

Hill County Community Wildfire Preparedness Plan



September 2005



Bear Paw Development Corporation
of Northern Montana

MAXIM
TECHNOLOGIES

ENGINEERING & ENVIRONMENTAL CONSULTANTS

DRAFT

**HILL COUNTY MONTANA
COMMUNITY WILDFIRE PREPAREDNESS PLAN**

Prepared for:

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LIST OF ACRONYMS

ATGS	Air Tactical Group Supervisor
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe
CAT	County Assistance Team
CWPP	Community Wildfire Preparedness Plan
CRP	Conservation Reserve Program
DES	Montana Disaster and Emergency Services
DOI	U.S. Department of Interior
DNRC	Department of Natural Resources and Conservation
EOC	Emergency Operations Center
FAA	Federal Aviation Administration
FD	Fire Department
FEMA	Federal Emergency Management Agency
GIS	Geographic Information Systems
GPM	Gallons Per Minute
GPS	Global Positioning Systems
HFRA	Healthy Forests Restoration Act
IC	Incident Commander
ICS	Incident Command System
MPH	Miles per hour
MIST	Minimum Impact Suppression Tactics
NED	National Elevation Dataset
NFP	National Fire Plan

NIFC	National Interagency Fire Centers
NIMS	National Incident Management System
NLCD	National Land Cover Dataset
NOAA	National Oceanic and Atmospheric Administration
NPS	National Parks Services
NRCS	Natural Resource Conservation Service
NWCG	National Wildfire Coordinating Group
NWS	National Weather Service
PDM	Pre-Disaster Mitigation Plan
RAWS	Remote Automated Weather Stations
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
VFA	Volunteer Fire Assistance Fund
VFD	Volunteer Fire Department
WUI	Wildland Urban Interface

I.0 EXECUTIVE SUMMARY

I.1 INTRODUCTION

Wildfires directly impact the safety and well being of Hill County residents, the counties assets and surrounding natural resources. The purpose of the Hill County Community Wildfire Preparedness Plan (CWPP) is to provide Hill County residents, public and private organizations with assistance and recommendations to mitigate wildfire risk and vulnerability presented by wildfires within the county. Hill County, working in conjunction with Montana Disaster and Emergency Services (DES), U.S. Bureau of Land Management (BLM), U.S. Forest Service (USFS), Montana Department of Natural Resources and Conservation (DNRC), and Maxim Technologies (Maxim), prepared this document (the Plan) to help guide and focus wildfire hazard mitigation activities. The Hill County CWPP profiles significant wildfire related hazards to the community and identifies preparation activities that can reduce their impacts. The purpose of the Plan is to promote sound public policy designed to protect citizens, both private and public assets of the county and the natural resources of the county from natural and human caused wildfire hazards. The Hill County CWPP includes resources and information to assist county residents, organizations, local government, and others interested in participating in planning for the occurrence of natural and man-made wildfire hazards. The preparedness plan provides a prioritized list of wildfire prevention and preparedness steps that will assist Hill County in reducing risk and preventing loss from future wildfire events.

I.2 AUTHORITY

The Hill County CWPP is a county level planning document which will add to Montana's statewide fire plan as administered at the state level by the USFS and the BLM. Montana's overall plan, adequately underpinned and approved by these agencies at the county level, would then contribute to the U.S. National Fire Plan. The Hill County CWPP also complements and enhances the Counties Pre-Disaster Mitigation (PDM) Plan which amends the Robert T. Stafford Disaster relief and emergency assistance act by adding a new section, 322 – Mitigation Planning. It requires all local governments to have an approved Pre-Disaster Mitigation Plan in place to be eligible to receive Hazard Mitigation Grant Program project funding. The CWPP for Hill County also affords the county with compliance to the Healthy Forests Restoration Act (HFRA) of 2003. This Act put in place statutory incentives for the USFS and the BLM to assist communities on the county level to develop and implement forest management and hazardous fuel reduction programs.

Hill County and the incorporated towns of Havre and Hingham have adopted this CWPP. These governing bodies have the authority to promote sound public policy regarding natural and man-made wildfire hazard mitigation. Copies of the signed Resolutions from these jurisdictions are included as *Appendix A* of this plan. The Plan was adopted at the regularly scheduled meetings of the Havre and Hingham City Councils and at the meeting of the Hill County commissioners, all of which were open to the public and advertised through the communities' typical process for publicizing public meetings.

The Hill County DES Coordinator will be responsible for acceptance and submission of the adopted Plan to the Regional National Fire Plan Coordinators Office in Helena, Montana for review and incorporation into the statewide plan. This state level review will address the State of Montana criteria outlined in *Appendix B – Wildland/Urban Fire Assessment and Mitigation Planning*. Upon acceptance, the Regional National Fire Plan Coordinator will compile the various county level plans in preparation for revision to the State Plan which will then be compiled on the National level for inclusion into the National Fire Plan. Upon acceptance by the National Fire Plan administrators, USFS and Department of

the Interior, Hill County and the other Plan signatories will retain eligibility for local wildfire mitigation project grants and forest management and hazardous fuel reduction programs.

I.3 ACKNOWLEDGEMENTS

Many groups and individuals have contributed to development of the Hill County CWPP. City and county level fire officials, U.S. Fish and Wildlife Service (USFWS), the BLM, the DNRC and the local DES Coordinator provided significant guidance and support to all aspects of plan development. Numerous elected officials, city and county personnel, and the local communities participated in the planning process and contributed significantly to the Plan's development.

I.4 PLAN OVERVIEW

The community and officials of Hill County are committed to the preservation of the safety of residences and protection of natural resources and community assets within the management area. The Hill County CWPP has been prepared to better prepare community wildfire fire response resources, prioritize hazardous fuels reduction needs and ultimately protect the community from the potentially devastating and costly effects of wildfires.

To this end, this Plan has been prepared with input from a variety of resources including stakeholders representing a range of interests in the community. The plan has been prepared with the following structure:

- Section 1: Executive Summary; a brief synopsis of the plan (current section)
- Section 2: County Profile; addressing the regional management area in location, climate and weather, and economy
- Section 3: Scope and Plan Organization; itemizing the planning process to date, public comment considerations
- Section 4: Hazard Evaluation and Risk Assessment; outlining county fuel loads/types, weather, topography, wildland / urban interface, historical fire events and overall risk of fire
- Section 5: Assessing Vulnerability; identifying assets and vulnerable populations to include an assessment of economic, ecological and social values
- Section 6: Mitigation Strategy; examines the existing situation, and prioritizes strategies and outlines steps to accomplish agreed mitigation strategies
- Section 7: Assessment of Fire Plan Protection Preparedness and Capability; a measure of the existing situation for the county wildfire response assets and capacity
- Section 8: Plan Maintenance Procedures; establishes a method for plan maintenance and updates on an annual basis
- Section 9: References

In addition to affording county residence with planned improvements to wildfire prevention and control measures, the completion and annual updates to this plan will ensure Hill County remains eligible to receive expedited financial aid in the event of catastrophic wildfire. Having an approved CWPP will also continue and enhance the counties eligibility to receive need based grants from a variety of sources including the DNRC, the USFS and the BLM. The plan also directs any newly acquired funds to projects and resources previously prioritized by the Plan.

2.0 COUNTY PROFILE

2.1 PROJECT AREA AND LOCATION

Hill County is located in north-central Montana and has a land area of about 1,866,600 acres or 2,917 square miles. Hill County is bounded by Liberty County on the west, Chouteau County on the south, Blaine County on the east and the provinces of Alberta and Saskatchewan, Canada on the north. Havre is the county seat and incorporated towns include Hingham and Havre. The Rocky Boy's Indian Reservation is located in the southwest part of the county. The Fresno Reservoir is located in the north-central portion of the county. **Map 2-1** represents a location map of the plan area.

Elevation in Hill County ranges from about 2,450 feet above mean sea level along the Milk and Marias rivers in the east-central plains to about 7,000 feet in the Bears Paw Mountains in the south-eastern corner. Most of the county lies in the glaciated portion of the Great Plains. The Bears Paw Mountains make up the southeastern part of the county and several high buttes make up the northeastern section.

Agriculture is the primary land use in Hill County. About 65 percent of the county is cropland, 33 percent is rangeland and 2 percent is woodland (USDA, NRCS 2003).

According to the 2000 Census, the population of Hill County is 16,673. This represents a 5.6 percent decrease in population in the 10 years since the last census. The median age in Hill County is 34.5 years old (U.S. Census 2005).

