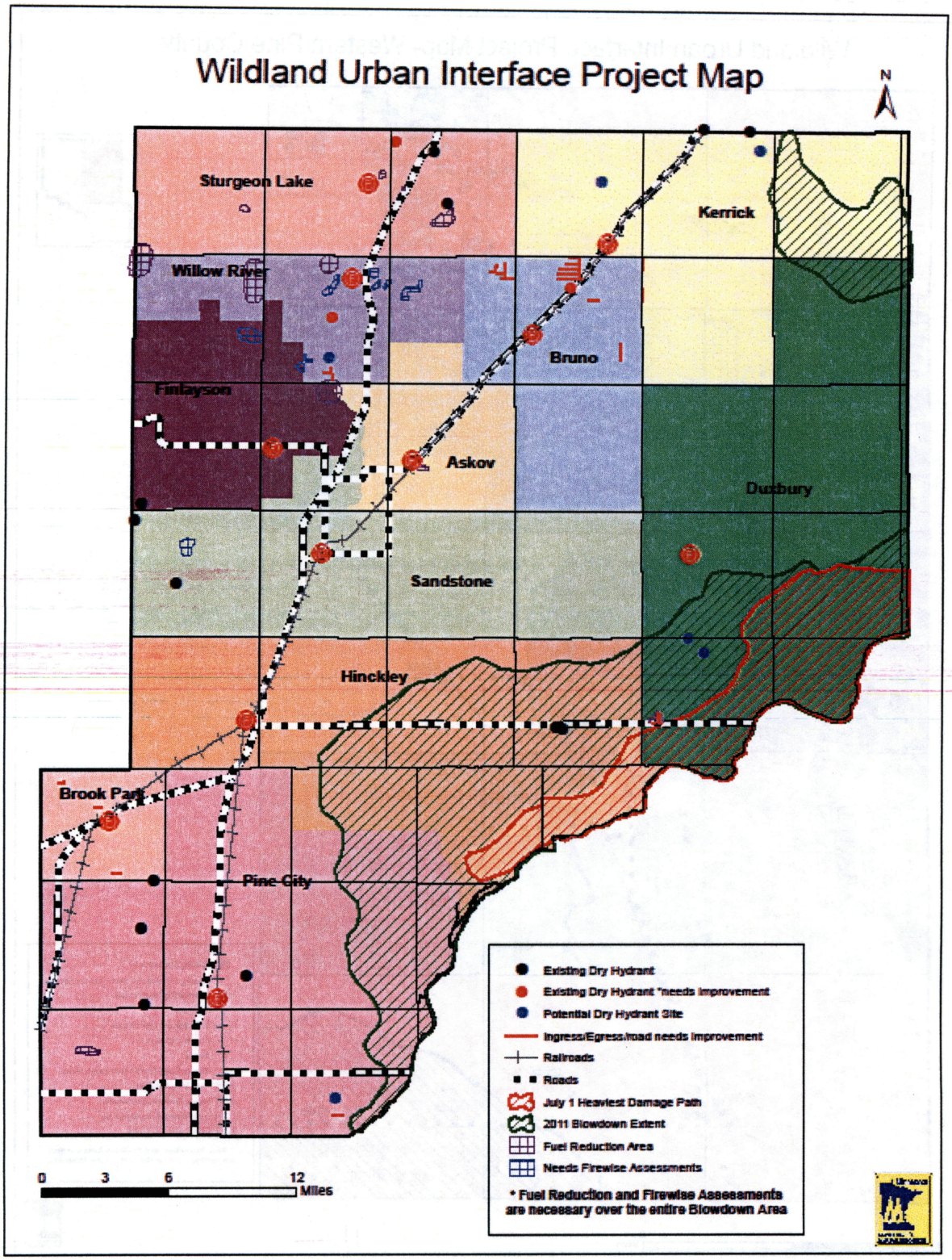
Fire Department Needs: List of any outstanding fire department needs

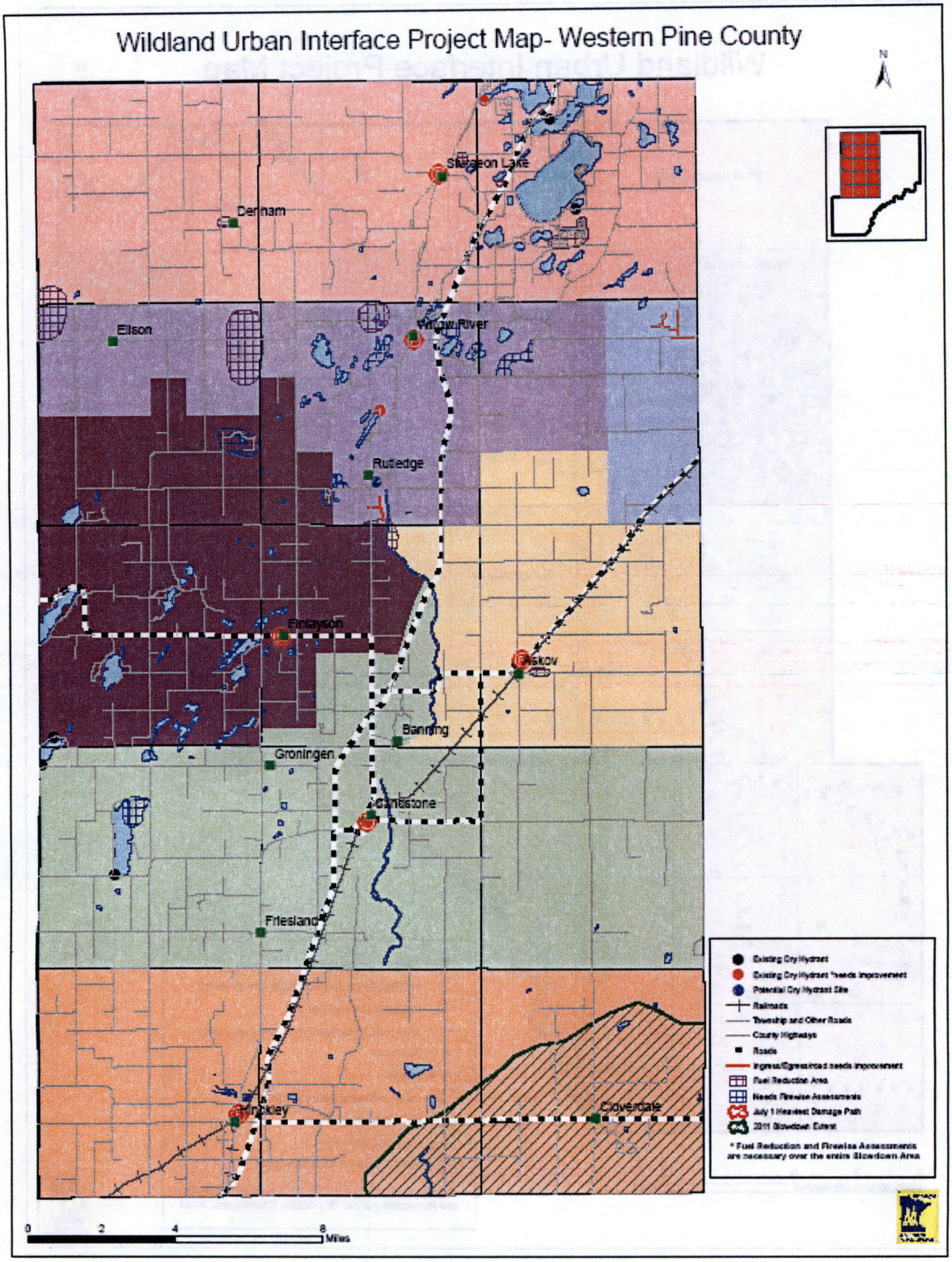
"Firewise" Information: Program information about assessment need, completion and mitigation measures.

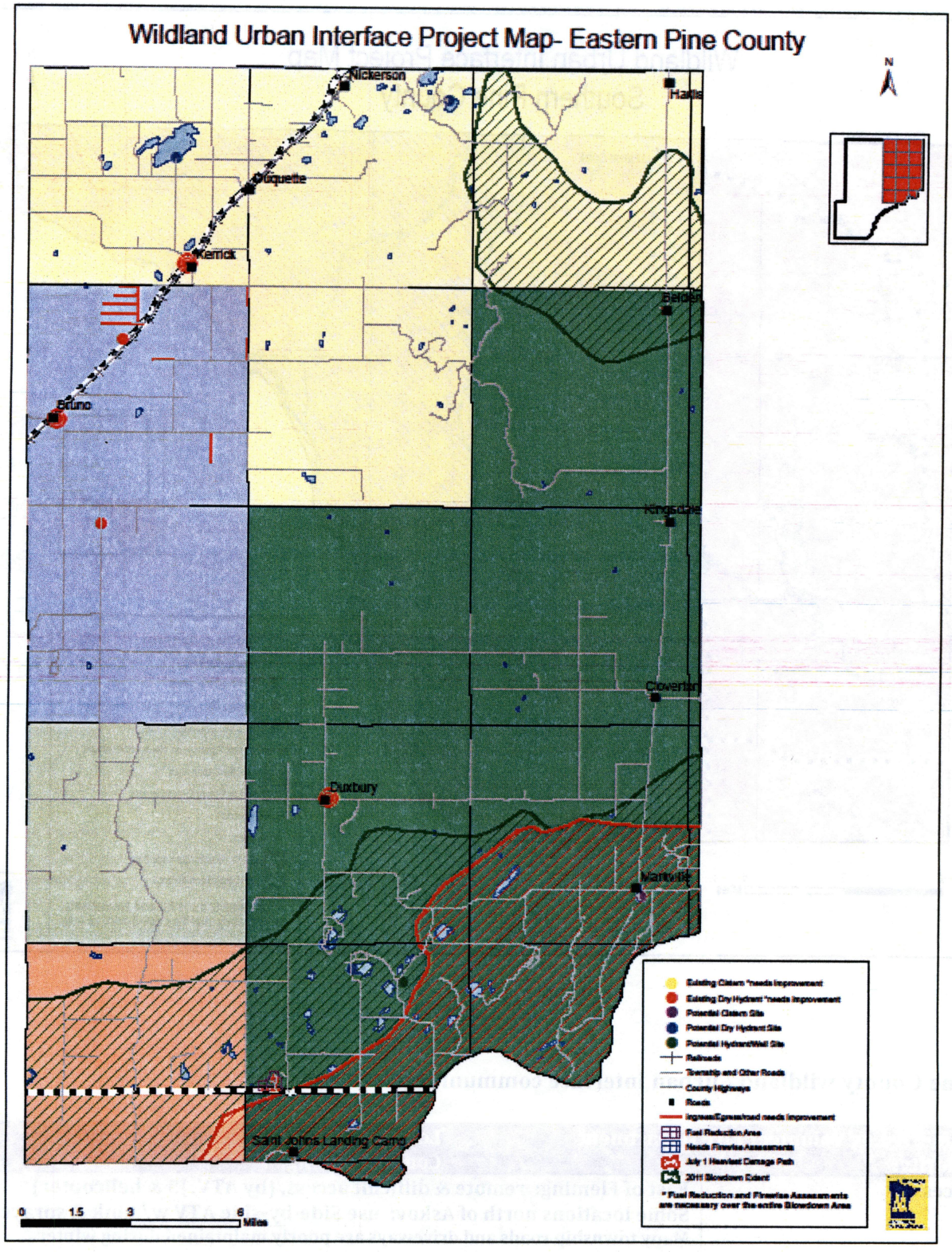
Fire Department Contacts: Name and number of local fire department contact.

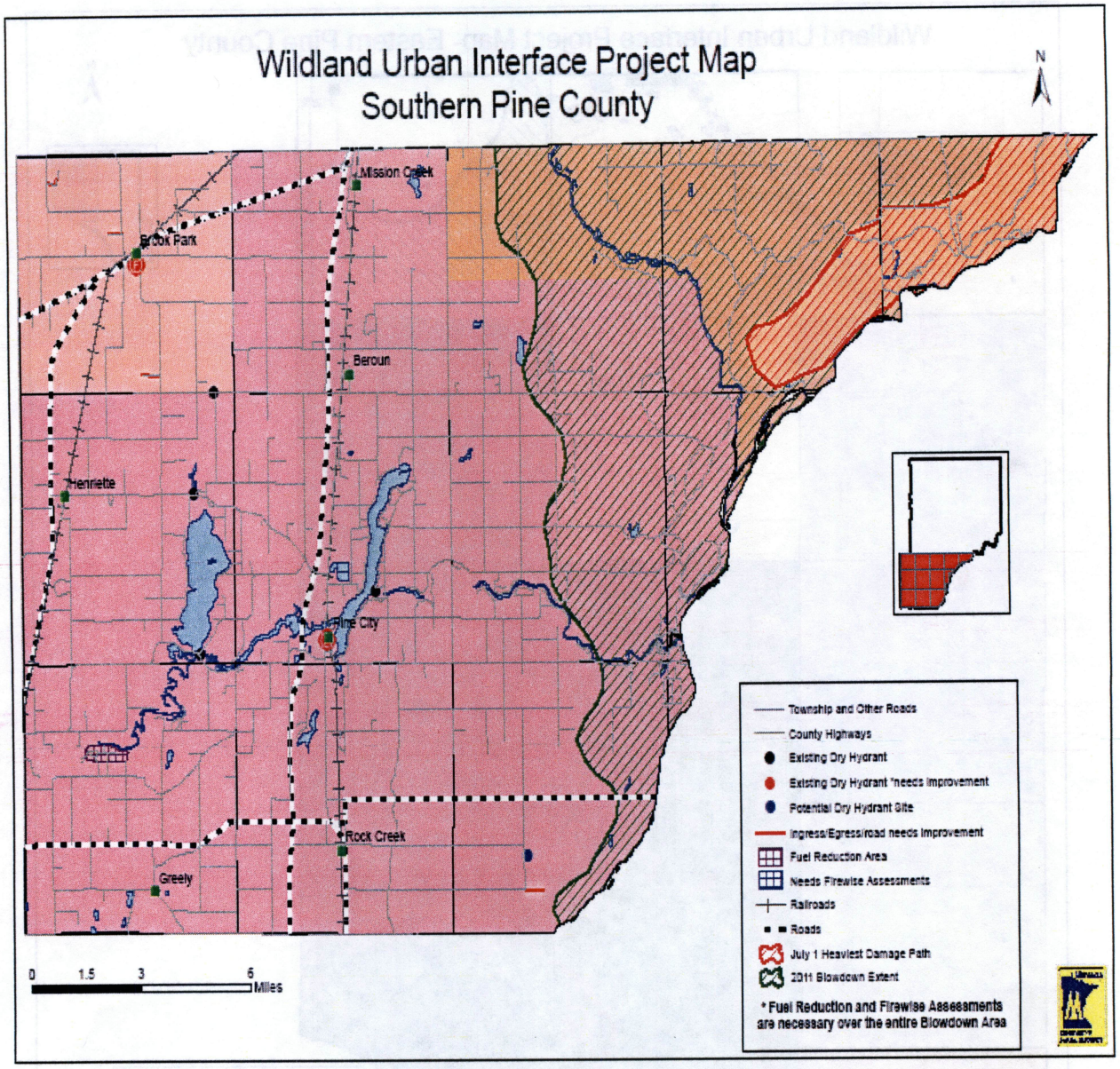
Wildfire Risk Assessment Rating: A synopsis of fire risk associated with the area related to the type of fuels, fuel hazards, fire occurrence, and values at risk, infrastructure, suppression capabilities, and response times.