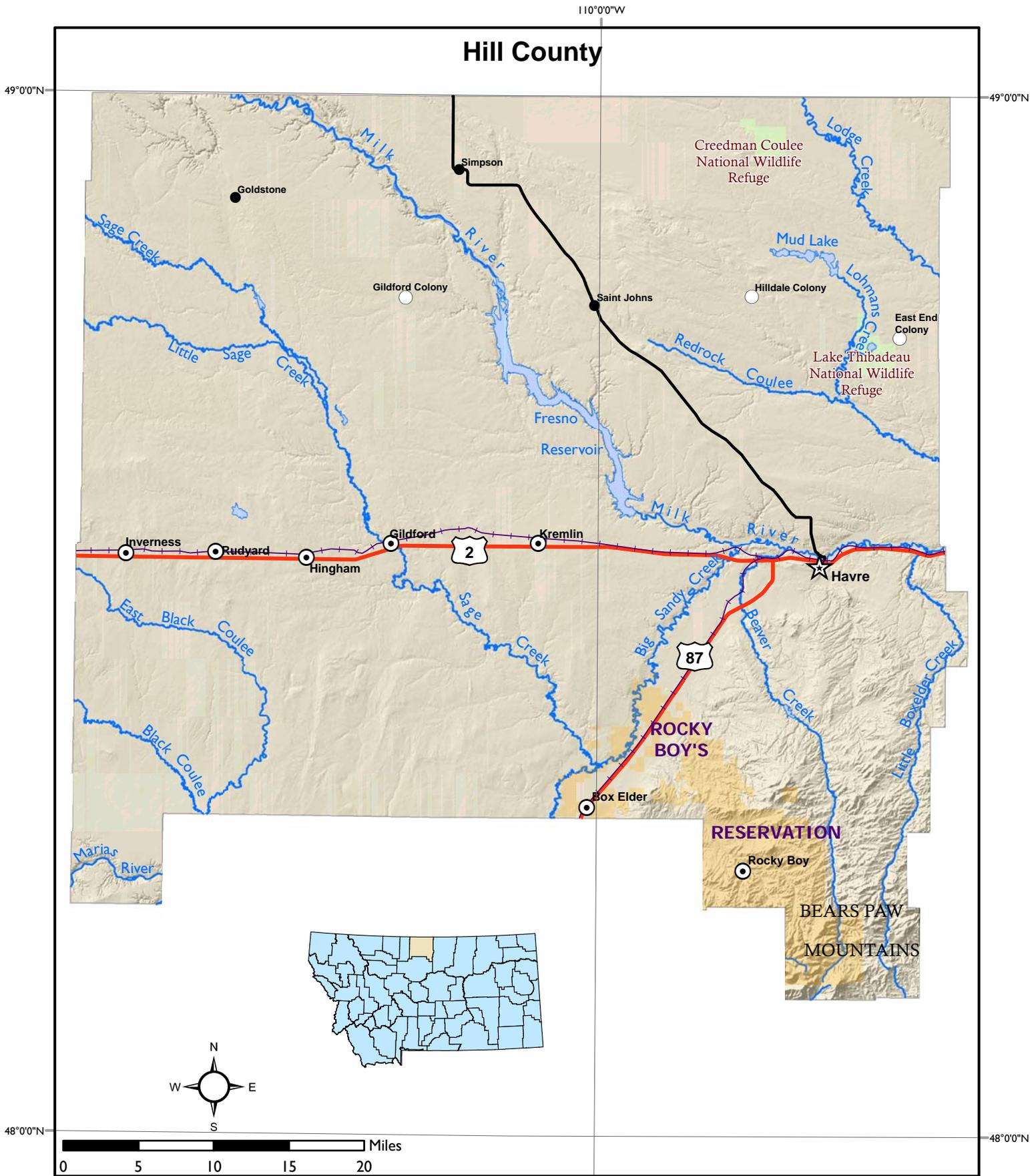
2.2 CLIMATE AND WEATHER

Hill County, Montana is located within the region generally classified as dry continental or Steppe with four well-defined seasons. The weather can be quite changeable with large day to day temperature variations, particularly from fall to spring. Days with severe winter cold and summer heat are typical.

Average high temperatures in January are 22 to 32°F with average lows 2° above to 10°F above, with the coldest averages over the far northern part of the county. The mildest winter conditions are in the Bears Paw Mountains. In winter in particular, temperatures often vary significantly from the averages with significant day to day variations. Temperatures near -50° F have been recorded at most locations, while typical extreme winter minimum temperatures are between -25 and -35° F during most years. Often the coldest temperatures occur at sheltered valley locations when winds are light, but extreme wind chill situations occur almost every winter when windy conditions coincide with very low temperatures. Winter Chinooks, or rapid warm-ups with strong west winds, are quite common. These rapid warm-ups during the winter and early spring on rare occasion can lead to significant snow melt and flooding of small streams and rivers and/or ice jam flood problems.

Average high temperatures in July are in the upper 70s to mid 80° s with average lows in the 50° s, with the warmest conditions along the Milk River valley and coolest conditions in the Bears Paw Mountains. Brief spells with temperatures above 100° F can occur but are often short lived. Temperatures above 105° F have been reported on rare occasion. Extended periods with temperatures above 90° F occur every few years. Freezing temperatures can occur during mid summer, but are rare except in the Bears Paw Mountains where below freezing lows occur almost every summer. Annual average precipitation is 10 to 13 inches, except up to 20 inches in the higher elevations of the Bears Paw Mountains. Over 65 percent of the annual precipitation total falls from May through September. Precipitation can vary significantly from year to year, and location to location within a given year. November through March,

Hill County



- | | | | | | |
|--|--------------------------|--|------------------|--|-------------|
| | National Wildlife Refuge | | Montana Highways | | County Seat |
| | Indian Reservation | | U.S. Highways | | Town |
| | Rivers and Streams | | Railroad | | Colony |
| | Waterbodies | | | | Place |

Location Map
Hill County
Northeast Montana
County Wildfire Preparedness Plan
Map 2-1

are on average quite dry with average monthly precipitation of 0.50 inches or less. The heaviest most intense precipitation often occurs with localized downpours associated with thunderstorms in June through August. Significant flash flooding can result from these downpours with over 4 inches of precipitation reported in a few events. Widespread heavy precipitation events of 1 to 2 inches can occur every few years and is most common from April through June and September through early November.

Average winter snowfall ranges from 25 to 38 inches, except over the highest elevations of the Bears Paw Mountains where the average snowfall is over 90 inches. The heaviest snowstorms often occur from late March through May or mid October to mid November. These storms can produce more than 12 inches of snow and are often made more severe as temperatures are warmer, and therefore the snow is heavier and more difficult to travel through and remove. These storms are often accompanied by high winds resulting in blizzard conditions. In spring these storms can coincide with the calving season resulting in livestock loss. At low elevations, mid winter snowstorms in general produce less than 6 inches of snow, but heavier amounts to 10 inches or more have occurred on rare occasions. Despite the generally lighter amounts in mid-winter and drier snow, high winds can result in blizzard conditions. Even without falling snow, in the colder conditions of mid winter, high winds can pick up loose snow, resulting in local ground blizzards. On rare occasions storms can produce over 2 feet of snow in the Bears Paw Mountains.

Severe thunderstorms are common from June into early September. Typically the greatest hazards associated with these thunderstorms are very high winds and large hail. Damage to structures and crops occur every summer from these storms. Tornadoes have been reported, but are relatively rare.

An important element of the climate in Hill County is the often windy conditions. Average wind speeds range from 10 to 15 miles per hours (mph), depending on the exposure of the location. The average and peak sustained winds in the Milk River Valley and Missouri River valleys tend to be somewhat less than the winds over the higher more exposed terrain in the northern and west central portions of the county. The highest wind gusts often occur with thunderstorms during the summer, with gusts over 60 mph occurring every year. The highest sustained winds tend to occur in the spring and fall, with sustained winds over 40 mph occurring every year (NWS 2005). *Table 2-1* shows the top weather events recorded in Havre.

Hottest Days		Coldest Days		Wettest Days	
111	08/05/1961	-57	01/27/1916	--	--
110	08/24/1969	-55	02/3/1887	--	--
109	08/03/2001	-54	01/28/1916	--	--
108	06/21/1900	-52	01/24/1969	--	--
108	07/12/1886	-50	12/14/1983	--	--
Wettest Years		Driest Years		Longest Dry Spells	
25.67	1884	4.99	1990	66 days	1988
20.69	1916	6.26	1997	--	--
18.99	1911	6.38	1988	--	--
18.94	1887	6.76	1905	--	--
18.88	1907	6.94	2001	--	--

Source: Data from National Weather Service (NWS 2004)

2.3 REGIONAL ECONOMY

Agriculture is the major industry in Hill County. The three major sources of income in Hill County are Government (\$76,447,000), Railroad (\$37,499,000) and Agriculture (\$6,325,000). The average annual unemployment rate in 2004 was 6.15 percent (Montana Department of Labor and Industry 2004).

As the largest City on the Hi-Line, Havre is the economic center of Hill County containing 839 businesses and organizations. Havre is a major transportation center on the Hi-Line. A division headquarters of Burlington Northern Santa Fe (BNSF) Railroad is located in Havre (Bear Paw 2004). An average of 55 BNSF trains pass through Hill County daily (Regional Request Narrative 2005). Agricultural products and interstate shipments bound for global markets are transported through Havre via the Burlington Northern Railroad (USDA, NRCS 2003).

The estimated percent of people of all ages in poverty in the state was 18.4 percent in 2000. Hill County's poverty rate was 18.4 percent (U.S. Census 2005).

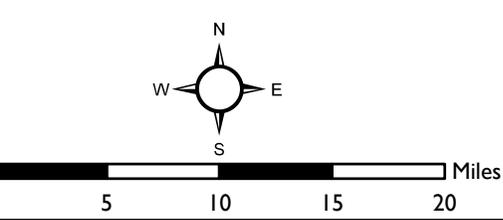
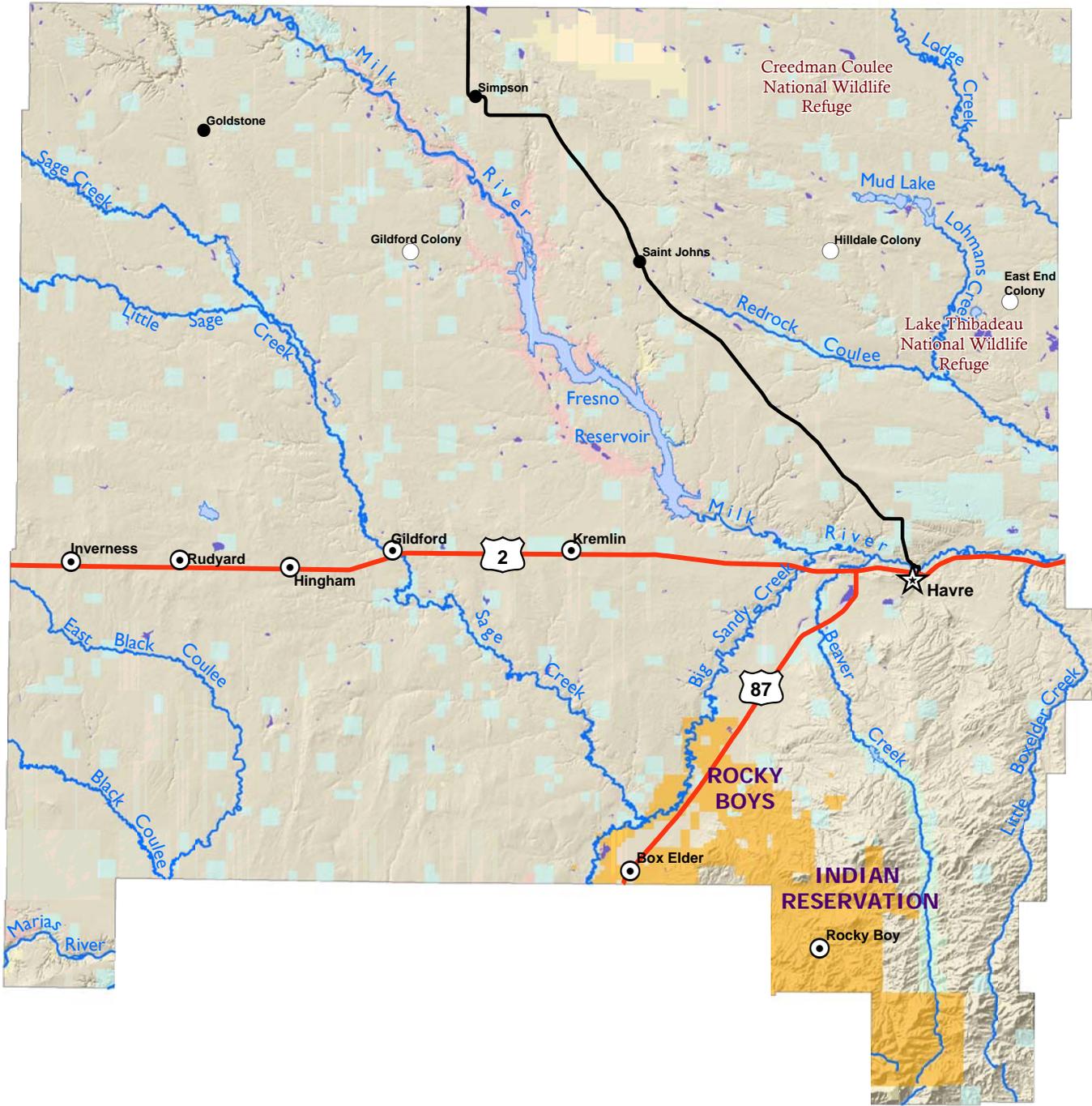
2.4 LAND TENURE