Wildland Urban Interface Base Map
Fire Department Protection Areas
N
Sturgeon Lake
Willow River
Finlayson
Kerrick
Bruno
Askov
Duxbury
Sandstone
Hinckley
Brook Park
Pine City
0 1.5 3 6 9 12
Miles
Fire Stations
Railroads
County Highways
Roads
July 1 Heaviest Damage Path
2011 Blowdown Extent
Municipal Boundary
Political Township
Water Features


Wildland Urban Interface Project Map
N
Sturgeon Lake
Kerrick
Willow River
Bruno
Finlayson
Askov
Duxbury
Sandstone
Hinckley
Brook Park
Pine City
0 3 6 12
Miles
Existing Dry Hydrant
Existing Dry Hydrant *needs improvement
Potential Dry Hydrant Site
Ingress/Egress/road needs improvement
Railroads
Roads
July 1 Heaviest Damage Path
2011 Blowdown Extent
Fuel Reduction Area
Needs Firewise Assessments
* Fuel Reduction and Firewise Assessments are necessary over the entire Blowdown Area


Wildland Urban Interface Project Map- Western Pine County
N
Sturgeon Lake
Denham
Elson
Willow River
Rutledge
Finlayson
Askov
Banning
Groningen
Sandstone
Friesland
Pokegama
Cloverdale
Existing Dry Hydrant
Existing Dry Hydrant *needs improvement
Potential Dry Hydrant Site
Railroads
Township and Other Roads
County Highways
Roads
Ingress/Egress/road needs improvement
Fuel Reduction Area
Needs Firewise Assessments
July 1 Heaviest Damage Path
2011 Blowdown Extent
* Fuel Reduction and Firewise Assessments are necessary over the entire Blowdown Area
0
2
4
8
Miles


Wildland Urban Interface Project Map- Eastern Pine County
N
Nickerson
Hatts
Duquette
Kerrick
Belden
Bruno
Kingsdale
Cloverton
Duxbury
Mantville
Saint Johns Landing Camp
Existing Cistern *needs improvement
Existing Dry Hydrant *needs improvement
Potential Cistern Site
Potential Dry Hydrant Site
Potential Hydrant/Well Site
Railroads
Township and Other Roads
County Highways
Roads
Ingress/Egress/road needs improvement
Fuel Reduction Area
Needs Firewise Assessments
July 1 Heaviest Damage Path
2011 Blowdown Extent
* Fuel Reduction and Firewise Assessments are necessary over the entire Blowdown Area
0
1.5
3
6
Miles



Pine County wildland / urban interface communities:

Name: Askov Volunteer Fire Department **Priority:**	**Location:** **County Funding:**
Access:	**East of Fleming: remote & difficult access, (by ATV, J5 & helicopter)** **Some locations north of Askov: use Side-by-side ATV w/ tank & sprayer** **Many township roads and driveways are poorly maintained during winter months** **Spring breakup challenges equipment when roads are soft.** **Banning State Park roads are in protection area**
Local Topography:	**Flat farmland up to river** **Forested areas** **Areas around Kettle River can be steep & have cliffs**

Name: Askov Volunteer Fire Department Priority:	Location: County Funding:
Fuel Hazards:	**Logging slash/debris** **Homes and cabins scattered throughout the area-a high WUI** **Areas of upland and lowland grasses creating seasonal hazards** **Areas of dry swamp grasses that are year round threats**
Fire Occurrence:	**5 wildland fires / year in this protection area** **A low wildland fire occurrence with high potential**

Homes:
City of Askov
Partridge Twp

Population	Housing units	Per capita income	Poverty rate
368	181	$14,583.00	9.2%
518	247	$23,262.00	4.7%

Businesses:	
Jurisdiction:	
Infrastructure risk:	**Hiking trail, Grant-in-Aid Snowmobile trails** **Railroad** **Powerline that follows highway** **Gas station in City of Askov** **School**
Community values:	**Bar/restaurant** **Two store gas stations** **Two churches** **Fire hall** **Café** **Seasonal and year round homes** **Industrial forest lands**
Local Preparedness Capability:	**1 Type 3 engine** **20 fire fighters** **1 Type 6 engine** **1 Type 3 Tender (1000 gal capacity)**
Other:	**Protection area covers _ square miles** **Response times can be problematic**
Fire Department Needs:	**Wildland fire fighting gear (PPE)** **Training** **Chainsaws** **Bladder bags or pump cans** **Portable pumps** **Type 6 Engine** **Type 3 Tender** **Recruitment and retention of personnel** **Communication upgrades**
Firewise Information:	**Firewise Assessments completed by 2008** **Educating residents about fire dangers and prevention**
Fuels:	
Fire Regime/Condition Class:	**Historic Fire Regime: I, IV & V** **Condition Class I, II, III & Agricultural**

Name: Askov Volunteer Fire Department Priority:	Location: County Funding:
Vegetation Treatments:	**Improve homeowners defensible space** **Removal of hazardous fuels around residences** **Improving access and egress for emergency service vehicles** **Community education of vegetation treatments** **Reduce hazards near community/village improvements and infrastructure** **Logging** **Thinning** **Slash treatments for all landowners (public and private)** **Hazardous fuel reduction** **Biomass harvesting** **Pruning** **Prescribed burns** **Yard maintenance for fuel breaks** **Herbicide treatments to control vegetation** **Fire break maintenance** **Mowing lawns around structures** **Tree removal** **Weed control**

Name: Brook Park VFD Protection Area Priority:				Location: County Funding:
Access:	**Good roads for the most part. Areas of concern include Sportsmans LN, Hidden Tunnel LN and Alder Bark Dr, where roads are narrow and cabins are close together.** **(Ingress/egress & fuel reduction issues)**			
Local Topography:	**Marshland and agricultural land predominately.**			
Fuel Hazards:	**Areas of upland and lowland grasses creating seasonal hazards** **Homes and cabins scattered throughout the area-a high WUI** **Areas of dry swamp grasses that are year round threats**			
Fire Occurrence:	**5 wildland fires/year**			
Homes: City of Brook Park Brook Park Twp	Population 156 495	Housing units 61 223	Per capita income $14,353.00 $15,128.00	Poverty rate 13.5% 12.4%
Businesses:	**Gas station/restaurant** **Post office** **Monument company**		**Restaurant/bar** **Cemetery** **Logging operation**	
Jurisdiction:	**City of Brook Park** **Brook Park Twp** **Mission Creek Twp**			
Infrastructure risk:	**Railroad**			
Community values:				
Local Preparedness Capability:	**Type 3 Engine** **2 Type 6 engines**		**2 Type 2 tenders** **17 firefighters**	
Other:	**Protection area covers _ square miles** **Response times can be problematic**			

Name: Brook Park VFD Protection Area Priority:	Location: County Funding:
Fire Department Needs:	**New pumper/rescue engine (Type 3 Engine)** **Addition on firehall to store grass rigs**
Firewise Information:	**Assessments completed in 2006.**
Fuels:	
Fire Regime/Condition Class:	**Historic Fire Regime I & V** **Current Fire Regime:** **Condition Class 2/3 & Agriculture**
Vegetation Treatments:	**Improve homeowners defensible space** **Removal of hazardous fuels around residences** **Improving access and egress for emergency service vehicles** **Community education of vegetation treatments** **Reduce hazards near community/village improvements and infrastructure** **Logging** **Thinning** **Slash treatments for all landowners (public and private)** **Hazardous fuel reduction** **Biomass harvesting** **Pruning** **Prescribed burns** **Yard maintenance for fuel breaks** **Herbicide treatments to control vegetation** **Fire break maintenance** **Mowing lawns around structures** **Tree removal** **Weed control**

Name: Bruno FD Protection Area Priority:	Location: County Funding:
Access:	**State road access is poor.** **44-19 Sec. 1&2: Only one way in and out & the roads get narrower the farther you go in.** **44-18-Sec 4: Lots of ownerships with only one way in & out. The roads are narrow and dead-end with not turn-arounds for fire department equipment.**
Local Topography:	**Hilly, grassy areas throughout** **Forest & swamp scattered throughout**
Fuel Hazards:	**Black spruce & tamarack swamps** **Logging occurs here**
Fire Occurrence:	**4 wildland fires/year**

Homes:	Population	Housing units	Per capita income	Poverty rate
City of Bruno	102	56	$15,439.00	19.0%
Bruno Township	179	145	$13,490.00	33.3%
Fleming Township	115	121	$15,441.00	4.3%
Norman Township	247	197	$16,698.00	12.0%

Name: Bruno FD Protection Area Priority:		Location: County Funding:
Businesses:	Bar Post office	Nemadji Research Gas station
Jurisdiction:	City of Bruno Norman Township	Bruno Township Fleming Township
Infrastructure risk:	Railroad Gas station	Powerlines that run along Hwy 23 County garage
Community values:		
Local Preparedness Capability:	2-Type 3 Engines 2-Type 2 tenders	15 Firefighters 1-Type 6 Engine
Other:	Protection area covers __ square miles Response times can be problematic	
Fire Department Needs:	Updated water tender Updated grass rig New pagers & radios New rechargeable mountable flashlight for trucks Wildland PPE Pump cans & bladder bags 2 portable pumps (regular & floating) GPS ATV with trailer & shed for it (ATV needs to hold water & pump) Tracked ATV	
Firewise Information:	Assessments completed in 2006.	
Fuels:	Logging occurs here Area has spruce & tamarack swamps Slash piles & debris	
Fire Regime/Condition Class:	Historic Fire Regime: I, III, V Current Fire Regime: Condition Class: 1/2/3	
Vegetation Treatments:	Improve homeowners defensible space Removal of hazardous fuels around residences Improving access and egress for emergency service vehicles Community education of vegetation treatments Reduce hazards near community/village improvements and infrastructure Logging Thinning Slash treatments for all landowners (public and private) Hazardous fuel reduction Biomass harvesting Pruning Prescribed burns Yard maintenance for fuel breaks Herbicide treatments to control vegetation Fire break maintenance Mowing lawns around structures Tree removal Weed control	

Name: Duxbury, Danbury & Mille Lacs Band Lands Protection Areas Priority:	Location: County Funding:
Access:	**Duxbury/Danbury: County Road access is good** **Township road access is not good. Not much room for trucks to pass.** **Narrow driveways & no turn around to hunting cabins** **Nemadji State Forest roads are narrow.** **Mille Lacs Band: Roads to any housing subdivisions are paved. Good access for subdivisions. Usually off of main county road.**
Local Topography:	**Duxbury/Danbury: Farm fields, mostly hardwood forest** **Mille Lacs Band: Heavily wooded with lakes, swamps and creeks. Generally level terrain.**
Fuel Hazards:	**Duxbury/Danbury: Large area in blowdown timber** **Mille Lacs Band: Young pine plantations of different ages and size classes. (Some young –10 yrs old to 40 year old plantations in the blowdown area.) Balsam, spruce, white pine, red pine and jack pine. Jack pine occurs where there are no houses. Housing subdivision in area of 12'-15' tall spruce.**
Fire Occurrence:	**Duxbury/Danbury: 2 wildland fires/year** **Mille Lacs Band: Average 2 to 3 reported fires within Pine County per year in the wooded areas and grasslands.**
Mille Lacs Band: **Homes:** Village of Duxbury Arna Township New Dorsey Twp Ogema Township Wilma Township	**Mille Lacs Band: 175 year-round homes now, 50-100 more expected to be built in next few years. 10 of these homes are remote, 90% are located w/in subdivisions.** Population: 86, 74, 298, 137 Housing units: 194, 212, 207, 114 Per capita income: $19,521.00, $24,298.00, $13,042.00, $7,193.00 Poverty rate: 10.3%, 7.1%, 34.0%, 22.5%
Businesses:	**Duxbury/Danbury: Duxbury Store** **County Garage** **Tribal Center** **Offices** **Lake Lena** **Mille Lacs Band: Grand Casino** **Convenience Store** **Community Center**
Jurisdiction:	**Duxbury/Danbury:** **New Dosey Township (3 sections)** **Arna Township** **Wilma Township** **Cloverton** **Markville** **Duxbury** **Pine County Mutual Aid for all departments works very well** **Mille Lacs Band: Danbury FD Fire Mutual Aid w/ Duxbury, Sandstone, Hinckley** **MNDNR has IA responsibility w/ BIA &** **Mille Lacs Band**
Infrastructure risk:	**Mille Lacs Band: Convenience store, community center & housing** **Older overhead powerlines** **State Recreational trails that may run through tribal lands**
Community values:	**Duxbury/Danbury: Boulder Lake State Forest Campground** **2 Private campgrounds** **Mille Lacs Band: Gas station, convenience store, community center, year-round homes**

Name: Duxbury, Danbury & Mille Lacs Band Lands Protection Areas Priority:	Location: County Funding:
Local Preparedness Capability:	Duxbury/Danbury: 3-Type 3 engines 2-Type 2 Tenders 2-Type 6 engines 17 firefighters Mille Lacs Band: 1-Type 6 engine Floating pump Volume pump 1,000' - 1.5" hose 800'- 1" hose Mop up kit & vehicle + extra Equipment Chain saw kit + 3 chain saws 4 (digital) handheld radios 2 mobile radios 2 GPS units
Other:	Protection area covers _ square miles Response times can be problematic
Fire Department Needs:	Duxbury/Danbury: Large diameter well Some Type 6 Engines Chainsaws, training, Wildland & chainsaw PPE Communication Equipment Portable pumps Mille Lacs Band: J-5 tracked vehicle Electric-feed hydrant across from Community Center (Cty Rd 173) Ingress/egress for hydrant
Firewise Information:	Duxbury/Danbury: Assessments completed in 2006 Mille Lacs Band: Firewise assessments done in 2006, needs to be updated. Fire Prevention Specialist position open currently. Fire Prevention Plan in place. Fire Management & analysis in place (through BIA).
Fuels:	Duxbury/Danbury: Majority of timber has blown down in July 2011 storm Mille Lacs Band: Primarily northern hardwoods, aspen, jack pine, spruce, balsam fir (natural). One red pine plantation in patches (about 40 acres total) surrounded by northern hardwoods. Spruce plantation near casino w/ plans to thin it for 40 homes to be scattered throughout in subdivision layout. (Initially, 20 homes will be built by end of 2012.) Swamp grass, open fields. In Firewise assessment of 2006, open areas around homes has been increased (with grass)and mowed short. Plan on doing more fuels reduction within 50' of existing yards.
Fire Regime/Condition Class:	Historic Fire Regime: I, III, V Current Fire Regime: Condition Class: 2/3 & Agriculture

Name: Duxbury, Danbury & Mille Lacs Band Lands Protection Areas Priority:	Location: County Funding:
Vegetation Treatments:	Mille Lacs Band: Improve homeowners defensible space (in plan above) Maintain environmental education trails around school, by mowing Mowing lawns around school & community center Reduce hazards around community village infrastructure Overall: Vegetation Treatments: Improve homeowners defensible space Removal of hazardous fuels around residences Improving access and egress for emergency service vehicles Community education of vegetation treatments Reduce hazards near community/village improvements and infrastructure Logging Thinning Slash treatments for all landowners (public and private) Hazardous fuel reduction Biomass harvesting Pruning Prescribed burns Yard maintenance for fuel breaks Herbicide treatments to control vegetation Fire break maintenance Mowing lawns around structures Tree removal Weed control

Name: Finlayson VFD Protection Area Priority:	Location: County Funding:
Access:	Bremen Twp: Lower 50%, County & Twp roads, mostly gravel; $3,162.00 annually Finlayson Twp: 58%: combination of state hwy, county & twp roads; $3,675.00 annually City of Finlayson: black-topped streets, outer city streets-gravel $6,500.00 annually Pine Lake Twp: 100%, $14,478.00 annually Kettle River Twp: county & twp roads, some area not accessible by road, $1,854.00 annually
Local Topography:	Bremen Twp: Combination of high ground & swamp Fin: several lakes, swamp, low ground & high ground mix. Finlayson(city) two lakes, low ground & swamp Pine Lake Twp: lots of lakes, rivers & low ground with a good mix of high ground Kettle River Twp: hilly, rolling, pine River, lowland
Fuel Hazards:	Bremen: Minimal Finlayson: road side fuels are always present: grass, timber, brush Pine Lake Twp: grass, brush, pine trees, road side fires have plagued us for several years Kettle River Twp: lowland vegetation

Name: Finlayson VFD Protection Area Priority:				Location: County Funding:
Fire Occurrence:	**Minimal; 6.3 wildfires/year** **Finlayson: low to moderate** **Pine Lake Twp: moderate** **Kettle River Twp: low**			
Homes:	Population	Housing units	Per capita income	Poverty rate
City of Finlayson	314	136	$16,818.00	8.2%
Finlayson Township	506	244	$15,070.00	12.4%
Pine Lake Township	576	479	$16,903.00	12.4%
Businesses:	**Farms, home businesses, conservation companies**			
Jurisdiction:	**Bremen Twp** **Pine Lake Twp** **Finlayson Twp & city of Finlayson** **Kettle River Twp**			
Infrastructure risk:				
Community values:				
Local Preparedness Capability:	**1 Type 3 Eng** **1 Type 2 Tender** **1 Type 6 grass rig** **20 firefighters**			
Other:	**Protection area covers _ square miles** **Response times can be problematic**			
Fire Department Needs:	**New, larger fire hall** **New grass rig** **New side by side ATV w/trailer for better access** **New Indian packs** **New wildland firefighter PPE**			
Firewise Information:	**Firewise assessments completed several years ago (2008), may need updating**			
Fuels:				
Fire Regime/Condition Class:	**Historic Fire Regime:** **Current Fire Regime:** **Condition Class:**			
Vegetation Treatments:	**Improve homeowners defensible space** **Removal of hazardous fuels around residences** **Improving access and egress for emergency service vehicles** **Community education of vegetation treatments** **Reduce hazards near community/village improvements and infrastructure** **Logging** **Thinning** **Slash treatments for all landowners (public and private)** **Hazardous fuel reduction** **Biomass harvesting** **Pruning** **Prescribed burns** **Yard maintenance for fuel breaks** **Herbicide treatments to control vegetation** **Fire break maintenance** **Mowing lawns around structures** **Tree removal** **Weed control**			

Name: Hinckley FD (includes Pathfinder Village & St. Croix State Park) Protection Area Priority:	Location: County Funding:
Access:	**Pathfinder Village: all roads are gravel. Main entrance is good. Roads w/in Village are narrow with large number of dead ends & small Cul-de-sacs. SCSP: Cty Rd 22 (asphalt) runs directly into park for appx. 7 miles. At 5 miles in to park, an intersection provides access on gravel roads 5 miles to the east end and 12 miles to west end of the park. If access is needed east of Crooked Creek, gate 18, on Hwy 48, can be used. The park has 100+ miles of trails and roads that provide more direct access.**
Local Topography:	**Pathfinder Village: rugged topography SCSP: from very flat to some rolling hills/ridges with very little relief. The 34,000 acre park is made up of a combination of sandy soils and low marsh/wetlands.**
Fuel Hazards:	**SCSP: Area hit hard by blowdown in 2011. Also hit by blowdown and tornadoes in last 5 years. The July 1st blowdown consists of aspen, oak and jack pine canopy with a fine (FM1 & FM3) fuels understory in much of the area. Where light penetrates, 1 hour grasses component isn't present, oak and aspen leaf litter is.**
Fire Occurrence:	**9.5 wildland fires/yr Suppression efforts in the last 30 years have eliminated any fire outside of Rx burns.**
Homes: City of Hinckley Arlone Township Barry Township Clover Township Crosby Township Dell Grove Township Hinckley Township Munch Township	**Pathfinder Village: very large number of seasonal homes w/some year round homes SCSP: the park has nearly 200 structures w/in the infrastructure ranging from outdoor restrooms to CCC built log structures to residences and a shop complex. 3 group centers located at the west end, center and east end of the park make up a large number of the structures. Modern logging has reduced many of the fuels nearby, but St. Johns Landing group center is of <u>HIGH</u> concern until fuels are removed.**

Population	Housing units	Per capita income	Poverty rate
1,291	614	$15,537.00	12.4%
345	224	$14,867.00	6.7%
587	258	$14,740.00	17.7%
316	1,281	$22,043.00	9.1%
97	77	$22,159.00	6.9%
699	447	$18,399.00	9.5%
820	345	$15,118.00	12.9%
222	168	$19,588.00	6.7%

Businesses:	**Pathfinder Village: 1 general store SCSP: Canoe guide vendor who has a contract with the park.**
Jurisdiction:	**Hinckley FD for structure protection St. Croix State Park & MN DNR for wildland protection Mutual Aid: Sandstone Forestry, Hinckley VFD, Danbury VFD, WI DNR**
Infrastructure risk:	**SCSP: electronic transmission boxes are located throughout the park. The shop complex could act as ICP with phones, faxes, copiers and computer access. Special attention would be needed in this area.**
Community values:	**Pathfinder Village: In summer, up to 10,000 people can visit area, boosting local businesses SCSP: Campground and trail system throughout park. Some areas of the park are <u>HIGHLY</u> sensitive areas due to historical value from CCC era. Sites have been identified through Resource Spec.**

Name: Hinckley FD (includes Pathfinder Village & St. Croix State Park) Protection Area Priority:	Location: County Funding:
Local Preparedness Capability:	Hinckley Fire Hall 3-Type 1 Structure engines 1-2,500 gal water tender 1-2,000 gal water tender 1-Type 6 engine 1-J-5 Tracked vehicle 2 dry hydrants in Pathfinder Village SCSP: 3-Type 6/7 engines 1-1,200 gal water tanker Appx. 20 FFT2s 1,500 gal portable drop tank Quick fill station Drip torches, back pack pumps, Hand tools
Other:	SCSP: 2 rivers make up the SE & W boundaries of the park and can used for water source. Also various wetlands throughout the park that can be used as a water source.
Fire Department Needs:	Wildland PPE Chainsaws & training & PPE SPSC: 1-Type 4 wildland engine 1-Type 6/7 engine staged during moderate or higher fire danger 1000' 1.5" hose 2-1,500 gal portable drop tanks 3-chainsaws w/20" bars 1 Waterous pump (stay on one of the Type 7 engine) 1-Multiquip 4-stroke pump (6-9hp) w/2.5" discharge hose for high vol. drafting completer w. 100' of hose 2-MarkIII pump kits for remote area drafting capability Sprinkler system for structure protection (inc. pump & hose) PPE
Firewise Information:	Assessments done within last 5 years at Pathfinder Village & SCSP. Pathfinder Village: Complete evacuation plan in place. Copy of plan at fire hall and local DNR office.
Fuels:	SCSP: Very large amount of blowdown timber
Fire Regime/Condition Class:	Historic Fire Regime: I, III, IV, V Current Fire Regime: Condition Class: 2/3
Vegetation Treatments:	Improve homeowners defensible space Removal of hazardous fuels around residences Improving access and egress for emergency service vehicles Community education of vegetation treatments Reduce hazards near community/village improvements and infrastructure Logging Thinning Slash treatments for all landowners (public and private) Hazardous fuel reduction Biomass harvesting Pruning Prescribed burns Yard maintenance for fuel breaks Herbicide treatments to control vegetation Fire break maintenance Mowing lawns around structures Tree removal Weed control

Name: Kerrick FD Protection Area Priority:	Location: County Funding:
Access:	**Access to most homes in our area is good. Structures near and in Nemadji State Forest not as good. Narrow roads—difficult to pass. Access difficult around Nemadji State Forest. Township roads are good (access)**
Local Topography:	**Rolling hills, not too steep. Lakes scattered throughout. Mix of conifer & hardwood cover A few pine plantations (less than 100 acres/plantation); different ages starting at 20 years and older**
Fuel Hazards:	**Lots of logging. Lots of blowdown in Nemadji State Forest Burn barrels Private land burning Railroad fires**
Fire Occurrence:	**4.4 wildland fires/year**

Homes:	Population	Housing units	Per capita income	Poverty rate
City of Kerrick	71	34	$14,324.00	2.7%
Kerrick Township	272	218	$18,478.00	13.6%
Nickerson Township	154	117	$16350.00	8.6%
Park Township	37	67	$17,398.00	0.0%

Businesses:	**Duquette Store** — **Dave's Tire** **Oaklake Campground & RV** — **Numerous small farms** **Nickerson Bar** — **Prachar's Pub** **Kerrick Post Office** — **Nickerson Campground** **Northview Bank** — **Tavern in Duquette** **Matusczack's Campground**
Jurisdiction:	**City of Kerrick Kerrick Township Nickerson Township (area is 2 townships: Nickerson East & West) Park Township**
Infrastructure risk:	**Railroad Duquette store Main power line along State Hwy 23**
Community values:	**Nemadji State Forest (Gafvert Campground): heavily used area, particularly on weekends, many miles of ATV and snowmobile trails**
Local Preparedness Capability:	**1-Type 2 Engine** — **1-Type 2 Tender** **2-Type 6 Engines** — **20 firefighters**
Other:	**Protection area covers 144 square miles Response times can be problematic**

Name: Kerrick FD Protection Area Priority:	Location: County Funding:
Fire Department Needs:	1-Type 6 Engine Water Tender Wildland PPE 2 chainsaws + PPE + training 2 portable pumps Drop tank Hall addition for equipment Large well at the hall Bladder bags Warning signs for roads Lights for Helicopter landing zone GPS equipment & training Better access for dry hydrant on Hwy 23 north of Nickerson Better water access at Gafvert Campground Better water access at Oak Lake Warning siren Collapsible buckets
Firewise Information:	Level 2 assessments completed in 2006.
Fuels:	Logging, especially in Nemadji State Forest Blowdown timber in Nemadji State Forest Pine plantations
Fire Regime/Condition Class:	Historic Fire Regime: I, III, IV, V Current Fire Regime: Condition Class: 1/2/3, & small amount of agriculture
Vegetation Treatments:	Improve homeowners defensible space Removal of hazardous fuels around residences Improving access and egress for emergency service vehicles Community education of vegetation treatments Reduce hazards near community/village improvements and infrastructure Logging Thinning Slash treatments for all landowners (public and private) Hazardous fuel reduction Biomass harvesting Pruning Prescribed burns Yard maintenance for fuel breaks Herbicide treatments to control vegetation Fire break maintenance Mowing lawns around structures Tree removal Weed control

Name: Pine City FD Protection Area Priority:	Location: County Funding:
Access:	**Pine city FD: Minimum maintenance roads** **NE quad: very few roads into State Forest** **SE quad: few roads in State forest& along Scenic Riverway**
Local Topography:	**All areas: farmland, swamp** **NE quad: hilly, Cross Lake** **SE quad: hilly, swampy, some very remote farmland** **NWquad; railroad land, Lake Pokegama**
Fuel Hazards:	**blowdown of trees, swamp & farmland**
Fire Occurrence:	**23 wildland fires/year**

Homes:	Population	Housing units	Per capita income	Poverty rate
City of Pine City	3,043	1,275	$16,802.00	15.0%
City of Rock Creek	1,119	417	$17,281.00	11.5%
City of Henriette	101	38	$13,312.00	12.6%
Chengwatana Township	809	480	$16,974.00	12.6%
Pine City Township	1,249	663	$20,074.00	4.0%
Pokegama Township	2,570	1,468	$19,027.00	7.3%
Royalton Township	976	419	$18,729.00	4.6%

Businesses:	
Jurisdiction:	**Braham, Rush City, Mora, MNDNR, Brook Park** **Hinckley, Grantsburg, WIDNR, MNDNR, Rush City, Brook Park**
Infrastructure risk:	
Community values:	
Local Preparedness Capability:	**NE quad: Have been able to get to most of fires except in forest**
Other:	**Protection area covers _ square miles** **Response times can be problematic**
Fire Department Needs:	**All of area: aerial map of area to see cabins among blowdown,** **Dry hydrants NE, SW quad: hard suction** **Strainers** **Floating pump**
Firewise Information:	**None in area yet**
Fuels:	
Fire Regime/Condition Class:	**Historic Fire Regime: I, III, V** **Current Fire Regime:** **Condition Class: 2/3**