Land ownership in Hill County is primarily private and Indian with some Federal and State. **Map 2-2** shows depicts major land ownership and management for the county. *Table 2-2* summarizes major land ownership and management by acres for Hill County.

TABLE 2-2 LAND STEWARDSHIP IN HILL COUNTY	
Ownership	Acreage
Local Government	9942.58
Native American Lands	78244.48
Private	1560535
State of Montana	155427.5
U.S. Army Core of Engineers	81.93
U.S. Bureau of Land Management	15131.13
U.S. Bureau of Reclamation	27539.29
U.S. Fish and Wildlife Services	465.39
Water	18284.2
Source: BLM Land Status GIS Database	

Located 10 miles south of Havre in the Bears Paw Mountains, Bears Paw Ski Bowl offers winter recreation for people of north-central Montana. Beaver Creek Park, the largest county owned park in the nation, is located in the Bears Paw Mountains south of Havre. Recreation seekers utilize the park for a wide range of summer and winter activities (Bear Paw 2004). Hill County's historical resources including the Wahkpa Chu'gn buffalo jump, Fort Assinniboine, Havre Beneath the Streets, and the H. Earl Clack Museum (Havre Chamber of Commerce 2005).

Hill County



- | | | |
|--|---|--|
| US - BLM | US Army Corps of Engineers | Local Government |
| US Bureau of Reclamation | Native American Lands | Water |
| US Fish & Wildlife Service | State of Montana | |

Land Stewardship
 Hill County
 Northeast Montana
 Community Wildfire Preparedness Plan
 Map 2-2

3.0 SCOPE AND PLAN ORGANIZATION

The scope of the Hill County Community Wildfire Preparedness Plan includes the following:

- Identify and prioritize potential wildfire areas that are most probable based on proximity to or use by the general population, Wildland/Urban Interface (WUI) corridors
- Identify critical fire fighting facilities
- Identify areas within the county that are presently the most susceptible to wildfires
- Develop goals for reducing the negative effects of wildfire events
- Develop specific projects to be implemented to accomplish each goal
- Develop procedures for monitoring progress and updating the Plan
- Officially adopt the Plan

The Plan is organized into sections that describe the planning process (Section 3), hazard evaluation and risk assessment (Section 4), assessing vulnerabilities of assets and populations (Section 5), assessing vulnerabilities to potential losses (Section 6), mitigation strategy (Section 7), assessment of fire protection preparedness and capability (Section 8), and Plan maintenance procedures (Section 9). Appendices containing supporting information are included at the end of the Plan.

3.1 PLANNING PROCESS

The Hill County CWPP is the result of a collaborative effort between Hill County citizens, public agencies and regional, state, and federal organizations. Public participation played a key role in development of goals and mitigation projects. Interviews were conducted with the Hill County DES Coordinator, mayors, and elected officials, and three public meetings were held to include the input of Hill County residents.

3.2 PROJECT PARTICIPANTS

The CWPP planning process was initiated by preparing a contact list of individuals whose input was needed to help develop the Plan. On the County level, these persons included elected officials (Hill County Commissioners), the DES Coordinator, County Health Department and Sheriff's Department. Councilpersons from the incorporated towns were listed (Hingham and Havre), as well as the mayors and fire chiefs. State agencies included Montana Department of Natural Resource and Conservation (DNRC) and Montana Department of Fish Wildlife and Parks (MFWP). Federal Agencies included the Rocky Boy's Reservation, USFWS and BLM. *Appendix B* presents the Hill County contact list. Persons and entities on the contact list received a variety of information during the planning process, including project maps and documents for review, meeting notifications, and mitigation strategy documents.

3.3 STAKEHOLDER INTERVIEWS AND MEETINGS

Interviews were conducted with individuals and specialists from organizations interested in hazard mitigation planning. The interviews identified common concerns related to natural and man-made hazards and identified key long- and short-term activities to reduce risk. Stakeholders interviewed for the plan included representatives from local government, fire departments. A list of meetings and interviews with Hill County stakeholders is presented in *Appendix B*.

3.4 FORMAL PUBLIC MEETINGS

Two public meetings were conducted in Hill County during initial plan development. The meetings were held in Havre on January 20, 2005 and in Hingham on January 20, 2005. The purpose of the meetings was to gather information on historic disasters, update the list of critical facilities, and gather ideas from citizens about mitigation planning and priorities for mitigation goals. The sign-in sheet from the Hill County public meetings and meeting summaries are presented in *Appendix B*.

In advance of the public meeting, a press release was distributed to local and regional newspapers including the Havre Daily News and the Great Falls Tribune. Local radio stations who received copies of the press release as public service announcements included area radio stations KOJM, KPQX and KRYK. Notices of the public meetings were sent in advance to all jurisdictions participating in the planning process including Havre, Hingham, and Hill County. Notices were sent to all federal, state, and local officials on the project contact list (*Appendix B*). A copy of the press release and media distribution list is included in *Appendix B*. *Appendix B* also contains copies of the press release as it appeared in several local newspapers. Reporters were in attendance at several of the public meetings and follow-up articles on Plan development appeared in local newspapers.

The City Council and County Commission meetings at which the resolutions adopting the plan were passed provided the public with the opportunity to review the final version of the plan.

3.5 OTHER PROJECT MEETINGS

Over the course of the project numerous meetings were held with, and briefings given to, local officials and other stakeholders. At the project's inception the DES Coordinator and the Project Manager for Maxim Technologies toured the project area and met with commissioners from the county and local emergency fire response personnel. The overall project objectives were presented at these meetings and initial concerns and potential mitigation measures were discussed.

3.6 PLAN REVIEW

Review copies of the draft Plan were provided to the DES Coordinator for distribution in hard copy. Plan reviewers included county commissioners, mayors of the various jurisdictions, and other federal, state, and local officials. The DES Coordinator provided review copies of the Plan to all jurisdictions involved in the planning process including Chinook, Harlem, and Hill County. Public comments were submitted to the DES Coordinator after a 30-day review period. The DES Coordinator reviewed the comments and submitted a consolidated list to Maxim.

A review of the Plan for completeness was conducted after the initial comments were addressed. Plan copies were then submitted to the DNRC and to the attention of the National Fire Plan Coordinators Office in Helena for review. The review period lasted 30-days. Upon receipt of Coordinators comments, the Plan was finalized and taken to the County commissioners and jurisdictions for adoption.

Future comments on this Plan should be addressed to:

**Hill County Community Wildfire Preparedness Plan Coordinator
315 4th Street
Havre, MT 59501**

4.0 HAZARD EVALUATION AND RISK ASSESSMENT

The hazard evaluation for Hill County has two primary components. The first component is a qualitative community assessment of the county and larger towns risk to wildfire. The second component is a quantitative assessment using GIS based models and the best available data related to fire risk factors including weather, fuel, topography, and fire history.

4.1 COMMUNITY ASSESSMENTS AND MITIGATION ACTIVITIES

The majority of Hill County Residents live in rural areas where equipment and personal are very limited. Fire fighters in remote areas also face limited water supplies and lack of hydrant taps. Fire protection in these rural and interface areas is mostly reliant on landowners and their initiative to create defensible space and other protective measures. Structures in Hill County are at the greatest risk to wildfire when they are constructed of combustible roofing material, have no defensible space or are located on steep slopes. Proximity to a water supply and fire stations and the availability of equipment and personal are factors in wildfire risk. Properly signed streets are also a risk factor as they allow emergency response crews to quickly and accurately identify routes and decrease response time. Community wildfire hazard and risk assessments were conducted by fire management specialists experienced with wildfire suppression, fire behavior, fuel models, terrain and weather that occur in North Central Montana. Community evaluations were accomplished during on site visits using standard National Fire Protection Association (NFPA) wildfire severity checklists for wildland-urban interface areas. The evaluations are also based on fire behavior fuel models as described in the U.S. Forest Service Document “*Aids to Determining Fuel Models For Estimating Fire Behavior*” by H. E. Anderson, 1982. Utilization of standard wildfire severity rating forms combined with fire behavior fuel models within the county will allow comparisons to risk ratings in all communities surveyed. Written narrative descriptions of each community, fuel models, risk ratings and mitigation suggestions are presented below. The Wildfire Severity Checklists and ratings are included in *Appendix D*.

4.1.1 Incorporated Individual Communities

4.1.1.1 Havre

Havre is the County Seat of Hill County and is the largest city in the County with a population of 9,621. Havre is located on US Highway 2 and on the mainline of the Burlington Northern Santa Fe Railway. Numerous businesses and homes and an airport comprise Havre. Schools include grades Kindergarten through 12th and Montana State University, Northern. Emergency services include city fire department, city law enforcement, county law enforcement, county fire department (FD) and emergency services dispatching.

Community Assessment:

The Havre Fire Department provides structure and wildfire protection to Havre and areas outside of Havre. The fire station is situated at a location conducive to quick response. Within Havre a municipal fire hydrant system provides an adequate water supply for structure fires. For areas outside of Havre, water availability for wildfire suppression is inadequate. The structures around the perimeter and homes/ranches just outside of Havre are at the greatest risk to wildfire due to flammable vegetation accumulation close to the structures or dwellings. Homes constructed on hills with little set back from the slope on the outskirts of Havre are also a great risk to wildfire.

The Havre vicinity has experienced numerous wildfire ignition sources including railroad, power lines falling, debris burning, lightning, and machinery use. Fuels around Havre are generally considered light fuels and include prairie grass, cottonwood stands, and tall cultivated grains, tall weed species, and mixed grass, weeds and shrubs on Conservation Resource Program (CRP) lands. The topography in and around Havre is rolling hills to steep coulees and river bluffs to the North and South. Named and signed streets in and outside Havre city limits improve emergency response times. Most structures in the area have sufficient defensible space of 70 to 100 feet.

Weather has a heavy influence on containment and control of wildfire in and around Havre. The region is prone to unusually severe fire weather and strong dry winds. Winds and low humidity will dry the fuels quickly and ignitions will exhibit high rates of spread, and a greater intensity. Large wind driven wildfires pose a significant threat to the community of Havre. The Blaine County Fire of 1991 was a large wind-driven fire that was ignited south of Havre. The fire would have reached homes on the south side of Havre had the winds blown in a more northerly direction.

Mitigation Activities:

Implementation of defensible space for perimeter and outlying structures will reduce ignition potential in the event of a wildfire. The defensible space of 40 feet around structures can be accomplished by maintaining green grasses as long as possible into the fall and keeping the grass cut. Removal or mowing of tall weed patches along fences, property boundaries, irrigation ditches or canals will decrease the spread potential and intensity of any ignitions that occur. Conifer trees that are adjacent to structures should be limbed to at least 5 feet above the ground fuels. Additional public awareness during of wildfire potential could be accomplished through radio announcements, fire danger signs on roads/highways, and presentation of Firewise practices at schools in Havre. Continued implementation of and adherence to the Hill County burning permit requirements is a necessity. A Havre or Hill County wildfire prevention or awareness day in the late summer would assist residents with updated Firewise information and could be combined with Fire Department displays, demonstrations or fundraisers.

4.1.1.2 Hingham

Hingham is a small community with a population of 157 according to the 2000 U.S. Census. Located on U.S. Highway 2 the BNSF railroad line runs through the north side of town. Hingham is primarily a shipping and storage station for stock and grain (Cheney 1996). A number of homes, businesses, and other structures comprise the town of Hingham. Agriculture lands surround the community, including grain fields and CRP lands.

Community Assessment:

The topography around Hingham is rolling with mostly gentle slopes. Most homes in the community have some defensible space. At risk are structures that have continuous grass or other fire prone fuels between and adjacent to them.

Hingham and the surrounding area has experienced a number of historic ignition sources for wildfires including railroad, debris/vegetation burning and other human caused ignitions.

Fuels on the perimeter of Hingham include cured grass, wheat stubble, and tall vegetation. In the surrounding area vegetation is grain fields, CRP lands, and prairie grasses. Hingham is rated at moderate risk to wildfires.

Fire suppression for the community is provided by the Hingham Volunteer Fire Department (VFD). Response times within and adjacent to town is good, but as distances increase response times increase.

Water availability within Hingham is adequate. Outlying areas that are within the Hingham VFD response area lack good water availability.

Mitigation Activities:

Easily implemented wildfire risk reduction activities in Hingham include mowing and removing cured vegetation around the perimeter of and adjacent to structures. Defensible space could be created with minimal effort around all structures.

CRP and agricultural lands around Hingham should engage double row perimeter plow/disking, mowing and/or the initiation of prescribed burning or a combination of methods. All vegetation burning would be coordinated with the Hingham and adjacent Fire Departments and would require compliance with an issued Hill County burn permit.

4.1.2 Unincorporated Individual Communities

4.1.2.1 Box Elder

Box Elder serves as the Headquarters for the Rocky Boy's Indian Reservation (Cheney 1996). According to the 2000 U.S. Census, Box Elder's population was 794. It is located on State Highway 87, approximately 23 miles southwest of Havre near the Hill County and Chouteau County line. The Rocky Boy's Indian Reservation boundary is just east of Box Elder and the BNSF railroad line run through the west side of town. Businesses include a grocery store, fuel station, restaurants and schools with grades kindergarten through 12 comprise the town.

Community Assessment:

Box Elder historically has had several wildfires in close proximity to the community. Wildfire poses a significant threat to parts of Box Elder and outlying homes.

Box Elder is rated at moderate risk to wildfires during winter, spring, and early summer. Risk increases during late summer and fall when the vegetation is cured and high dry wind events occur. During these periods Box Elder is rated at high risk based on fuel availability, historic fire behavior, rates of spread and ignition potential.

Historic wildfire ignitions in the Box Elder area include railroad, debris burning, and lightning. Most ignitions in the community are contained within the first initial attack operational period if weather conditions are favorable. Wildland fire fuels around Box Elder include, grain fields, short grass prairie, CRP vegetation, and various tall weeds species.

The roads, highways and streets in an around Box Elder are named, signed and a number system is applied. The structures and homes on the perimeter of and outside of Box Elder are at the greatest risk to wildfire. Some homes and structures on the edge and outside the town have flammable vegetation in close proximity to the structures. Predominate building materials in the area are non-combustive/fire resistive siding.

The Box Elder VFD and the Rocky Boy's FD, provide protection from wildfire within and the areas surrounding Box Elder. The Box Elder VFD provides structure and wildland fire protection. Water availability is often inadequate when the Box Elder Fire Department responds to wildfires outside of town.

Mitigation Activities:

Mitigation of risk can be accomplished through implementation of a number of precautions. Creation of defensible space, an area next to the home or structure that contains green low growing vegetation into the fall and use of noncombustible material for landscaping, would be most effective. An individual survey of homes or structures within and outside of Box Elder would result in hazard identification and mitigation action that homeowners could accomplish. Some potential yearly mitigation projects include removal, mowing or burning of vegetation in and around Box Elder. Controlled ignition of harvested grain fields and CRP lands will provide an area that is not subject to wildfire, such projects would require compliance with the Hill County burning permit and coordinated with the Box Elder, Hill County and Rocky Boy's County Fire Departments. The Hill County burning permit should remain enforced and followed by all residents within or on the outskirts of Box Elder.

4.1.2.2 Gilford

Gilford is a community located on State Highway 2 approximately six miles east of Hingham. According to the 2000 U.S. Census the population of Gilford was 185. Farmers use the small town as a grain marketing center (Cheney 1996). The BNSF railroad line runs through Gilford. A small number of homes, businesses, schools, stores and other buildings comprise Gilford.

Community Assessment:

Topography at and around Gilford is mostly gentle with occasional steeper hills. Cultivated agriculture fields of grains and areas of pasture generally surround the community. Most structures have defensible space of 70 to 100 feet, but some on the perimeter of town have combustible vegetation next and adjacent to homes or structures. Predominate building materials in Gilford consist of combustible siding and deck materials.

Gilford and the area near it have experienced a number of wildland fires from various ignition sources including rail road, debris/vegetation burning, and other human causes. Wildfire risk potential around Gilford can be easily underestimated because of the cultivated grain fields and pasture grasses. Cured grain fields, stubble, pasture or CRP vegetation around Gilford indicates the risk to wildfire is moderate. During dry wind events in late summer or fall this risk increases to high if mitigation measures are not taken to remove or modify the fuels around Gilford.

Suppression of wildfires in the Gilford area is provided by the Gilford VFD. Water availability within Gilford is good, but water availability for wildfire suppression in outlying area is not always adequate.

Mitigation Activities:

Removal or mowing of cured vegetation on the edge of and within the community would reduce wildfire risk. Grain fields adjacent to Gilford could implement a double row plow/disk of fields that abut the community thus removing fuels. Defensible space for homes on the perimeter of Gilford could be improved. Prescribed fires or burning of grain stubble on CRP lands would reduce risk but would require coordination with the Gilford and adjacent fire departments and compliance with Hill County burning permit requirements.

4.1.2.3 Inverness

Inverness is a small community in western Hill County. According to the 2000 census the population of Inverness was 103. Inverness is Located on Highway 2 and approximately three miles from Liberty County. The BNSF railroad runs along the north side of town. The Inverness FD provides fire protection for Inverness and the surrounding area.

Community Assessment:

The topography around Inverness is gentle and rolling. Agricultural lands comprise most of the landscape. Most dwellings have a fair amount of defensible space, though some have less than 30 feet defensible space. Building materials are predominately non-combustive/fire-resistive. Areas of uncut cured vegetation 12 inches to 16 inches in height are interspersed within Inverness. Parts of Inverness's perimeter are protected by areas of plowed/disked agricultural ground, while other areas are vulnerable.

Grasses, CRP and harvested grains provide a fuel bed for wildfires around Inverness. Despite the generally light fuels in and around Inverness the community is rated at moderate risk to wildfires. This risk will increase to high when vegetation cures and high wind events occur. High risk generally occurs from August through mid November. Historic wildland fire ignitions around Inverness include railroad and other human caused ignitions. At risk from wildfires in the Inverness area are the homes on the perimeter and homes/ranches in areas outside of Inverness.

County roads outside of Inverness are signed. Most roads within Inverness are signed. Response time for fire suppression and water availability within Inverness is adequate, response times and water availability for wildfire suppression in outlying areas is not always adequate.

Mitigation Activities:

Specific mitigation activities for Inverness include removal or mowing of cured vegetation within the community and the establishment of a minimum of 40 feet defensible space for all dwellings and structures. Establish defined perimeter through plowing/disking of agriculture lands around Inverness. Maintain green grass on properties within and on the perimeter of Inverness as late in the fall as feasible.

Outlying areas within CRP lands and grain fields should establish defensible space around homes and structures and remove vegetation adjacent and next to structures. The maintenance of a water supply for suppression of unplanned ignitions would be advisable due to possible electrical power loss due to winds. Double row plow/disk around CRP lands combined with mowing or the introduction of prescribed fire would mitigate wildfire spread over these areas.

4.1.2.4 Kremlin

Kremlin, a small community of 126 people according to the 2000 U.S. Census, is located on Highway 2 approximately 20 miles west of Havre. The BNSF railroad line runs on the north side of town.