Name: Pine City FD Protection Area Priority:	Location: County Funding:
Vegetation Treatments:	**Improve homeowners defensible space** **Removal of hazardous fuels around residences** **Improving access and egress for emergency service vehicles** **Community education of vegetation treatments** **Reduce hazards near community/village improvements and infrastructure** **Logging** **Thinning** **Slash treatments for all landowners (public and private)** **Hazardous fuel reduction** **Biomass harvesting** **Pruning** **Prescribed burns** **Yard maintenance for fuel breaks** **Herbicide treatments to control vegetation** **Fire break maintenance** **Mowing lawns around structures** **Tree removal** **Weed control**

Name: Sandstone FD Protection Area Priority:	Location: County Funding:
Access:	**Ingress/Egress concerns regarding new homes on Trapp LN near Grindstone LK. Otherwise most of coverage area has improved roads.** **Main County Roads are well maintained year round**
Local Topography:	**Steep cliffs along Kettle River, Banning State Park & in city of Sandstone** **Generally flat otherwise**
Fuel Hazards:	**Junk yards (in middle of City of Sandstone)**
Fire Occurrence:	**13 wildland fires/year**

Homes:	Population	Housing units	Per capita income	Poverty rate
City of Sandstone	1,549	634	$18,053.00	16.7%
Danforth Township	84	81	$22,171.00	40.3%
Sandstone Township	1,614	358	$18,193.00	7.7%

Businesses:	**Logging operation west of town, Wildcat Sanctuary** **Grocery store** **Federal prison** **Gas stations (3)** **Tightly spaced downtown in City of Sandstone** **Special needs employment center** **Christian school (K-6)** **Gun range**
Jurisdiction:	**City of Sandstone, Sandstone Township** **Dell Grove** **Danforth Township**

Name: Sandstone FD Protection Area Priority:	Location: County Funding:
Infrastructure risk:	Prison Railroad I-35 freeway Hospital Trunk powerlines Pipelines (Minnesota Resources) County Highway Garage Sheriff's office
Community values:	Audubon Center of the North Nature photography business
Local Preparedness Capability:	2-Type 3 Engines 1-Type 6 Engine 2-Type 3 tenders 14 firefighters
Other:	Protection area covers _ square miles Response times can be problematic
Fire Department Needs:	Type 6 grass rig Miscellaneous hose & plumbing Wildland PPE Portable pumps
Firewise Information:	Assessment completed in 2006. New structures on NE side of Grindstone Lake
Fuels:	Mostly hardwood with pine areas interspersed Agriculture (tall & short grasses throughout)
Fire Regime/Condition Class:	Historic Fire Regime: I, III, IV & V Current Fire Regime: Condition Class: 1/2/3 & Agriculture
Vegetation Treatments:	Improve homeowners defensible space Removal of hazardous fuels around residences Improving access and egress for emergency service vehicles Community education of vegetation treatments Reduce hazards near community/village improvements and infrastructure Logging Thinning Slash treatments for all landowners (public and private) Hazardous fuel reduction Biomass harvesting Pruning Prescribed burns Yard maintenance for fuel breaks Herbicide treatments to control vegetation Fire break maintenance Mowing lawns around structures Tree removal Weed control

Name: Sandstone DNR Forestry Priority:	Location: County Funding:
Access:	Increase accessibility to Type 4 ENG capability on South Extension & Potlatch Forest RDs as well as the Gandy to Harlis RD connection; evaluate & sign weight limits on bridge @ Tamarack Horsecamp, Trout Brook and the Gandy crossing into WI; general trail maintenance for Type 6 grass rigs; trail identifiers/signs
Local Topography:	Steep terrain along streams and rivers within county, old quarries are inaccessible with equipment
Fuel Hazards:	Blowdown & regenerating forests w/ heavy slash; pine forests/plantations; vast stretches of continuous fuels particularly with swamps
Fire Occurrence:	Average 100 fires/yr within Pine County
Homes:	Entire County
Businesses:	Entire County
Mutual Aid:	Pine County & neighboring Fire Departments
Jurisdiction:	Wildfire within Pine County and land managers on State Forestry Lands
Infrastructure risk:	Improvement and maintenance of evacuation routes within the forest; trail bridges used for evacuation
Community values:	
Local Preparedness Capability:	Wildfire Initial Attack ready which includes 5 Type 6 Engines, 3 tracked vehicles and typically a Type 3 helicopter during spring fire season. Given recent fuel conditions change and the resulting anticipated change in tactics, Sandstone Forestry is likely lacking some qualifications and a Type 2 helicopter. See Section X. Protection Capabilities.
Other:	Need for an Incident Command Post (facility) which will be necessary if Pine County were to have a Type 3 Fire or greater. Forest Road mile marker signs & road signs.
Fire Department Needs:	Increased air support; resolve communications issues; training (coursework & time, DNR and mutual aid with VFDs & Sheriffs Dept.); increased heavy equipment; chainsaws; radios and PPE for Emergency Equipment Rental Agreement Contractors
Firewise Information:	Forest User information/outreach regarding fire danger & prevention within State Forests (signs & physical handouts); County-wide public information/outreach regarding fire danger & prevention on private lands.
Fuels:	
Fire Regime/Condition Class:	See Condition Class Map
Vegetation Treatments:	Forest RD right-of-way maintenance to serve as fuel breaks; strategically break up fuel types/conditions in all forests with an emphasis on areas near private ownerships.

Name: Sturgeon Lake FD Protection Area Priority:	Location: County Funding:
Access:	**Most access is acceptable for structure protection** **Wildland fires may by remote**
Local Topography:	**Relatively flat with agricultural grasslands** **Pine plantations & hardwood forests as well**
Fuel Hazards:	**One area in City of Denham overgrown grass, burned 2 years ago** **Swamp grasses, overgrown brush and pine plantations** **Large pine plantations, pine litter** **Many vacant homesteads** **Old sawmill site (vacant)** **Potential for crown fire** **Tall grasslands abutting pine plantations**
Fire Occurrence:	**3.5 wildland fires/year**

Homes:	Population	Housing units	Per capita income	Poverty rate
City of Sturgeon Lake	247	151	$15,501.00	15.3%
City of Denham	40	23	$10,106.00	17.6%
Birch Creek Township	217	134	$15,839.00	10.7%
Sturgeon Lake Township	409	169	$13,563.00	4.3%
Windemere Township	1,489	1,347	$21,346.00	7.7%

Businesses:	**Bar** **Gas stations** **Repair shops** **Strip mall near freeway** **Minimum security Prison** **Large tree nursery** **Timberline campground**
Jurisdiction:	**Sturgeon Lake** **Sturgeon Lake Township** **Birch Creek Township** **City of Denham** **Mutual aid to surrounding departments**
Infrastructure risk:	**I-35 freeway** **Pipelines** **Pine plantations abut several surrounding lakes that have many lake homes** **Water treatment settling ponds**
Community values:	**Large tree nursery** **Timberline Campground**
Local Preparedness Capability:	**2-Type 3 engines** **1-Type 4 engine** **1-Type 6 engine** **1-Type 2 tender** **14 fire fighters**
Other:	**Protection area covers _ square miles** **Response times can be problematic**
Fire Department Needs:	**Wildland fire truck Type 6** **Fire hall in Denham** **Medical rig** **Type 3 wildland/structure pumper** **2,000 gal – 2,500 gallon tanker** **Improved radio communication/repeaters** **Wildland PPE** **Hose and affiliated equipment**
Firewise Information:	**Completed assessments in 2006.**
Fuels:	**Pine litter** **Hardwood blowdown from 2005 in Sturgeon Lake** **Swamps, barns, hay bales, vacated homesteads**

Name: Sturgeon Lake FD Protection Area Priority:	Location: County Funding:
Fire Regime/Condition Class:	Fire Regime: I, III, IV, V Current Fire Regime Condition Class: 1/2/3 & agriculture
Vegetation Treatments:	Improve homeowners defensible space Removal of hazardous fuels around residences Improving access and egress for emergency service vehicles Community education of vegetation treatments Reduce hazards near community/village improvements and infrastructure Logging Thinning Slash treatments for all landowners (public and private) Hazardous fuel reduction Biomass harvesting Pruning Prescribed burns Yard maintenance for fuel breaks Herbicide treatments to control vegetation Fire break maintenance Mowing lawns around structures Tree removal Weed control

Name: Willow River Priority:	Location: County Funding:
Access:	Bald Eagle, Starlight Dr, Daily Lake Rd, Prachar Rd, Sunrise Dr, Dago Lake Fire Rds, Chokecherry Lane, Stepan Rd & Boundary Ave Military Rd have limited access. There are many dead end roads in the area.
Local Topography:	Flat land.
Fuel Hazards:	Significant wetlands with flashy fuels, many tall grass fields and hardwood forests. Grain storage & drying facilities
Fire Occurrence:	5.3 wildland fires/year

Homes:	Population	Housing units	Per capita income	Poverty rate
City of Willow River	301	155	$16,620.00	16.9%
City of Rutledge	196	110	$19,040.00	19.6%
Bremen Township	246	181	$12,504.00	5.9%
Kettle River Township	491	342	$16,370.00	15.9%

Businesses:	School 2 bars Willow River Mercantile Chipmunk Park & Campground 2 gas stations 3 or 4 construction businesses with a large inventory of underground directional boring equipment Camp Heartland Challenge Incarceration Program (CIP)

Name: Willow River Priority:	Location: County Funding:
Jurisdiction:	City of Willow River Norman Township Kettle River Township Bremen Township
Infrastructure risk:	I-35 freeway New development in wildland areas Power Transmission lines Pipelines Wastewater station
Community values:	Camp Heartland Cabins Snowmobile trails Seasonal recreation area Snowmobile club
Local Preparedness Capability:	2-1,000 gallon pumpers 1-3,400 gal tanker 93 Suburban personnel vehicle 20 firefighters including 7 EMTs & 5 First Responders 1-2,300 gal tanker 2 older gas rigs (1977) '85 panel personnel hauler
Other:	Protection area covers _ square miles Response times can be problematic
Fire Department Needs:	Grass rig Tactical tender Hall expansion in Willow River Satellite hall in Ruttledge Communications equipment Floating pump Wildland PPE Exhaust system, SCBA equipment
Firewise Information:	Completed assessment in 2006. Dry hydrant needed, see map
Fuels:	See map to address areas
Fire Regime/Condition Class:	Historical Fire Regime: I, III, IV & V Current Fire Regime: Condition Class: 1/2/3 & Agriculture
Vegetation Treatments:	Improve homeowners defensible space Removal of hazardous fuels around residences Improving access and egress for emergency service vehicles Community education of vegetation treatments Reduce hazards near community/village improvements and infrastructure Logging Thinning Slash treatments for all landowners (public and private) Hazardous fuel reduction Biomass harvesting Pruning Prescribed burns Yard maintenance for fuel breaks Herbicide treatments to control vegetation Fire break maintenance Mowing lawns around structures Tree removal Weed control

VII. Planning Process:

Pine County Community Wildfire Protection Planning began in September of 2011, led by local County Government officials working with area fire departments, the Mille Lacs Band of Ojibwe, and the Minnesota Department of Natural Resources. 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, the planning group proposed eleven different planning (Wildland/Urban Interface) areas to present to Pine County communities for project input, prioritization and review.

Additional community meetings were held to build and prioritize projects. This plan is a work in progress and will be amended by the local community coordination group, 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 Pine County.

1. Description of Participants

Askov Fire Department, Brook Park Fire Department, Bruno Fire Department, Duxbury Fire Department, Finlayson Fire Department, Hinckley Fire Department, Kerrick Fire Department, Pine City Fire Department, Sandstone Fire Department, Sturgeon Lake Fire Department, Willow River Fire Department, Pine County Emergency Management, Pine County Sheriff's Office, Mille Lacs Band of Ojibwe, Minnesota Department of Natural Resources, Small Business Representatives, Minnesota "Firewise" Program.

2. Collaboration and Community Outreach

The multi-faceted nature of problems addressed by a Community Wildfire Protection Plan (CWPP) necessitates communication and collaboration across private and public lands, administrative boundaries, geographic regions and other special areas of interest. Pine County Community Wildfire Protection Plan meetings were publicly announced in local papers. Local community meetings were held at the Pine County Court House, Duxbury Fire Station, and Sandstone Area DNR Station. Community meetings were used to inform and update the local communities, address local 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, the public, and various public interest groups collaborating to make decisions to establish priorities, cooperate on activities, and to increase the public awareness of the risk of to Pine County communities and their environments. The Pine County Community Wildfire Protection Plan will continue to be a collaborative

approach as the coordination group moves forward with on the ground mitigation plans and planning.

3. Description of Community Meeting Steps:

a. Convene decision makers:
In September of 2011, Pine County formed a core team including representatives from the County Sheriff's Office, local fire departments, Tribal governments, and the Minnesota Department of Natural Resources to begin development of a Community Wildfire Protection Plan for Pine County.

b. Engaged Interested Parties:
The Pine County planning group held meeting in conjunction with the Pine County Fire Mutual Aid association. Public meetings were announced in local papers and radio station. Nine meetings were held during the planning process. Public meetings were held at various fire departments throughout the county, planning group meetings were open to the public and held at the Sandstone Area DNR office, in the City of Sandstone.

c. Established a Community Base Map:
The planning group worked together to establish a community base map which defines Pine County's eleven WUI communities and displays areas at risk, forested areas containing critical infrastructure, and areas at risk for large-scale fire disturbance.

d. Developed a Community Risk Assessment:
The planning group worked to develop a community risk assessment that considers fuel hazards; risk of wildfire occurrence to homes, businesses, and essential infrastructure at risk; other community values at risk; and local wildfire and structural preparedness capability. The group rated each risk factor and incorporated the results into this community Wildfire protection plan as appropriate.

e. Established Community Priorities and Recommendations:
The planning group used the base map and community risk assessment to facilitate collaborative community discussions. Two community meetings were held to address the priority WUI areas. The Coordinating group will lead additional community discussions to identify specific local priorities for fuel treatment, reduction of structural ignitability, and other issues of interest as the plan is implemented on the localized level.

f. Developed an Action Plan and Assessment Strategy:
The planning group developed a detailed implementation strategy to accompany the community Wildfire protection plan and a monitoring plan that will ensure its long-term success. The Coordinating group will be responsible for plan implementation.

g. Finalize Community Wildfire Protection Plan:
Community partners finalized the community Wildfire protection plan and held a public hearing to share results with the community and key partners.