Community Assessment:

The topography around Kremlin is similar to other communities in Hill County. Vegetation surrounding the community consists of Buffalo Grass. Most of the structures in Kremlin have defensible space, though some structures around the perimeter have combustible vegetation in close proximity. Wildfire ignitions in the Kremlin area are attributed to railroad, debris burning and other human causes.

The area in and around Kremlin is at moderate risk to wildfires until vegetation cures and dry wind events occur increasing the risk to high unless mitigation measures are employed to modify or remove fuels around the perimeter of Kremlin and the outlying homes or ranches.

Fire suppression for the Kremlin area is provided by the Kremlin VFD. Water availability within Kremlin is adequate but water availability for wildfire suppression in outlying response areas is not always adequate.

Mitigation Activities:

Improvements in defensible space for homes and buildings on the perimeter of Kremlin should be the easiest and first activity implemented. Removal of cured vegetation near structures and retaining green vegetation as late in the fall as possible will decrease wildfire risk.

For CRP lands, the mowing, disking and introduction of prescribed fire would also mitigate risk for the heavier fuel loadings. Continued enforcement and adherence to the Hill County burn permits should also be employed.

4.1.2.5 Rudyard

Rudyard is an agricultural community located on Highway 2 in western portion of Hill County between Chester and Havre. According to the 2000 US Censuses the population of Rudyard was 275 people. The BNSF railroad line runs between Rudyard and Highway 2 south of the town.

Community Assessment:

The predominant agricultural lands around Rudyard occupy gentle rolling topography. Homes within the community have defensible space but cured grass up to 12 inches in height occur intermittently in a few areas of Rudyard. Grain fields in stubble or disked occur around the community. Most dwellings in Rudyard have defensible space to 40 to 100 feet, though cured lawn grasses will carry wildfire in the late summer and fall. Rudyard is at moderate risk to wildfire due to fuels within and in the surrounding areas, historic ignitions and water availability. When fuels are cured in late summer and fall combined with dry wind events that often occur, the risk for Rudyard would increase to high.

Ignition sources of wildfires in the Rudyard area include railroad, debris burning, and other human causes. Grain stubble, cured grain and CRP vegetation on the perimeter presents a wildfire risk to homes in Rudyard and the surrounding area especially during dry winds.

Fire suppression is provided by the Rudyard VFD. Wildfire suppression response times within and close to Rudyard are adequate, but as distances increase response times will be extended and water availability is not always adequate.

Mitigation Activities:

Mitigation of wildfire risk in Rudyard can be initiated with mowing or removal of tall vegetation around the perimeter and on various properties in the community.

Establishing defensible space around homes and structures in and surrounding Rudyard by removing fuels and providing green nonflammable vegetation for a long a feasible in the fall is a simply implemented mitigation activity.

Double row plow/disk of grain fields and CRP land on the perimeter of Rudyard and outlying farms and ranches will slow wildfires rates of spread and can be used during suppression activities if needed. The application of mowing and/or prescribed fire to CRP lands in the Rudyard area will decrease fuel heights or loading in the event of a wildland fire. Application of prescribed fire would need to be coordinated with the fire department combined with having and complying with the Hill County burn permit. GPS coordinates of possible ground water wells for use in wildfire suppression should be obtained and made available for Hill County resources and wildfire mutual aid to Hill County.

4.1.3 Hill County Fire Suppression Resources

Wildfire suppression resources within the County were obtained from survey questionnaires provided to full-time and volunteer fire departments within the county, interviews with department chiefs and personnel and the Hill County Cooperative Management Plan of 2004 prepared by the DNRC Northeastern Area Office. A summary of wildfire suppression resources available to the county in the event of wildfire are presented in *Table 4-1* below.

Fire Suppression Resource	Volunteers or Staff	Equipment Details						
	Total	Other Trucks	Brush/Quick Attack Truck	Tender Trucks	Pump Trucks	Fire Engines	Command Trucks	Ambulance
Bear Paw VFD	20					7		
Box Elder VFD	15							
Gildford VFD	15					2		
Havre FD/Ambulance	17		3			2		3
Hingham VFD	12		2			1		
Inverness VFD	12					2		
Kremlin VFD	15					2		
Rudyard VEMS	13							
Rudyard VFD	10				2			
St. Joe VFD	20					6		
Wildhorse VFD	20		2					

4.1.3.1 Federal Resources

The Zortman BLM office is not manned year round and is a seasonal station. The Central Montana BLM Fire Zone has the following resources in Lewistown. The type refers to resource capability. A type 1 resource provides a greater overall capability due to power, size, capacity, etc., than would be found in a type 2 resource:

Lewistown

- Type 3 Incident Commander (IC)
- Three Type 6 engines
- Type 4 engine
- Type 1 water tender
- Type 3 helicopter with crew
- Type 1 Air Attack platform with Air Tactical Group Supervisor (ATGS)

Zortman

- Type 4 IC
- Two Type 6 engines
- Type 4 engine

4.1.3.2 DNRC Resources

Lewistown Northeastern Land Office provides the following fire suppression resources to Hill County:

Aircraft

- Recon flights available with a County Fire Advisor if warranted and weather conditions permit
- Retardant aircraft available if warranted and weather conditions permit

Ground Resources

- Type-6 engines (Note: must coordinate availability from other counties where engines are located. None are located within Northeastern Land Office cache in Lewistown)
- Radio Cache - 15 programmable King portable radios
- 50-person mobile fire cache - radio equipped
- Mobile command trailer - radio equipped
- 1 ton 4X4 flatbed - radio equipped (set up to pull 20 foot. gooseneck flatbed trailer)
- ½ ton 4x4 pickup - radio equipped
- ½ ton 4x4 pickup - radio equipped
- ½ ton 4x4 pickup - radio equipped
- ½ ton 4x4 pickup - radio equipped (Incident Commander for County Assistance Team (CAT))
- ½ ton 4x4 pickup - radio equipped (IOFR for CAT team)

4.1.3.3 Hill County

Hill County Rural VFD's includes St. Joe, Wildhorse, Bear Paw, Kremlin, Gilford, Hingham, Rudyard, Inverness and Box Elder. With the exception of Bear Paw VFD, each department receives a yearly levy based on property tax revenues collected from residents in residing within the respective fire district. Depending on the district population, annual revenues range from \$2,750 to \$8,500. Bear Paw VFD relies solely on the funding from residents in its district. Vehicle maintenance, equipment, training, utilities and building costs are the main uses of the revenue. The Hill County Rural VFD's protect local, state, and federal properties such as Beaver Creek Park, a 10,000 acre county owned park providing year round recreational opportunities with approximately 125 summer cabin sites and Fresno Dam and Reservoir which provides year round recreational opportunities with approximately 35 summer cabin sites and federally owned caretakers quarters. Mutual aid agreements include Blaine, Chouteau, Liberty, Phillips, Valley Counties, the cities of Chinook, Harlem, Malta, and entities of (Bureau of Indian Affairs) BIA, and Fort Belknap Indian Reservation.

Between 2001 and 2003 Hill County received \$18,381 dollars in Volunteer and Rural Fire Assistance (section 6.4) from the DNRC to purchase the following equipment for the Inverness Fire District, Pear Paw VFD, Rudyard Fire District, Box Elder Fire District, Kremlin VFD, Gildford VFD and Havre Fire Department:

- 7 Self Contain Breathing Apparatuses (SCBA's)
- 18 Sets of Wildland Personal Protective Equipment (PPE)
- 9 ICOM Radios
- 1 Pump
- 1 Reel
- 1 Siren
- 1 Flasher
- 1 Speaker Unit

Hill County provides the following fire suppression resources to the Hill County Rural VFD's:

- 700 gallon water tender, 350 gallons per minute (gpm), Radio Equipped
- Road Departments have dozer, graders, etc

4.1.3.4 Havre

Formed in 1905 the Havre FD serves Hill County and the City of Havre and responds to an area of approximately 42 square miles. The Havre FD has mutual aid agreements with all VFD's in Hill County, Rural Fire District #1 and the City of Chinook located in Blaine County. The Havre FD also has Emergency Medical Services (EMS) mutual aid with Rudyard Ambulance Volunteer Emergency Medical Services (VEMS) as well as Blaine County and Liberty County. Partnered together, Rudyard VEMS and City of Havre provide county-wide response. No state or federal agreements exist with the Havre FD. Medical/EMS services have the greatest impact on the FD followed by wildland fires and structural fires. Acquiring equipment is the greatest departmental issue facing the FD followed by funding, training, water supply and firefighter availability. The FD is a member of the Hill County Rural Fire Council which consists of 8 members. The FD participates in a firefighter certification program, but does not participate in the National Wildfire Coordinating Group (NWCG) Wildland Firefighter "Red Card" Certification Program. If offered the FD would participate in the NWCG's advanced level firefighter certification for wildland fires. Approximately 200 course hours a month is spent on in-house training for fire fighters. Seventeen firefighters a year attend fire training. Dispatching for the FD is provided by the Sheriff's Department and the City of Havre.

The following is a list of equipment available to the Havre Fire Department:

- 800 gallon engine, 6x6, 350 gpm, Radio Equipped, 2 SCBA's
- 750 gallon interface engine, foam system, 50 gallon AFFF tank, 9 SCBA's, Radio Equipped,
- Aerial unit, 1,000 gpm, 65 foot snorkel, Radio Equipped
- 700 gallon engine, 750 gpm, 4 SCBA's, portable foam unit, Radio Equipped
- 350 gallon engine, 80 gpm, Radio Equipped
- 500 gallon engine, 1,000 gpm, 4 SCBA's, Radio Equipped
- 1500 gpm 750 gallon tank with foam, Radio Equipped
- 17 total working SCBA's
- 400 gpm 1000 gallon tank, Radio Equipped
- Decon trailer
- Narrow Band Compatible Radio Equipment

4.1.3.5 Hingham

The Hingham VFD is located 35 miles east of Havre and is responsible for providing emergency services to the town of Hingham and the surrounding 300 mile rural area with a population of 240 people. The annual budget of the Hingham VFD is \$4,200 per year. The response capabilities of the Hingham fire department include wildfire and structural fire suppression along with medical first aid response. The Hingham VFD responds to 14 to 20 calls per year ranging from structure, wildland, vehicle incidents, and mutual aid. The Indian Nation of Rocky Boy's is included in the mutual aid response.

4.1.3.6 Bear Paw VFD

The following is a list of equipment available to the Bear Paw VFD:

- 800 gallon water tender, Radio Equipped, Location: Kiwanis Camp, NW¼, Sec. 9, T29N, R16E

- 200 gallon engine (State-owned), Radio Equipped, Location: Fort Assiniboine Experiment Station SW¼, Sec. 28, T32N, R15E
- 200 gallon engine (State-owned), Radio Equipped, Location: Jack Dahlin, SW¼, Sec. 20, T31N, R15E
- 200 gallon engine, Radio Equipped, Location: Jim Faber, SE¼, Sec. 18, T29N, R16E
- 200 gallon engine (State-owned), Radio Equipped, Location: Keith Hansen, Clear Creek, SE¼, Sec. 17, T32N, R17E
- Command vehicle (1-ton, 4x4), Equipped with a 200 gallon tank, Radio Equipped
- 2,900 gallon water tender (State-owned chassis), Radio Equipped, Location: Enron Gas Pump Station, SW¼, Sec. 18, T31N, R16E
- 200 gallon engine, Radio Equipped, Location: Ramond Kallenberger

4.1.3.7 Box Elder

The following is a list of equipment available to the Box Elder VFD:

- 650 gallon engine
- 1,000 gallon water tender 1½ inch pump
- Handheld radios
- 1 Ton 4x4, 360 gallon tank; 1 inch hose

4.1.3.8 Gilford

The following is a list of equipment available to the Gilford VFD:

- 800 gallon engine, Radio Equipped
- 500 gallon engine, Radio Equipped

4.1.3.9 Hingham VFD

The following is a list of equipment available to the Hingham VFD:

- Three 500 gallon engines, Radio Equipped

4.1.3.10 Inverness VFD

The following is a list of equipment available to the Inverness VFD:

- 300 gallon engine, 350 gpm, Radio Equipped, Location: Inverness
- 800 gallon engine, Radio Equipped, Location: Lloyd Wolery
- 1,250 gallon engine, Radio Equipped, Location: Inverness
- 200 gallon engine, slip-on, (State-owned) NO RADIO, Location: Lloyd Wolery, S½, Sec. 4, T36N, R8E

4.1.3.11 Kremlin VFD

The following is a list of equipment available to the Kremlin VFD:

- 800 gallon engine, Radio Equipped

- 750 gallon engine, Radio Equipped
- 300 gallon engine, 1 ton quick attack with foam system

4.1.3.12 Rudyard

The Rudyard VFD has a primary response area of approximately 264 square miles. Written mutual aid agreements are in place with neighboring FD's. The FD is not a member of any statewide mutual aid agreements. Monetary support is supplied by the tax district. The department is a member of the Hill County Fire Council, which consists of eight other departments. The FD doesn't participate in any firefighter certification programs or the National Wildfire Coordinating Group (NWCG) "Red Card" Certification Program, but if offered would participate in the NWCG wildland courses offered at advanced levels. In-House training for volunteers is approximately six hours per month and the department does not possess International Fire Service Training Association (IFSTA) Manuals. Two volunteers attend fire training yearly. Fire Suppression equipment for Rudyard is listed below:

- 2 ½ Ton Ford, 750 gallon engine, 1955, F800, 250 gallon per minute (gpm) Radio Equipped
- 2 ½ Ton IHC, Boom (pumper) truck, 50 foot Snorkel, 1963, 750 gpm, no water on board, Radio Equipped
- 2 ½ Ton Ford, 1964, 800 gallon Pumper Truck, 350 gpm engine, Radio Equipped
- 1994 Brush Truck, K3500, Chevy 4x4 1-Ton 300 gallon 250 gpm, Radio Equipped
- Three working SCBA's

4.1.3.13 Saint Joe VFD:

- 750 gallon engine, pump only (State-owned) Radio Equipped, Location: Paul Chagnons, Badland Tree (River Road)
- 1,200 gallon engine, Radio Equipped Location: Ron Beatty, 37 miles north of Havre
- 200 gallon engine, slip-on (State-owned) Radio Equipped, Location: Hans Verploegen
- 450 gallon engine, Radio Equipped, Location: Shrauger Farms, NW¼, Sec. 19, T37N, R16E
- 300 gallon engine, Radio Equipped, Location: Shrauger Farms

4.1.3.14 Wildhorse RFD:

- 1,050 gallon tender, L-9000 Ford, pump only (State-owned)
- 94 gallon pump at 100 psi, Radio Equipped, Location: Joe Pruys, SW¼, Sec. 11, T35N, R13E
- 300 gallon engine (State-owned pump & tank), Radio Equipped, Location: Daryl Morse, Sec. 32 T37N, R12E
- 200 gallon engine (State-owned), Radio Equipped. Location: Sec. 26, T33N, R14E
- 700 gallon tender, No Radio, Location: Sec. 11, T35N, R13E
- 4x4 Ford with 300 gallon tank, Location: Murdy Rismon
- 2-ton (1976) Ford 200-gallon tank

4.2 FUELS

Fire risk is influenced to a large extent by the fuel available to the fire. The primary fuel for wildfire is vegetation. The species composition, structure and amount of vegetation heavily influence fire behavior, intensity, rate of spread, and flame lengths. In the context of fire behavior, the vegetation can be described in terms of fuel models that estimate fire behavior based on vegetation type. The Fuel model used for this plan is based on the 13 standard Anderson Fire Behavior models (Anderson 1982).

Anderson Model:**Grass And Grass-Dominated Group**

- 1 Short Grass (1 Foot)
- 2 Timber (Grass And Understory)
- 3 Tall Grass (2.5 Feet)

Chaparral And Shrub Fields Group

- 4 Chaparral (6 Feet)
- 5 Brush (2 Feet) 0
- 6 Dormant Brush, Hardwood Slash
- 7 Southern Rough

Timber Litter Group

- 8 Closed Timber Litter
- 9 Hardwood Litter
- 10 Timber (Litter And Understory)

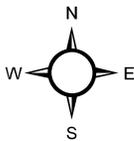
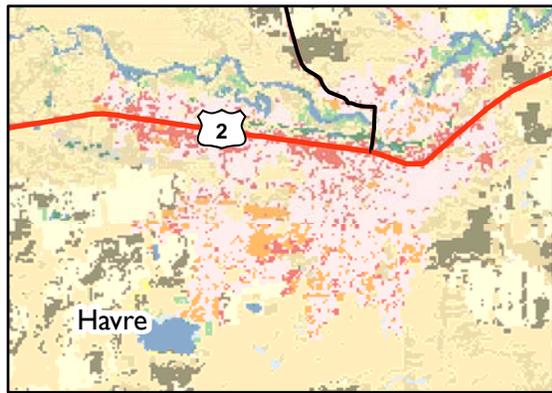
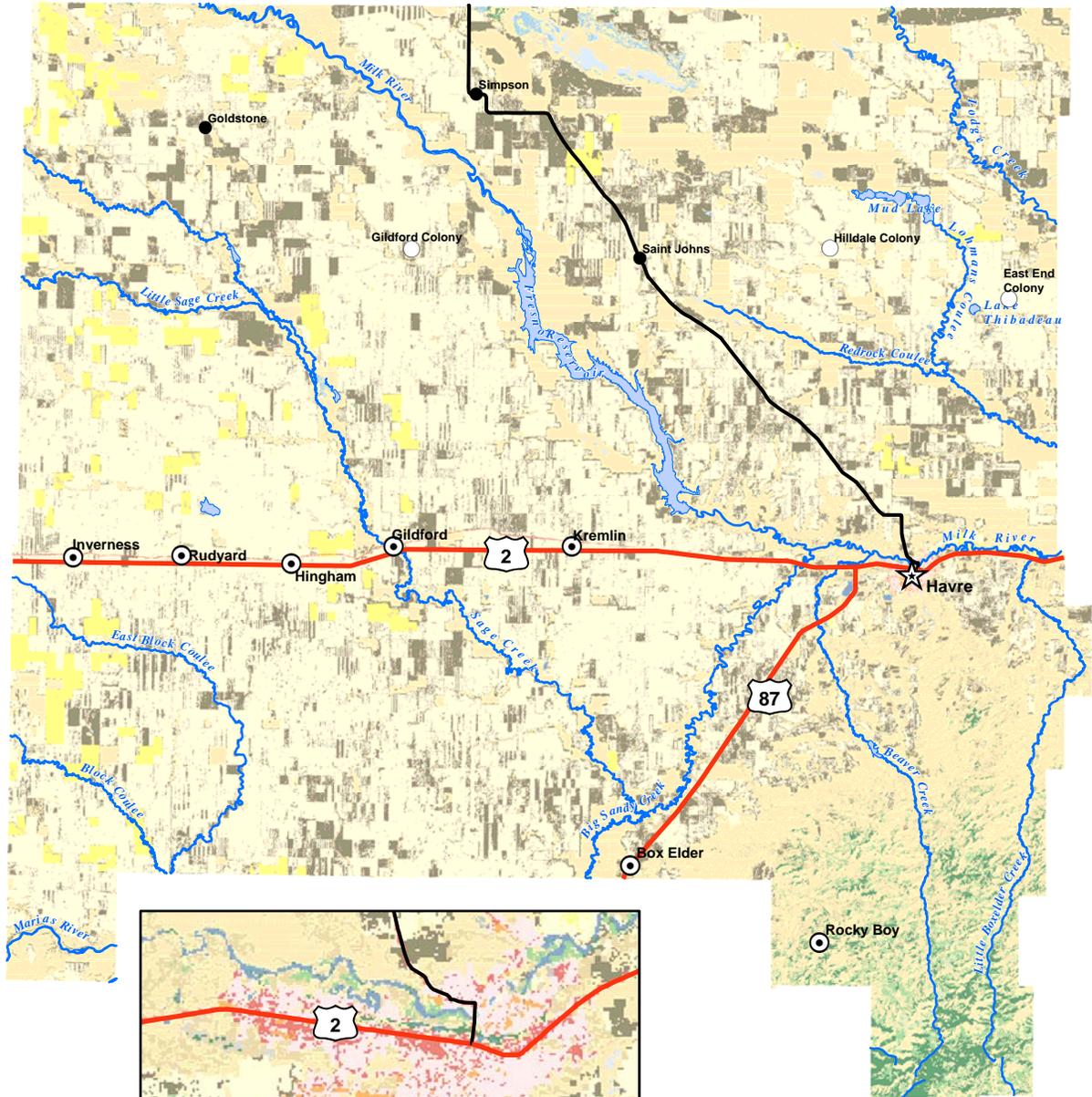
Slash Group

- 11 Light Logging Slash
- 12 Medium Logging Slash
- 13 Heavy Logging Slash 5

The National Land Cover Dataset (NLCD) from the U.S. Geological Survey (USGS) was used for vegetation and landuse for the area of study. **Map 4-1** depicts vegetation types for the project area. **Table 4-2** summarizes acres in the project area by vegetation type.