VIII. Pine County Community Profile:

1. Information about Pine County

a. General

Pine County is located on the border with Wisconsin, in east central Minnesota. The county covers 1411 square miles and has a population of 29,750. Because the county is located midway between the Twin Cities of Minneapolis/Saint Paul and City of Duluth, outdoor recreation activities double the daily population of the county during the summer months.

Pine County enjoys easy access to big city amenities while maintaining the charming, small town atmosphere that we are proud of. The County offers an abundance of scenic and recreational activities with many lakes and rivers to make up over 23 square miles of water. The Chengwatana State Forest, General Andrews State Forest, Banning State Park, St. Croix State Forest and Park, and the Nemadji State Forest boast miles of hiking, ATV, canoeing, kayaking, rock climbing, cross-country skiing and snowmobile trails.

Beyond the camping opportunities on public land Pine County contains numerous private campgrounds that cater to both short term and long term visitors. ATV and snowmobile clubs maintain a substantial network of private trails through the county. County ordinance allows limited use of county roads for recreational use. The fifth busiest tribal casino in the United States is located in the county and draws over 700,000 visitors a year. The Mille Lacs Band of Ojibwe, Tribal community, is spread through the eastern portion of the county and boasts a population of over 800.

b. County Government

An elected Board of Commissioners governs Pine County. The board consists of five elected officials, with each representing one of the five districts. On a yearly basis the Board elects one of its members to serve as Chair Person. An appointed County Administrator oversees the daily operation of county government and prepares information and plans for the County Board.

Pine County primary and secondary education is provided by seven school districts, the county contains four High Schools, one Tribal School, and several private primary schools. The Pine County Technical College is located in Pine City and provides a wide range of post secondary educational opportunities.

Pine County is divided into five soil and water districts, each with an elected supervisor. The county also participates in several watershed districts, and other land management agreements.

c. Public Safety

Fire protection is provided by eleven volunteer fire departments located throughout the county. Each department is a member of the Pine County Mutual Aid Association, which allows sharing of resources and personnel. The Sandstone Area DNR Office staffs a substantial wildfire fighting capability during fire season.

Several volunteer, First Responder, groups, and a private ground ambulance service provide emergency medical service. Air ambulance service is available from two private companies with flight time to a major medical facility of less than thirty minutes.

Because the county has no municipal police departments, the Pine County Sheriff's Office is the primary Law Enforcement agency in the county. The Sheriff's Office maintains policing contracts with the cities of Pine City, Hinckley, and Sandstone. The Sheriff's Office also contains the county emergency management function, with the Sheriff holding the position of Emergency Management Director. Secondary law enforcement agencies in the county include the, Minnesota State Patrol, Mille Lacs Band Tribal Police, DNR Enforcement.

d. Infrastructure

Pine County contains a rural road network of over 800 miles. Interstate Highway 35 runs through the County north and south. Several primary and secondary State Highways run through the County primarily east and west. The Saint Croix River National Scenic Riverway runs along 2/3s of the east edge of the County and serves as the State Line. There are three bridges crossing the Saint Croix River into Wisconsin and several overland crossing points.

The Burlington Northern SantaFe, and Saint Croix Valley Railroads run north and south through Pine County. Several major utility pipelines and power transmission lines pass though the county. A medium security Federal Prison and a minimum security State Work Camp are located in Sandstone and Willow River. The Sandstone Area District Office of the Minnesota Department of Natural Resources is located in the City of Sandstone. Pine County is served by a community hospital located in the City of Sandstone, and several other clinics.

e. Land Ownership

% Private Ownership = 73%
% County Ownership = 5%
% Tribal Ownership = 0.3%
% State Ownership = 21%
% Federal Ownership = 0.3%

This base of natural resources has been shaped by a variety of factors. Initially forest fires, insects, and wind were major agents of change in this environment. Human activities such as agricultural practices, 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 insect and disease infestations and weather including droughts, flooding, straight-line winds and tornadoes.

As a result of and in response to human intervention, forests have undergone tremendous transformations in spatial patterns composition and structure. For example, some areas were once extensive stands of white and red pine, cedar and northern hardwoods have given way in a

large part to aspen and aspen-birch. These changes in forest vegetation, set into motion over 100 years ago have been sustained through past forest management policies, fire suppression and human use that emphasized clear cutting, select species reforestation.

The Department of Natural Resources is provided forest management direction through their Subsection Forest Resource Management Plan (SFRMP). This plan identifies long-term strategic direction for the DNR Forestry and Wildlife administered forestlands. It will also identify forest stands to be treated over the next ten year period. The strategic component of the SFRMP focuses on long-term strategic direction in response to identified issues, strategies to implement the general direction, and identification of quantifiable long term desired future forest composition (DFFC) goals.

f. Population, demographics, socio-economic data

Information from US Census 2010

	Pine County	Minnesota
Population, 2010	29,750	5,303,925
Population, percent change, 2000 to 2010	12.10%	7.80%
Population, 2000	26,530	4,919,479
Persons under 5 years, percent, 2010	5.80%	6.70%
Persons under 18 years, percent, 2010	22.20%	24.20%
Persons 65 years and over, percent, 2010	16.30%	12.90%
Female persons, percent, 2010	46.40%	50.40%
White persons, percent, 2010	91.90%	85.30%
Black persons, percent, 2010	2.00%	5.20%
American Indian & Alaska Native persons, percent, 2010	3.10%	1.10%
Asian persons, percent, 2010	0.40%	4.00%
Persons reporting two or more races, percent, 2010	1.90%	2.40%
Persons of Hispanic or Latino origin, percent, 2010	2.40%	4.70%
White persons not Hispanic, percent, 2010	90.50%	83.10%
Housing units, 2010	17,276	2,347,201
Homeownership rate, 2005-2009	82.40%	74.90%
Housing units/multi-unit structures, percent, 2005-2009	6.60%	21.20%
Median value /owner-occupied housing units, 2005-2009	$163,300	$207,000
Households, 2005-2009	10,965	2,061,882
Persons per household, 2005-2009	2.46	2.45
Per capita money income in past 12 months 2005-2009	$21,129	$29,431
Median household income, 2009	$39,309	$55,621
Persons below poverty level, percent, 2009	18.90%	10.90%
Private nonfarm establishments, 2009	590	1,464,532
Private nonfarm employment, 2009	6,727	24,171,742
Private nonfarm employment, percent change 2000-2009	37.20%	0.9%2
Retail sales per capita, 2007	$8,636	$13,751
Building permits, 2010	46	9,840
Federal spending, 2009	227,568	443,381,242
Land area in square miles, 2010	1,411.29	79,626.74
Persons per square mile, 2010	21.1	66.6

g. Housing and Development Trends

The housing goal for Pine County is to encourage the development of housing within the county that meets a variety of needs. The county will work with private developers, applicable state, tribal, and federal agencies, local organizations, and institutions to assess and address housing needs.

Pine County will encourage the development of housing in areas of the County that can be economically served with adequate transportation and utility infrastructure. They will also encourage the location of multi-family and high-density small lot residential development adjacent to cities or other areas with adequate infrastructure.

h. Land Use and Projected Trends

The scenic beauty of Pine County, its abundance of natural resources, and its proximity to the forestry, and tourism industries make it an attractive place to live and work. While a vast majority of Pine County is in private ownership, areas around cities have a full range of urban land uses. As vacant land in these areas develops, urban land uses could extend into adjacent forested and open areas, increasing development pressure. Coordination with local, state, tribal and federal jurisdictions is imperative in coping with existing and future pressures.

2. Pine County Land Use Goals:

Note that County-wide land use planning was/is a goal of the 1993 Comprehensive Plan but has never been implemented resulting in the vast majority of Townships implementing and adopting their own land use controls, goals, etc.

3. Pine County Transportation Goals

a. Work with applicable State and Federal agencies and Townships to establish, construct, and improve all modes of the transportation system.

b. Encourage the continued utilization and maintenance of highway, rail and air facilities

c. Add and maintain consistent directional and community identification signage on roads and streets within the county.

d. Make access management a consideration in the transportation system.

4. Pine County Recreational and Cultural goals:

a. Encourage cultural partnerships.

b. Encourage preservation of historic sites.

c. Support the multiple-use of public lands and recognize the importance of varied recreational activities.

5. Pine County Environmental Goals

a. Recognize, promote, and implement management practices to foster stewardship of the County's environmental resources.

b. Continue to manage the county's resources in accordance with official controls and county plans.

c. Work with state, tribal and federal resource management agencies to achieve consistency.

IX. Wildfire Risk Assessment:

The Pine County CWPP risk assessment displays the potential losses to life, property and natural resources posed by the ever-present threat of wildland fire. This risk assessment takes into consideration a combination of factors as defined below; all of which contribute to fire hazards and risk in the urban interface. The table looks at each area and analysis factor and ranks them on a qualitative scale. The descriptions given to each factor are summarized into one adjective value (low, moderate or high), which formulates a rating for fire hazard risks within an area. Areas with a higher risk value have higher fire hazard risk, i.e., the probability of having a fire that will spread quickly and intensely causing significant damage is higher.

Risk of Wildfire Occurrence: The potential and frequency of wildfire ignitions (based on past occurrences)

Fuel Hazard: Conditions that contribute to wildfire (fuels, slope, aspect, elevation and weather)

Valued Assets: The people, property and resources that could suffer losses in a wildfire event.

Firefighting Capability: The ability to mitigate loss, prepare for, respond to and suppress wildland and structural fire.

Structural Ignitability: 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.)

Risk Values: L=Low, M=Moderate, High=High

COMMUNITY WILDFIRE RISK TABLE

Community, structure or area at risk	Fuel Hazard	Risk of Wildfire Occurrence	Structural Ignitability	Firefighting capability	Overall Risk
Askov	L	L	L	H	L
Brook Park	M	M	M	H	M
Bruno	L	L	L	H	L
Duxbury	H	H	H	H	H
Finlayson	M	M	M	H	M
Hinckley	H	H	H	H	H
Kerrick	M	M	M	H	M
Pine City	H	M	M	M	M
Sandstone	M	L	M	H	M
Sturgeon Lk	H	H	H	H	H
Willow River	H	H	H	H	H

Develop the overall community priority.

The priority rating reflects the overall risk and community values.

Overall Risk: Qualitative value found from table above.

Community Value: Important community value w/in the WUI community

Cultural Value: Important cultural value w/in the WUI community

Overall Priority: L=Low, M= Moderate, H=High

OVERALL COMMUNITY PRIORITY TABLE The priority rating reflects the overall risk (from previous table) and the community values.

Community, structure or area at risk	Overall Risk	Community Value	Cultural Value	Overall Priority
Askov	L	L	L	L
Brook Park	M	M	M	M
Bruno	L	L	L	L
Duxbury	H	H	H	H
Finlayson	M	M	L	M
Hinckley	H	H	H	H
Kerrick	M	M	M	M
Pine City	M	M	L	M
Sandstone	L	M	M	M

Sturgeon Lk	H	H	H	H
Willow River	H	H	H	H

Areas of concern from local knowledge

If there are any specific locations that are known, include them here.

Infrastructure Needs

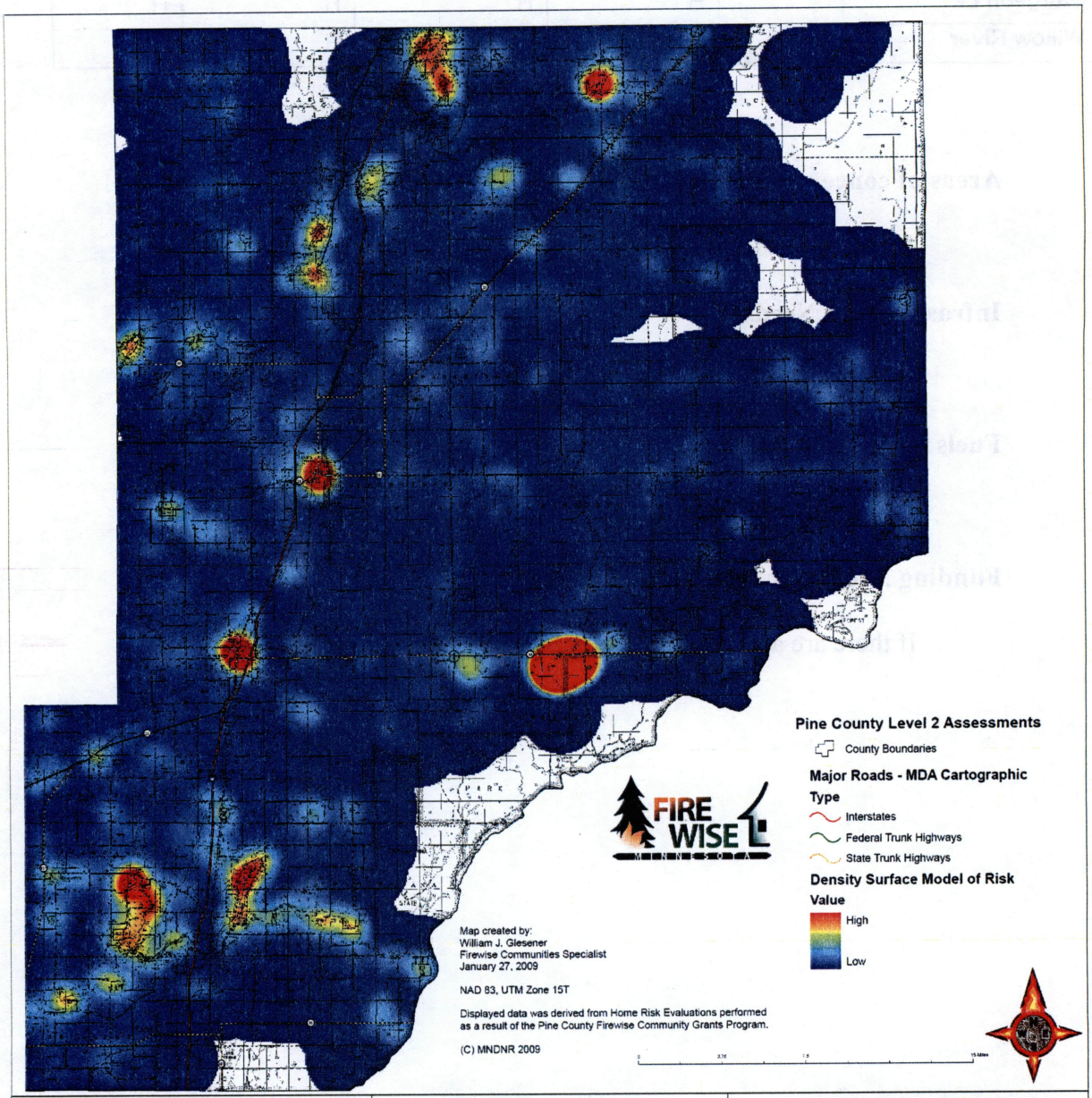
If there are any specific locations that are known, include them here.

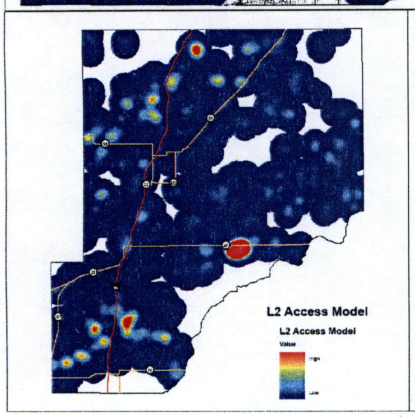
Fuels Reduction Needs

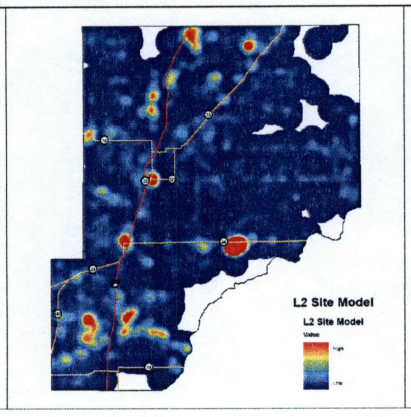
If there are any specific locations that are known, include them here.

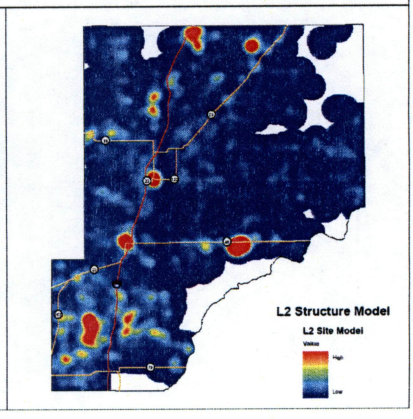
Funding Needs (Grants, Cash In-Kind)

If there are any specific locations that are known, include them here.


Pine County Level 2 Assessments
County Boundaries
Major Roads - MDA Cartographic Type
Interstates
Federal Trunk Highways
State Trunk Highways
Density Surface Model of Risk
Value
High
Low
FIRE WISE
MINNESOTA
Map created by:
William J. Glesener
Firewise Communities Specialist
January 27, 2009
NAD 83, UTM Zone 15T
Displayed data was derived from Home Risk Evaluations performed as a result of the Pine County Firewise Community Grants Program.
(C) MNDNR 2009


L2 Access Model
L2 Access Model


L2 Site Model
L2 Site Model


L2 Structure Model
L2 Site Model

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. Two fuel model systems are used in Pine County to predict fire behavior; the U.S. system (Fire Behavior Prediction System, FBPS), and the Canadian system (Fire Prediction System, FPS). The U.S. system typically relates to western conditions while the Canadian system has fuel types that more closely represent northern MN, therefore a combination of the two gives the best information.

Each fuel model describes the type of vegetation found in it, how that material is located both horizontally and vertically, and under what conditions that material will most commonly burn. For instance, most fires in Pine County begin in grass, either upland or marshland, which is considered a fine fuel that ignites easily. Because grasses are typically continuous, it takes minimal wind for a fire to spread in this fuel type resulting in higher "rates of spread." These fuels also are most likely to burn when the grasses are cured such as in the spring before green up has occurred and in the fall after a good frost.

Running fire prediction software based on specific models and anticipated seasonal conditions or daily weather, many aspects of fire behavior can be predicted. Fire behavior includes how susceptible the fuel is to ignite, rates of spread, flame lengths, fire intensity and if the fire will spot (embers thrown in front of the main fire ignite a new fire) among other things. Some common fuel models and their anticipated fire behavior are included in other parts of this plan.

A custom fuel model was developed after the Boundary Waters Canoe Area Wilderness blowdown event of 1999 to represent the fire behavior associated with areas where there is moderate to heavy blowdown. U.S. 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.

6. 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 larger 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

7. Definition of Fire Regime Condition Class (FRCC)

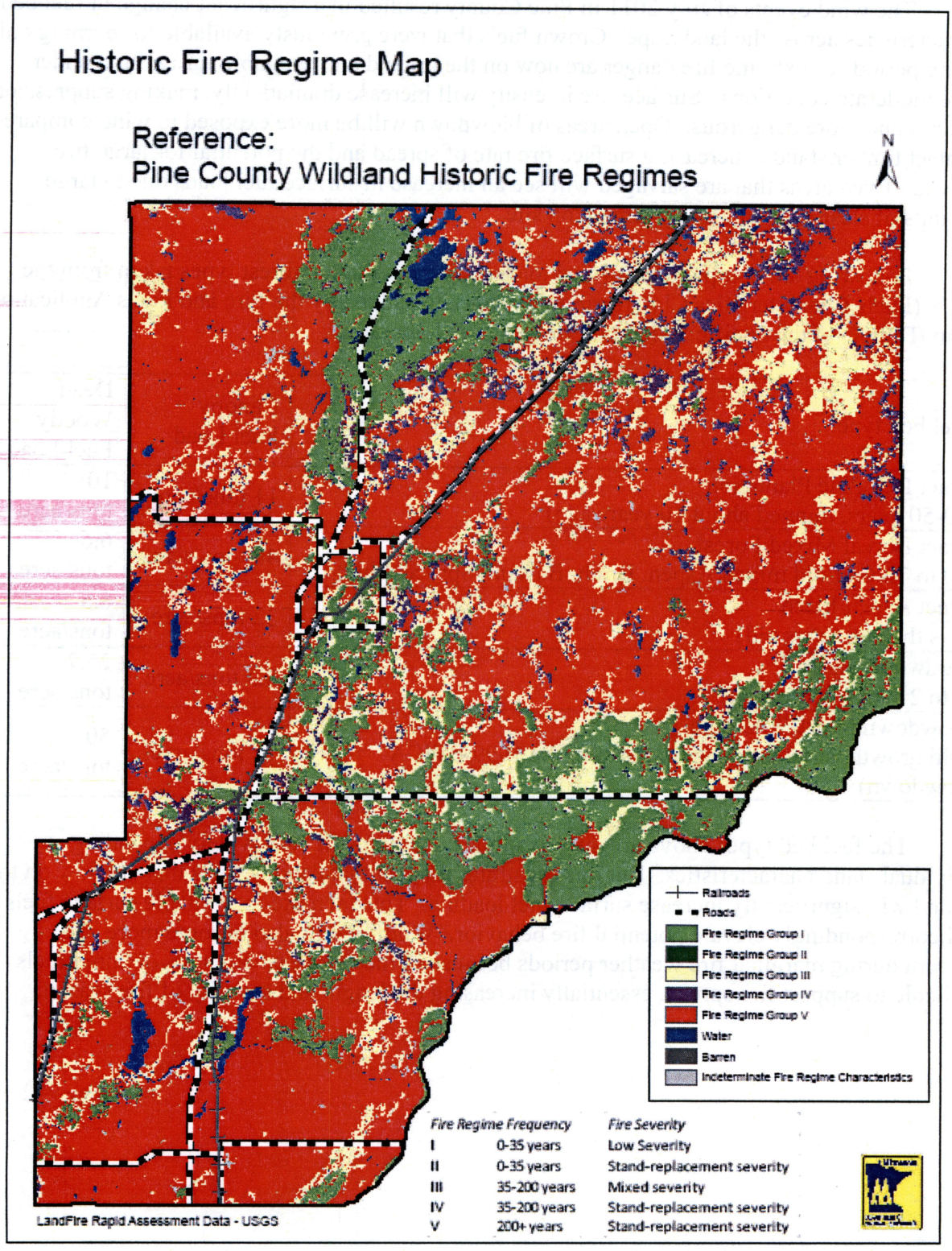
DESCRIPTION: Fire Regime Condition Class is a tool developed to evaluate current against natural landscape characteristics with respect to vegetation-fuel composition and structure, fire frequency, fire severity, and other disturbances.

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 over story vegetation.

8. Historic Fire Regime Map



9. Fire Hazard

The wind events of July 2011 in Pine County resulted in a significant change in fuel bed characteristics across the landscape. Crown fuels that were previously available for burning only during periods of extreme fire danger are now on the ground and available for ignition under more moderate conditions. Surface fire intensity will increase dramatically, making suppression difficult and more dangerous. Open areas of blowdown will be more exposed to wind compared to intact timber stands, increasing surface fire rate of spread and the potential for large fire growth. Even areas that are salvaged will see an increase in surface fuel loads due to large amounts of slash that will likely remain on site.

Following are comparisons of fuel loads for representative forest types taken from the FCCS (Fuels Characteristics Classification System) developed by the Fire and Fuels Application Team (FERA) of the Pacific Wildland Fire Sciences Laboratory:

Fuel bed type	Canopy Fuel Load	Dead Woody Fuel Load
Intact Red Pine Plantation (40-50 years, thinned about 10 years ago)	11 tons/acre	10 tons/acre
Intact Boreal Mixed Forest (20 to 70 year old mixed Aspen, Birch, Balsam, Spruce, Pine)	48 tons/acre	6.6 tons/acre
Intact Aspen/Birch (less than 60 years old)	32 tons/acre	8.5 tons/acre
Hardwood Slash (1 to 2 year old clearcut)	0.3 tons/acre	25.7 tons/acre
Blowdown Red/White Pine (Old growth, similar to conditions after the 1999 BWCA blowdown)	12 tons/acre	50 tons/acre

The fuel bed types above are only examples; loading will vary widely depending on individual stand characteristics. But this illustrates the fact that canopy fuels that are now on the ground will significantly increase surface fuel loading. This increase in available surface fuels will correspondingly elevate potential fire behavior. Wildfire will also become more of a concern during marginal fire weather periods because of the increased amounts of cured fuels available to support fire spread, essentially increasing the length and severity of fire season.

Following are fire behavior model outputs illustrating potential rate of spread and fire intensity of intact timber stands and blowdown/slash.

	Springtime conditions (cured live vegetation)*		Summer conditions (green vegetation)**	
Fuel Model[2]	Rate of spread	Head fire flame length	Rate of spread	Head fire flame length
Long-needle Litter (TL8)	2 ch./hr.	2 ft.	1 ch./hr.	1 ft.
Moderate Load Timber-Grass-Shrub (TU3)	7 ch./hr.	4 ft.	2 ch./hr.	1 ft.
Moderate Slash (12)	12 ch./hr.	8 ft.	10 ch./hr.	7 ft.
High Load Blowdown (SB4)	46 ch./hr.	12 ft.	38 ch./hr.	10 ft.
BWCA Custom model	50 ch./hr.	25 ft.+	24 ch./hr.	16 ft.+

Outputs assume a 20 foot wind speed of 6 mph.
*Spring outputs are based on moisture scenario D2L1, Low Dead/ Fully Cured Herb (6, 7, 8, 30, 60)
**Summer outputs are based on moisture scenario D3L4, Moderate Dead, Green Herb (9,10,11,120,150)

Based on the model outputs shown above, rates of spread in blowdown/slash may increase 5 to 20 times that of intact standing timber. Fire intensity in slash/blowdown fires will be 10 to 20 times higher than surface fire intensity in standing timber. Fires that can easily be suppressed with hose lays and hand tools in intact timber will require the addition of heavy equipment and aircraft in blow down stands due to the very high intensities.

As fires become established in blowdown and slash, the very high intensity can create strong convection columns which allow the fire to gain momentum independently of local weather influences. Large fire growth will become a possibility if such plume domination occurs. As the Pagami Creek fire showed in the summer of 2011, when the power of the fire exceeds that of the local weather influences, fire behavior becomes unpredictable. Fire in adjacent areas of standing timber that would normally burn with low to moderate intensity can exhibit extreme rates of spread and intensity when the fire environment becomes plume dominated.

10. Seasonal weather patterns affecting fire behavior

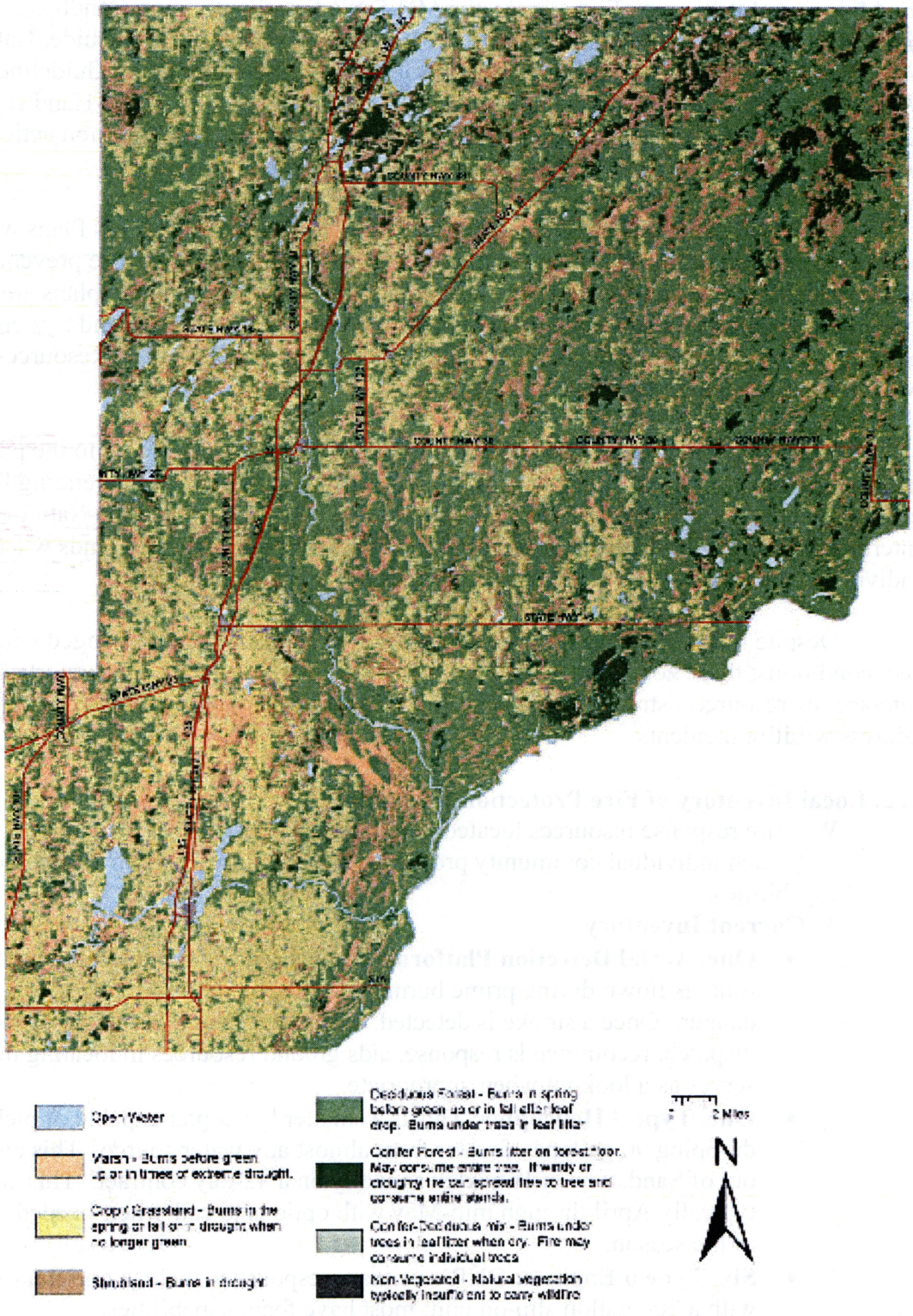
Fire Danger changes with the seasons in MN. While there have been wildfires in every month of the year, April has the most occurrence but Pine County's largest fires have occurred in the fall. After the snow melt occurs in late March, fine dead fuels (upland and lowland grasses) are exposed and easily ignitable. These spring fires are typically not too intense but do move quickly and have larger flame lengths at the head, especially in lowland grasses like cattails. In mid to late May, when the fine fuels begin to grow, drawing up moisture (referred to as "spring green up") the danger of grass fires drop significantly. On the other hand, this is when conifers are at their most flammable state during the year. In late spring, when conifers are pushing out their new growth (called "candling" since they look like candles at the end of the branches), all of the trees energy and moisture are put into this effort leaving the rest of the tree extremely dry.