NLCD Code	NLCD Description	Acres
11	Open Water	4,672
21	Low Intensity Residential	2,079
23	Commercial/Industrial/Transportation	3,510
31	Bare Rock/Sand/Clay	969
32	Quarries/Strip Mines/Gravel Pits	60
33	Transitional	15,553
41	Deciduous Forest	24,185
42	Evergreen Forest	4,329
43	Mixed Forest	65,110
51	Shrubland	474,614
71	Grasslands/Herbaceous	54,818
81	Pasture/Hay	800
82	Row Crops	970,593
83	Small Grains	234,235
84	Fallow	308
85	Urban/Recreational Grasses	5,576
91	Woody Wetlands	4,204
92	Emergent Herbaceous Wetlands	4,672

Hill County



- | | | |
|--------------------------------------|----------------------|------------------------------|
| Open Water | Evergreen Forest | Small Grains |
| Low Intensity Residential | Mixed Forest | Fallow |
| Commercial/Industrial/Transportation | Shrubland | Urban/Recreational Grasses |
| Bare Rock/Sand/Clay | Grassland/Herbaceous | Woody Wetlands |
| Quarries/Strip Mines/Gravel Pits | Pasture/Hay | Emergent Herbaceous Wetlands |
| Deciduous Forest | Row Crops | |

Land Cover
Hill County
Northeast Montana
Community Wildfire Preparedness Plan
Map 4-1

As can be seen in *Table 4-3* Hill County is primarily grassland, small grain, and row crops. Grassland in the project area is both grazing land and farmland that is currently in the Natural Resource Conservation Service (NRCS) CRP. There is a significant amount of land in the CRP program in the project area and land is consistently being added and retracted from the CRP. In 2004, the total active amount of CRP land in Hill County was 300,522 acres or 16.11 percent of the total acreage in the county.

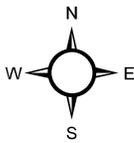
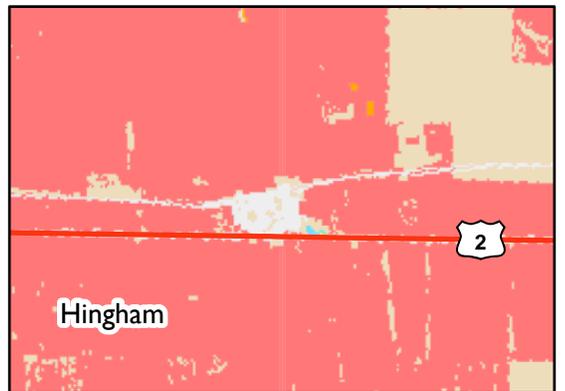
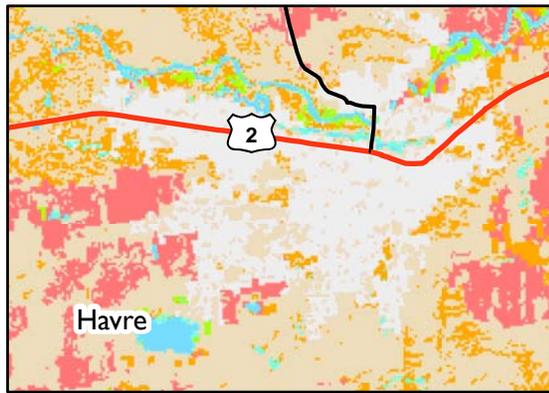
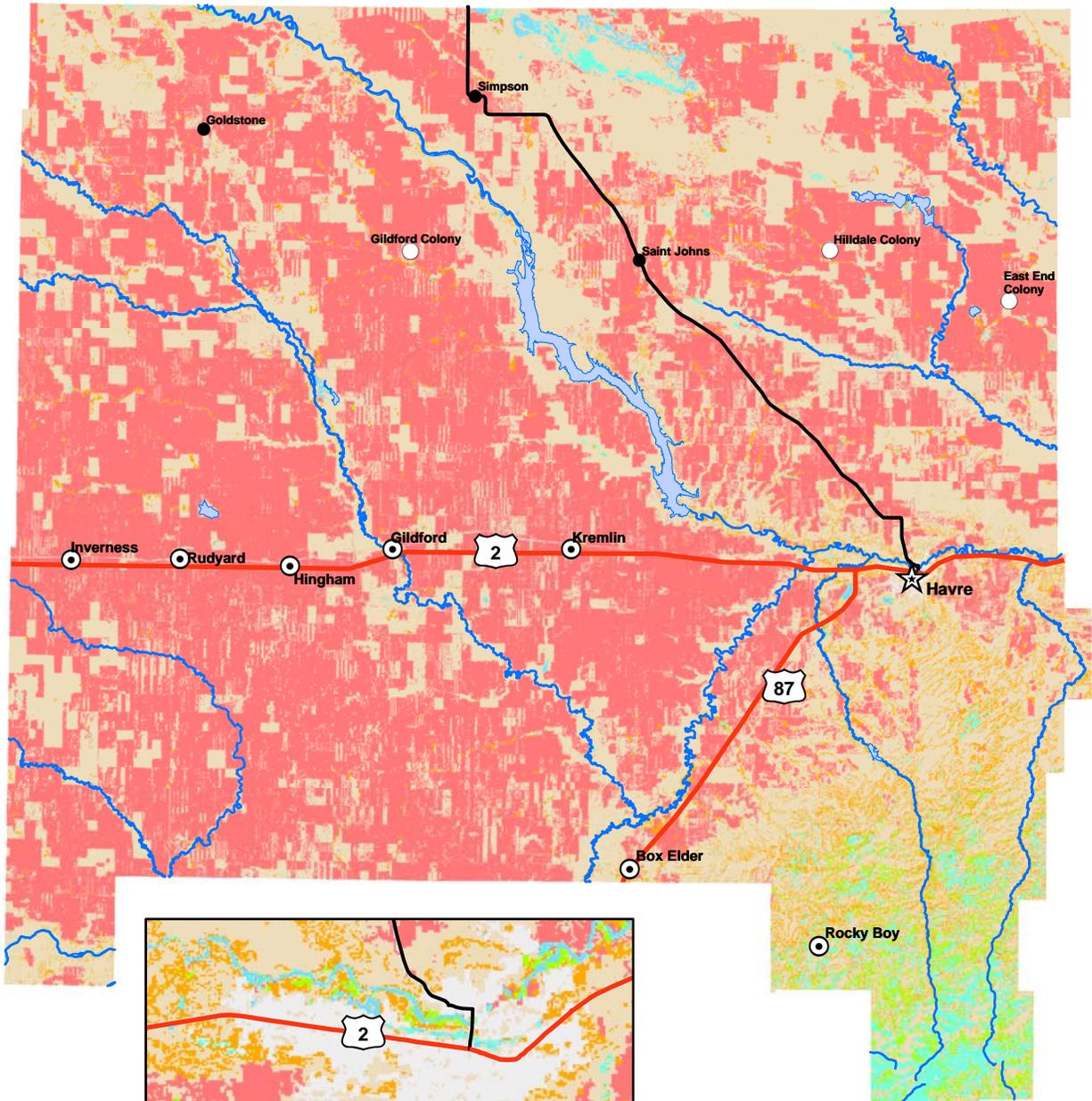
NLCD vegetation types were assigned Anderson fuel model codes and canopy coverage as shown in *Table 4-3*.

NLCD Code	NLCD Description	FlamMap/Anderson Code	FlamMap/Anderson Description	Canopy Coverage
0	Null	0	Null	0%
11	Open Water	98	Water	0%
12	Perennial Ice/Snow	99	Barren	0%
21	Low Intensity Residential	99	Barren	0%
22	High Intensity Residential	99	Barren	0%
23	Commercial/Industrial/ Transportation	99	Barren	0%
31	Bare Rock/Sand/Clay	99	Barren	0%
32	Quarries/Strip Mines/ Gravel Pits	99	Barren	0%
33	Transitional	99	Barren	0%
41	Deciduous Forest	9	Hardwood litter	50%
42	Evergreen Forest	8	Closed timber litter	50%
43	Mixed Forest	8	Closed timber litter	50%
51	Shrubland	2	Timber (grass and understory)	0%
61	Orchards/Vineyards/Other	9	Hardwood litter	70%
71	Grasslands/Herbaceous	1	Short grass (1 ft.)	0%
81	Pasture/Hay	1	Short grass (1 ft.)	0%
82	Row Crops	1	Short grass (1 ft.)	0%
83	Small Grains	3	Tall grass (2.5 ft.)	0%
84	Fallow	1	Short grass (1 ft.)	0%
85	Urban/Recreational Grasses	1	Short grass (1 ft.)	0%
91	Woody Wetlands	8	Closed timber litter	20%
92	Emergent Herbaceous Wetlands	98	Water	0%

The Anderson model contains 13 fuel models that are organized into four groups. *Table 4-4* summarizes total acreage by fuel type and **Map 4-2** depicts fuel type distributions for Hill County. As the map and table clearly indicate the county is primarily composed of fuels in the Grass and Grass-Dominated Group - Anderson types 1 & 2. These groups support fast moving ground fires of low to moderate intensity. Anderson type 3 is composed of small grains. Cured small grains sustain the highest heat and fastest spreading fires in the county. Grass and brush fires represent the greatest wildland fire hazard for the project area.

CRP grassland may not be adequately represented in the fire model. In some cases CRP grasslands should be designated as Tall Grass but they are designated Short Grass as there is no means to

Hill County



Anderson Fuel Types

- 1 - Short Grass (1 Ft.)
- 2 - Timber (Grass And Understory)
- 3 - Tall Grass (2.5 Ft.)

- 8 - Closed Timber Litter
- 9 - Hardwood Litter
- 98 - Water
- 99 - Barren

distinguish these areas from the surrounding native grasslands and range lands. Most CRP lands are interspersed within small grain areas and are thus within the designated high fire hazard areas.

The other primary fuel type in Hill County is Closed Timber Litter (Fuel Model 8). Fuel Model 8 supports slow burning ground fires with low flame lengths.