As the summer continues, larger diameter fuels (logs on the ground) typically dry out from their saturated state in the spring from the snow covering, to potentially quite dry by the end of summer. With higher humidity's in the summer, it typically isn't until September that fire activity will pick up a bit in droughty conditions. At this point of the season, the larger fuels are dry and receptive to flames. After a hard freeze occurs in the fall killing the finer grasses, all fuels are typically ready to burn. Fires during this time of the year may move a bit slower than the regular spring grass fires but they typically burn more intensely and require more effort to extinguish.

In the blowdown area, the fire danger will be elevated throughout most of the snow free season. Because most of the trees that tipped over or snapped off are not on the ground, they will dry more quickly as they don't have contact with the ground moisture. Since the storm happened during the growing season with leaves on, those leaves continued to pull moisture from the main tree accelerating the rate and extent of drying out the larger diameter fuel. And looking into the following growing seasons, grasses will fill in with the newly created openings which will help to carry fire quickly under the highly flammable larger fuels.

Minnesota County Wildland Fire Planning Map

Pine



X. Emergency Operations:

1. 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, Fire Line Hand Book, and the MNICS Mobilization Plan. These plans and handbooks guide our suppression actions whenever a fire is detected.

Minnesota land management agencies (MNICS) have Preparedness Plans which addresses propositioning of resources, fuels assessment and reductions, fire prevention, communications infrastructure and fire coordination. These preparedness plans are also supported by aviation plans. 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.

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 and the 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 landscape and fuel conditions; these zone agreements will be maintained. Incidents are supported by expanded interagency resources, stronger communication, and as necessary a unified command structure to address wildfire incidents.

2. 2. Local Inventory of Fire Protection Resources*

Wildfire response resources located within Pine County.

*See each individual community profile for structural fire department protection capabilities

A. Current Inventory

- **One, Aerial Detection Platform:** Typically using a small airplane, the Detection route is flown during prime burning periods on days of moderate or greater fire danger. Once a smoke is detected, the spotter reports a size-up of the fire to dispatch, recommends response, aids ground resources in locating the fire and serves as a lookout when appropriate.
- **One, Type 3 Helicopter:** This is a smaller helicopter capable of picking up and dropping 90 gallons of water from almost any water source. This aircraft is based out of Sandstone or Hinckley annually on a 42-day contract. This contract is typically April through mid-May with options to call-when-needed during the rest of the season.
- **Six, Type 6 Engines:** DNR's primary response vehicle, a one-ton 4WD pickup with a 200 gallon slip-on unit; most have foam capabilities.

- **Two, small tracked vehicles (J-5's) with prime movers:** The J-5 is a tracked vehicle equipped with ~100 gallon tanks and foam capabilities. These are essential for initial attack in Pine Co. given their maneuverability in lowland and wooded areas. Each unit is pulled by a Type 6 utility engine which carries a mini-cache of items.
- **One, larger tracked vehicle (Muskeg or J-7) with prime mover:** The Muskeg tracked vehicle carries 400 gallons and has room for supplies. It is pulled by a Type 4 engine that has an 800 gallon tank and mini-cache of supplies.

B. Proposed Additional Fire Protection Resources

Based on a changed forest condition due to July 2011 blowdown events, firefighting tactics will need to be altered from recent practices due to the increased fuel-loading and how the fuels are distributed across the landscape. Therefore, the BIA and DNR identified the need for expanded initial attack resources. The following suppression resources are proposed:

- **One, DNR owned and operated Dozer:** Heavy equipment will be essential and while private contractors will be relied upon heavily, for safety purposes, it is felt that a professional wildland firefighter should be taking the lead on incidents. This dozer is an item already owned by the state that will simply be relocated to Pine County.
- **One, Type 3 "Intermediate" Helicopter:** While this helicopter is technically a Type 3, we will be looking for a helicopter with greater lift capacity and a bucket size of ~140 gallons. This contract will also be a longer term one as the change in fuels will result in a longer fire season.
- **One, Type 2 Helicopter on a call-when-needed contract:** This helicopter is desired due to its greater lift capabilities and therefore larger bucket, ~300 gallons. Because of the larger fuels that are on the ground, it is anticipated that more water will be needed to extinguish fires that are going in these fuels.
- **One, Type 6 Engine for Tribal response:** The Mille Lacs Band has quite a bit of ownership within Pine County but their nearest resources are on the west side of Mille Lacs Lake. While an Agreement is in place for DNR to respond initially on Tribal lands, fires are ultimately under the control of the Tribe. Having an engine in Pine County would greatly improve the response time of the Tribe and assist local resources in navigating lands that Tribal members know better than any other responders.
- **Increased trained Personnel:** To meet the increased staffing level which will be required during this time period, the DNR is looking to hire seasonal employees. Currently the State relies on Smokechasers which are casual hires with no guarantee of time. As a result, these folks find more secure employment when it arises. Like Fire Departments, agencies are left short-staffed particularly during the weekdays. This addition will guarantee qualified personnel are available when necessary to maintain safe working operations.

3. **Statewide Inventory of Fire Protection Resources***

While there are more resources than can be listed in this document, below are some crucial items that are available to Pine County in the event of a wildfire. Response times of these resources are anywhere from 30 minutes to a couple days. As well as the items listed below, the USFS Region 9 Fire cache is located in Grand Rapids, MN, a 2 hour drive and has a great amount of ground supplies.

- **Two, CL-215 Aircraft**: These water scooping aircraft are capable of dropping up to 1,400 gallons of water, foam injected water, or retardant at one time. They can scoop water from nearby lakes shortening response times. The Minnesota Department of Natural Resources owns two CL-215's. These aircraft are normally stationed in Ely, Bemidji, Brainerd and Hibbing depending on fire danger. Contract durations can also vary depending on fire danger.

- **Conventional water or retardant delivery aircraft**: These aircraft are dispatched based on national priority at the time an order is placed.

- **One, 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, a USFS contract based in Ely, is normally available mid May through June.

- **Seven, Type 3 Helicopters**: These aircraft are based around the state with the closest ones typically in Princeton and Cloquet. These 42-day contracts are typically April through mid-May with options to call-when-needed during the rest of the season.

- **Two, Air Attack Platforms**: A small aircraft used to coordinate all aerial operations over an incident. It is also used to guide aerial water or retardant delivery on the fire. This aircraft is typically staged with the CL-215's as it is required to accompany them when they are working on a fire.

- **Hand Crews**: Crews of this type are available through the MNICS organization. They come from throughout Minnesota and are dispatched or prepositioned as fire danger increases.

- **Type 4/6 Engines**: Engines of this type are available through the MNICS organization. They come from throughout Minnesota and are dispatched or prepositioned to areas as fire danger increases. These are midsize wildland engines that carry a crew of three and up to 800 gallons of water.

- **Two, Cache Vans**: Ryder type trucks stocked with equipment and supplies that improve local area fire response capabilities. These trucks can be ordered and propositioned as needed.

XII. Mitigation Action Plan

1. Plan Implementation, Coordinating Group

Implementation of the Pine County Community Wildfire Protection Plan will continue as a collaborative effort. To facilitate continued collaboration during implementation; a Coordinating Group representing a variety of stakeholders was established. This Coordinating Group met monthly to define, plan and implement the specific mitigating measures (needed) within the eleven WUI areas. The Coordinating Group is also responsible for yearly revisions and updates to the Pine County Community Wildfire Protection Plan and continuous documentation of completed projects.

Coordinating Group Members: The core Coordinating Group is composed of a Pine County Emergency Management representative, the Pine County Sheriff, Department of Natural Resources representatives, one Pine County Fire Mutual representative, one Mille Lacs Band of Ojibwe fire representative, a "Firewise" representative.

Adhoc Coordinating Group Members: On a project specific basis, various technical specialists will be added to the coordination group to help facilitate planning and implementation processes. Adhoc group members may include local fire department members, members of the local citizenry and lake associations, emergency management personnel, biologists, siviculturalists, botanists, fuels and fire specialists, environmental representatives, and others on an as needed basis. These people will serve as temporary consultants or advisors to the team.

The current "Pine County Community Wildfire Protection Plan" Coordinating Group is composed of:

Pine County Sheriff,
Pine County Emergency Management,
Department of Natural Resources,
Pine County Fire Chiefs; representing the Mutual Aid Association,
"Firewise" Representative,
Mille Lacs Band of Ojibwe,

Members of the public can reach the Coordination group through Pine County Emergency Management, 320-629-8380.

The Coordination group will focus on the three top Wildland/Urban Interface (WUI) priority areas listed in the plan, but will consider additional projects as priorities require. The team will set standards for implementation of fuels reduction and hazard mitigation projects within each of the WUI areas. As the team moves toward plan implementation, community involvement will be escalated to ensure needs of the local community are incorporated in the planning, development and execution of 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 WUI, their first step will be to go to the pages in the plan that outline each community, 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 individual 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; fire prevention and "firewise" activities

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

The development of the "Pine County Community Wildfire Protection Plan" has built closer relationships between communities, fire departments, the county, state and tribal 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.

2. Current Activities and Projects.

Based on community efforts and hazard risk assessments (page 52), three top priority Wildland/Urban Interface areas were selected. Priority areas to be addressed are: Duxbury/Danbury/Mille Lacs Band of Ojibwe; Hinckley Area; and Willow River. Community members wishing to comment and give suggestions for actions in the WUI areas listed above should contact the Pine County CWPP Coordinating Group.

3. Fire Prevention and Education (Community Outreach)

Humans cause Ninety percent of Wildfires in Minnesota, 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 thirty five 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 east central portion of the state continue to be some of the most pressing fire hazard concerns local fire management officers are

dealing with. Fire management personnel have been working to help landowners mitigate this danger.
To accomplish prevention goals, a combination of strategies will be used. These strategies include 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:

- Reduce human-caused wildfires throughout Pine County.
- Provide a continuing fire prevention and education programs.
- Work with communities to coordinate "Firewise" activities within the County.

2. Key Prevention Actions:

- Identify and update successful education programs to promote the fire prevention message.
- 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.
- 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 all the schools are visited by a representative on an annual basis.
- Promote "Firewise" at the local level. Work with Pine County fire departments and landowners concerning "Firewise", and what can be done to improve defensible space. Share "Firewise" information with homeowners.
- Develop and use age appropriate fire prevention themes that address fire issues in Pine County.
- Provide the public alternatives to debris burning such as recycling and composting materials.
- Educate the public on burning permit requirements, safe burning techniques, weather conditions, and fire use.

- Foster public, interagency and interdisciplinary cooperation when identifying and developing hazardous fuels mitigation measures.
- Work with communities on pilot projects such as brush disposal sites or starting a burn barrel amnesty program.
- Reduce the number of wildfires caused by burning barrels and unattended campfires.

3. Monitoring and Futuring: Will be tracked by the Coordination Group

Projects	Recommended Actions	Who	Timelines
Coordination Group	Address concerns w/in Blowdown Area: Fuels reduction, Community education & Awareness.		Ongoing
	Prioritize hazardous Fuel Treatments.		Annual
	Encourage local communities participation in projects.		Ongoing
	Work on Access and Water supply issues throughout county		Ongoing
	Revise and update the Pine County CWPP as needed.		Annual
Fire Prevention	Initiate media campaign to address the blowdown.		Ongoing
	Track prevention and education programs to document prevention objectives.		Annual
Fire Departments	Identify and provide cross departmental training and opportunities.		Annual
	Acquire and improve equipment		Ongoing
Firewise	Work at completing assessments in priority areas, and other areas resources allow.		Ongoing
	Work with Pine County communities on grant processes.		Annual
	Track fuels reduction grants.		Annual

APPENDIX:

A. Fire Department Contact Numbers

Department	Name	Day Phone
Askov	Pete Watrin	320-216-5340
Brook Park	Wayne Whited	320-358-0453
Bruno	Steve Nelson	320-838-3166
Duxbury	Mike McCullen	320-245-5494
Finlayson	Robby Fischer	320-216-4221
Hinckley	Kelly O'Donovan	320-384-7652
Kerrick	Mike Trierweiler	218-485-4433
Pine City	Tom Miller	320-980-5797
Sandstone	Ross Degerstrom	320-279-0353
Sturgeon Lake	Mike Mikrot	218-658-4601
Willow River	Tim Prachar	218-372-3825

B. Emergency Contacts Pine County Sheriff

911
Non emergency 320-629-8380

C. Grants and Funding

Congress has provided increased funding assistance to states through the USDA Forest Service State and Private Forestry programs since 2001. The focus of much of this additional funding was mitigating risk in Wildland Urban Interface (WUI) areas. State Fire Assistance (SFA) funding is available and awarded through a competitive process with emphasis on hazard fuel reduction, information and education, and community and homeowner action. This portion of the National Fire Plan was developed to assist interface communities manage the unique hazards they find around them. Long-term solutions to interface challenges require informing and educating people who live in these areas about what they and their local organizations can do to mitigate these hazards.

The 10-Year Comprehensive Strategy focuses on assisting people and communities in the WUI to moderate the threat of catastrophic fire through the four broad goals of improving prevention and suppression, reducing hazardous fuels, restoring fire-adapted ecosystems, and promoting community assistance. The Wildland Urban Interface Grant may be used to apply for financial assistance towards hazardous fuels and educational projects within the following four goals.

Goal #1 – Improve Prevention in the Interface: Expand outreach and education about wildfire prevention in the interface through the use of programs such as Firewise in order to reduce the risks to homes and private property. Homeowners and local governments bear much of the responsibility for improving the defensibility of homes in the interface but may lack the

knowledge and information regarding what needs to be done and how to accomplish it. Additionally, they may lack the experience and expertise to deliver educational outreach programs to individuals and communities. States can provide the leadership needed to coordinate, develop and distribute educational materials and the partnering between homeowners, communities, insurance companies and government agencies.

Examples of projects that qualify (not all inclusive):

- Firewise or similar programs
- Living with Fire newspaper inserts
- Fire education such as Project Learning Tree
- Pamphlets, brochures, handouts

Goal #2 – Reduce Hazardous Fuels: Fuel reduction projects and vegetation treatments have been identified as a means of mitigating wildfire hazards. These are projects that remove or modify fuels in and/or adjacent to WUI development. Effective fuels mitigation treatments can be implemented across jurisdictional boundaries, on adjoining private lands, or within the respective communities. The states can facilitate the required coordination, collaboration, and partnering of these projects. Projects of this type include fuel breaks, thinning, pruning, landscape modifications, etc. The overall purpose is to modify or break up the fuels in such a way as to lesson catastrophic fire and its threat to public and firefighter safety and damage to property. Project proposals should consider all elements required to implement treatments on the ground, which includes acquiring the necessary permits and consultations needed to complete plans and assessments.
Examples of projects that qualify (not all inclusive):

- Defensible space around homes and structures
- Shaded fuel breaks
- Fuels reduction beyond defensible space
- Removal of slash including piling and burning; mulching; grinding; etc.
- Prescribed fire

Goal #3 – Restore Fire-adapted Ecosystems: Millions of acres of forest and rangeland face high risks of catastrophic fire due to deteriorating ecosystems health and drought. One way to prevent future large, catastrophic wildfires from threatening communities is by carrying out appropriate treatments (such as prescribed burning or thinning) to restore and rehabilitate forest and grassland health in and adjacent to the WUI. Such treatments have reduced the severity of wildfires, and may have additional desirable outcomes, such as providing sustainable environmental, social and economic benefits. Projects require planning, consultation, design, and sometimes contracting, and may take several years to implement completely. Monitoring and evaluating effectiveness of treatments is usually necessary.
Examples of projects that qualify (not all inclusive):

- Fuels reduction beyond defensible space
- Removal of slash including piling and burning; mulching; grinding; etc.
- Prescribed fire
- Thinning
- Promoting the establishment of native plants

Goal #4 – Promote Community Assistance: Creating conditions in and around individual structures that will limit the transmission of fire from wildland to structures is basic to reducing the fire hazard in the Interface. This is a responsibility of homeowners and communities. The states can facilitate these actions through safety inspections; demonstration projects; training and education of homeowners, officials and service personnel; fostering fire safe groups; and coordination of projects, services, and supplies.

Examples of projects that do not qualify:

- Purchase of fire department equipment (try VFA grant program)
- Small business start-up funding
- Research and development projects (try Economic Action Program)
- Preparedness and suppression capacity building (other SFA funds)

Examples of projects that qualify (not all inclusive):

- Homeowner-association sponsored fuels reduction projects

States are encouraged to identify local needs and submit proposals using one or a combination of these grant focus elements. Needs in any community depend on local fuels, topography, organization, public knowledge of the issues, and the will to address the issues?

Examples of Projects that DO NOT Qualify (not all inclusive):

- Municipal, fire district, county coordination of slash disposal Multi-jurisdictional hazard reduction projects

Funding Parameters: Each grant request will be limited to a maximum of $500,000. No state will receive more than 15% of the funds available in the west. At least 25% of all available grant funds must be awarded to new projects.

Applications will be screened for eligibility based on:

1) A 50/50 match. This means that the allocated grant amount must be matched in full by the recipient using a non-federal source. This matching share can be either soft match (which includes training, donated time, etc.) and/or hard match (which is actual dollars spent other than grant funds within the specified scope of work.)

2) Meeting the Hazard Mitigation Criteria in one or more of the following areas: a) Fuels: Recipients may facilitate and implement mitigating fuel treatments in or adjacent to identified fire prone communities to reduce the threat of wildfire to communities. This can be conducted across jurisdictional boundaries, on adjoining private lands, or within respective communities, including all components necessary to plan and implement the project. b) Education: Recipients can provide leadership to coordinate, develop, and distribute wildland urban interface education programs in association with insurance companies, communities, local government agencies, and other partners. Informational and educational programs must target prevention and mitigation of loss. Programs should lead to the use or establishment of one or more fire program elements such as fires safety codes, implementation of Firewise safety practices, fuels treatments within fire prone communities, or community planning to define fire safe actions suited to the local

ecosystem. c) Planning: Priority will be given to those activities that tie back to an established community fire plan. Community Wildfire Protection Plans (CWPP's) are created by local developments and may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection-or all of the above. The process of developing these plans can help a community clarify and refine its priorities for the protection of life, property, and critical infrastructure in the wildland-urban interface.

Eligible applications will then be scored based upon:

1) Is this project doable? (time, goals, etc.)
2) Is this project measurable? (# of acres treated, # of education/outreach programs, etc.)
3) Is the applicant clearly showing collaborative elements and partners? (Confidence level)
4) Is this project implemented from an existing community plan or is the request to develop the plan? 5) Is the applicant clearly showing future maintenance for this project?

Application Due Dates:
The standard application form for 2006 must be used.

This deadline applies to prioritized applications from the states. Each state should set its own internal deadlines for its cooperators, partners, and client's applications so they may be reviewed and prioritized at the state level before submission.

D. 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.

Interface Community: The Interface Community exists where structures directly abut Wildland fuels. There is a clear line of demarcation between Wildland fuels and residential, business, and public structures. 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. Fire protection is generally provided by a local fire department with the responsibility to protect the structure from both an interior fire and an advancing Wildland fire.

Intermix Community: 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 intermix ranges from structures very close together to one structure per 40 acres. Local fire departments and/or districts normally provide life and property fire protection and may also have Wildland fire protection responsibilities.

Occluded Interface: The Occluded Community generally exists in a situation, often within a city, where structures abut an island of Wildland fuels (e.g., park or open space). There is a clear line of demarcation between structures and Wildland fuels. The development density for an occluded community is usually similar to those found in the interface community, but the occluded area is usually less than 1,000 acres in size. Fire protection is normally provided by local fire departments.

Rural Interface: The Rural Interface Community exists in a situation where scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to Wildland fuels. There may be miles between these clusters.
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 wildlands, 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.

E. Website Information

aa. Fire Information Resources on the Web:

Pine County Community Wildfire Protection Plan: www.co.Pine.mn.us
Local Fire Information: www.mnics.org OR
www.dnr.state.mn.us and search "blowdown"
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
Firewise Minnesota: www.dnr.state.mn.us/firewise/index.html
National Association of State Fire Marshals: www.firemarshals.org
Federal Emergency Management Agency: www.fema.gov
http://www.ncrs.fs.fed.us/research/default.asp#fire
http://www.fs.fed.us/eacc/predictive_services/index.shtml
http://silvis.forest.wisc.edu/projects/WUI_Main.asp
http://wui.forest.wisc.edu/website/wui/viewer.htm

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.

bb. Grant Information websites:

Northeastern Area, State and Private Forestry
www.na.fs.fed.us
Northeastern Area, State and Private Forestry St. Paul Field Office (assisting Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Wisconsin)
www.na.fs.fed.us/spfo/
St. Paul Field Office staff directory:
www.na.fs.fed.us/spfo/staff/staffdir/who.htm www.firewise.org
www.dnr.state.mn.us/firewise/index.htl

F. Mitigation Tools

Individual WUI Community mitigation and protection priorities will be addressed during plan implementation. The following is a list of fire protection and mitigation tools that the communities and coordination group can use to implement this plan.

- **"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 the community and the public.

- **Dry Hydrants**: A permanent pipe connected to a water source other than a piped, pressurized water supply system that provides a water supply for firefighting utilizing the suction capability of fire engines.

- **Homeowner "Firewise" mitigation measures**: Homeowner actions to moderate the fire hazard or risk.

- **Sprinkler systems**: Water systems set up by homeowners or fire agencies to wet structures or slow down the fire behavior of an approaching fire.

- **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.

- **"Firewise" communities**: Communities completing the designated projects and receiving designation under the "Firewise" community program.

- **Chipper Days**: A day or two is arranged for neighborhoods needing brush clearance. Green waste is collected chipped and recycled after homeowners have cleared their own brush.

- **Harvesting/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. This can be done by selective cut, partial cut, and/or clear cutting.

- **Crushing**: A mechanical means of grinding/chopping vegetative materials to reduce fuel loading or build-up.

- **Biomass removal**: The reduction of fuels through cutting, piling and bundling (previously considered) noncommercial small diameter wood for possible commercial use.

- **Pile and Burn**: Flammable fuels are piled, and then burned when conditions are appropriate. This treatment is appropriate where there is not enough merchantable timber to harvest, too much dead and down fuel to broadcast burn, or near private property where structures are present.

- **Under burn**: A low fire intensity fire that burns beneath the canopy of a live timber stand. The fire removes ladder fuels that could spread fire from ground fuels into the crown of standing live timber. The under story materials to be removed include small down, dead, woody material. This may prevent a subsequent wildfire from spreading into tree crowns causing over story mortality. Under burns kill shrubs and most young trees that compete with over story canopy vegetation. Some live trees are burned during under story burns, but the main objective is to maintain the forest cover. Following the burn, the stand is a forest that is open underneath.

- **Patch Burn**: Patches of combustible materials are ignited within a larger treatment area. Only individual patches are burned within the larger area. Fire may spread outside of the patches to the surrounding area, but the surrounding area is not directly ignited. Following the burn, the landscape would consist of small burned areas amongst live vegetation patches.

Infrastructure info

Interstate 35

State Highway 18 serves as an east–west route between Brainerd, Garrison, Mille Lacs Lake, and Finlayson in east-central Minnesota. The route passes around the north end of Mille Lacs Lake, which is a popular fishing and recreational destination in Minnesota.
The section of Highway 18 from Brainerd to Garrison is officially designated the POW / MIA Memorial Highway. A section of U.S. Highway 169 in Minnesota also takes on this same memorial name designation.
Highway 18 passes through the Wealthwood State Forest in Aitkin County.
Banning State Park is located east of the junction of Highways 18 and 23; opposite the I-35 freeway near Askov and Sandstone.

Minnesota State Highway 23

MN 23 directly serves Pipestone, Marshall, Granite Falls, Willmar, Paynesville, Cold Spring, St. Cloud, Hinckley, Sandstone, and Duluth.
Portions of MN 23 that have been upgraded to a four-lane expressway include approximately 9 miles (14 km) in the Marshall area in addition to longer stretches between Willmar and New London, and between Richmond and Waite Park (St. Cloud). For a majority of the Willmar area, Highway 23 runs concurrently with U.S. Highway 71 (US 71), which includes a freeway bypass of the city. MN 23 crosses the Minnesota River at Granite Falls, and the Mississippi River in St. Cloud, over the Granite City Crossing bridge.

Minnesota State Highway 48

State Highway 48 serves as an east–west route between Hinckley, Cloverdale, and Danbury, WI.
Highway 48 crosses the Grindstone River on the eastern edge of Hinckley. The route crosses the Kettle River in Barry Township near Hinckley. The eastern terminus of Highway 48 is at the St. Croix River, where the route becomes Wisconsin Highway 77 upon crossing the river.
St. Croix State Park is located 15 miles east of Hinckley on Highway 48, then 5 miles south on County Road 22. The St. Croix State Forest is located east of Cloverdale near the route.
Camp Nathanael is located 16 miles (26 km) east of Hinckley on Highway 48.
Highway 48 is also known as Fire Monument Road in the city of Hinckley.
The route provides major access to Grand Casino Hinckley.
The route is legally defined as Legislative Route 195 in the Minnesota Statutes.[2] It is not marked with this number.

Minnesota State Highway 70

Highway 70 serves as an east–west route between Mora, Brunswick, Rock Creek, and Grantsburg, WI.
The route has an interchange with Interstate 35 at the city of Rock Creek.
Highway 70 in Minnesota is a narrow roadway. The connecting route in Wisconsin, Wisconsin Highway 70, is a wide roadway with large shoulders. Highway 70 in Minnesota carries a great amount of recreational traffic to Wisconsin, as Twin Cities residents try to avoid nearby U.S. Highway 8, which is often a traffic congested route.

Minnesota State Highway 107

Highway 107 serves as a north–south route between Braham, Grasston, Henriette, and Brook Park. It is geographically located between the cities of Cambridge and Hinckley in east-central Minnesota and parallels Interstate 35 and State Highway 65 throughout its route.
The route intersects State Highway 70 twice. Highway 107 and Highway 70 are concurrent for two miles between Braham and Grasston.
Highway 107 is also known as Main Avenue in Braham.
The original part of the route is legally defined as Route 134 in the Minnesota Statutes.[3] The southern portion is part of Minnesota Constitutional Route 5. It is not marked with either of these numbers

Minnesota State Highway 123

Highway 123 serves as an east–west and north–south route between Sandstone and Askov in east-central Minnesota.
The route changes direction to north–south in Sandstone Township and continues as north–south to its northern terminus in Finlayson Township near Askov.
Highway 123 passes briefly through Banning State Park. The park entrance is located on nearby Highway 23, east of Interstate 35 near Askov.
The route is legally defined as Route 185 in the Minnesota Statutes.[2] It is not marked with this number.

Minnesota State Highway 361

Highway 361 serves as a north–south route in east-central Minnesota between Rush City and Rock Creek. The route runs through Chisago and Pine counties. The roadway is also known as 4th Street on its east–west section in Rush City and as Forest Boulevard for the remainder of its length to Rock Creek. Highway 361 parallels Interstate 35.