FlamMap/Anderson Code	FlamMap/Anderson Description	Acres
1	Short Grass (1 Ft.)	764774.9
2	Timber (Grass And Understory)	65109.58
3	Tall Grass (2.5 Ft.)	970593.5
8	Closed Timber Litter	34089.65
9	Hardwood Litter	15552.78
98	Water	8875.324
99	Barren	6618.961

4.3 WEATHER

Wildfire behavior is significantly affected by local weather conditions. Important weather conditions to consider include: relative humidity which affects moisture content of the air and fuels; wind which affects the direction and speed of fire spread; and air temperature which affects the ambient temperature of the fire fuels. All three factors also affect fuel drying times.

Fire conditions worsen as temperature increases and relative humidity decreases. Wind speeds in excess of 10 mph also begin to increase fire intensity, the rate of fire spread and growth by adverse fire behavior and spotting. Fires become most difficult to control when relative humidity falls below 30 percent.

The most important weather characteristics for Hill County related to fire risk are precipitation (lack of), humidity, thunder storms, and wind.

Annual average precipitation in Hill County is 10 to 13 inches, except up to 20 inches in the higher elevations of the Bears Paw Mountains. Over 65 percent of the annual precipitation total falls from May through September. November through March, are on average quite dry with average monthly precipitation of 0.50 inches or less.

Humidity in the region is often quite low with normal averages of 30 to 40 percent in the afternoons from April to October and from 40 to 70 percent in the afternoons from November to March. Morning humidity is generally around 70 percent throughout the year (NWS 2005). *Table 4-5* shows the monthly average percentage of humidity in Hill County.

Month	Average Morning Humidity (%)	Average Afternoon Humidity (%)
January	70	64
February	70	58
March	72	51
April	71	42
May	72	40
June	73	41
July	69	32
August	67	30
September	69	37
October	68	45
November	69	58
December	69	64

Source: NWS 2005

Severe thunderstorms pose two significant hazards related to wildfire. The first is the lightning strikes that accompany thunder storms often trigger single or multiple ignition points on the ground. These fledgling wildfires often occur away from roads and are difficult for response personnel to reach. The second negative influence of these storms comes in the form of high winds. Wind is the most unpredictable force and has the greatest impact on a fire behavior. Winds supply fires with additional oxygen, further dry potential fuel, can unexpectedly change the direction of fire spread and increase the rate of fire spread. Average wind speeds in Hill County range from 10 to 15 mph, depending on the exposure of the location. The average and peak sustained winds in the Milk River Valley and Missouri River valleys tend to be somewhat less than the winds over the higher more exposed terrain in the northern and west central portions of the county. The highest sustained winds tend to occur in the spring and fall, with sustained winds over 40 mph occurring every year (NWS 2005). Regionally the largest and most dangerous fires have occurred in the late summer and fall when high winds can cause very fast moving fires over large expanses of dry, light fuels. Table 4-6 below demonstrates the percentage of fires that occur based on the season and time of year.

Month	Percent of Fires
January	2.17%
February	4.35%
March	2.17%
April	4.35%
May	4.35%
June	2.17%
July	45.65%
August	17.39%
September	8.70%
October	8.70%
November	0.00%
December	0.00%

Source: County and Local VFD's and Hill County Officials, BLM

4.4 TOPOGRAPHY

Topography plays an influencing role in the context of wildfire behavior. Wooded or brush covered slopes generally promotes the spread of the flame front up gradient. The speed at which the fire progresses is directly proportional to the slope of the hillside and the nature of the fuel available. Generally the steeper the slope the faster wildfires travel up gradient. Fire also travels the direction of the ambient wind which is usually upslope. As the flame reaches the crest of the slope fire migration typically slows or follows the next incline of the intersecting slope.

Elevation in Hill County ranges from about 2,450 feet above mean sea level along the Milk and Marias rivers in the east-central plains to about 7,000 feet in the Bears Paw Mountains in the south-eastern corner. In between are the steep sloping hills with elevations up to 4,500 feet above mean sea level. Most of the county lies in the glaciated portion of the Great Plains. The Bears Paw Mountains make up the southeastern part of the county and several high buttes make up the northeastern section. The general topography is represented in **Map 4-3**.

4.5 WILDLAND / URBAN INTERFACE

Wildland/urban interface (WUI) is defined as the zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuel. WUI areas are at high risk for loss to property and human life during wildfire events. In Hill County, the wildland/urban interface typically is where the edge of local communities adjoins agricultural fields, many of which are in the CRP.

A model based on the Federal Register definition of WUI (Federal Register 66:751, 2001) was used in this plan to define and map the WUI. The approach utilized the National WUI GIS layer developed by the Spatial Analysis for Conservation and Sustainability (SILVIS) Lab in the Department of Forest Ecology & Management at the University of Wisconsin at Madison. The SILVIS WUI layer was modified slightly to account for regional differences particular to the project area.

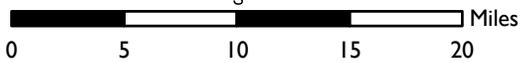
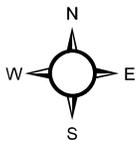
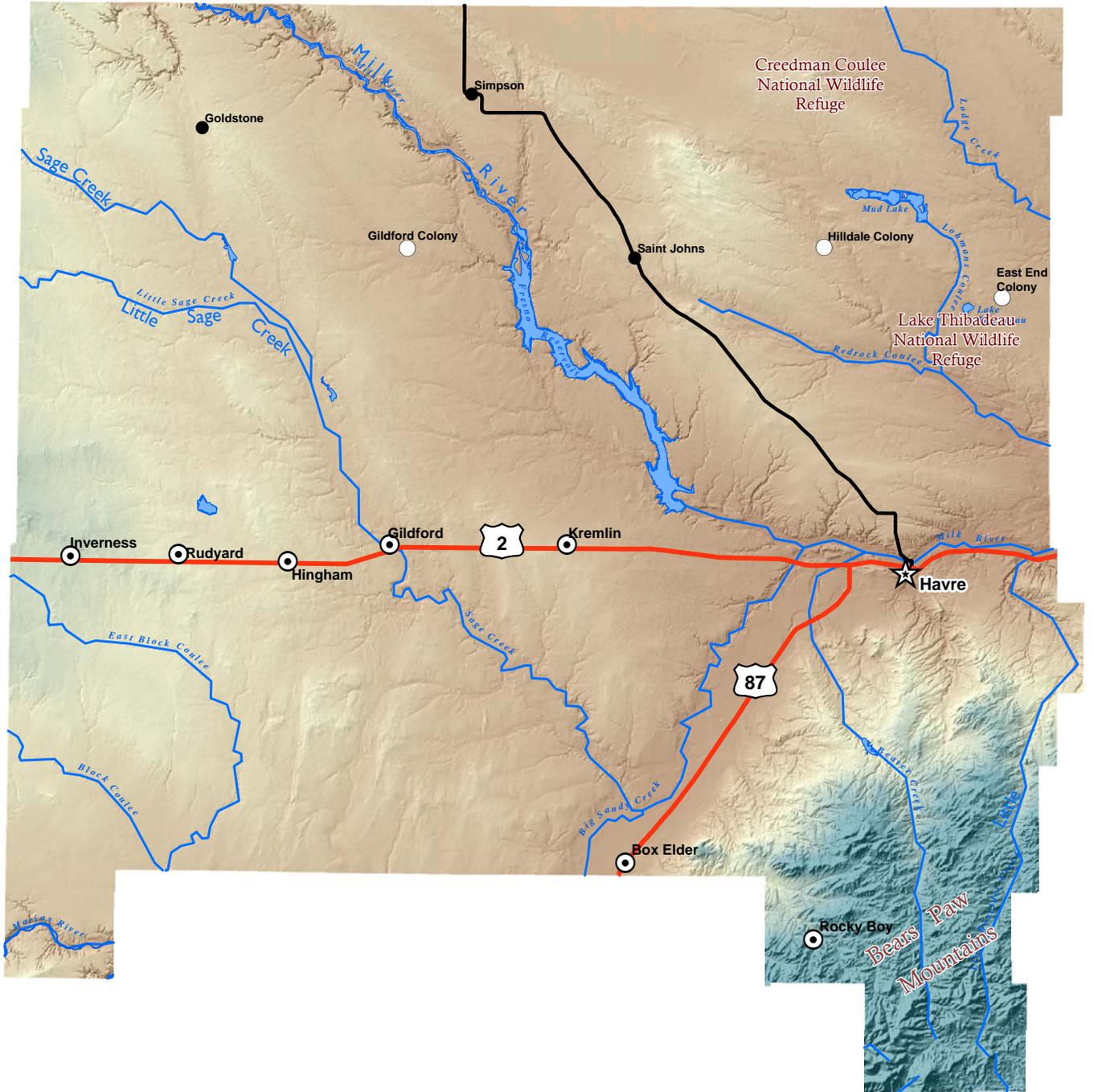
The two primary data elements used to define the WUI are:

Housing density - Housing density was derived from the 2000 U.S. Census block level data. Densities were compiled as the number of housing units per square kilometer.

Landcover - The National Land Cover Dataset (NLCD) produced by the USGS was used to define wildland vegetation. NLCD is based on 30 meter resolution satellite imagery from 1992/1993. The SILVIS definition of wildland vegetation included forests, native grasslands, shrubs, wetlands, and transitional lands. It excluded most types of agricultural lands and pasture. The SILVIS definition does not adequately account for the fire hazards presented by agricultural lands in Hill County. For Hill County the SILVIS wildland vegetation definition was modified to include agriculture lands. *Appendix E* contains a specific description of the reclassification of vegetation used for the Hill County WUI.

The WUI includes areas defined as either interface or intermix. In both areas, housing must meet or exceed a minimum density of one structure per 40 acres (16 ha). In intermix areas wildland/agricultural vegetation comprises more than 50 percent of the vegetation with more than 1 house per 16 hectares (ha). Interface areas have more than 1 house per 40 acres, contain less than 50 percent wildland/agricultural vegetation, and are within 1.5 mile of an area over 1,325 acres (500 ha) that is more than 75 percent vegetated.

Hill County



Elevation (ft)



Two classes were added in addition to the SILVIS classes - Uninhabited Agricultural and Sparsely Inhabited Agricultural. Uninhabited Agricultural includes areas with no housing units and agricultural vegetation greater than 50%. Sparsely Inhabited Agricultural includes areas with a housing density greater than 0 but less than one structure per 40 acres. These classes were split out of the Uninhabited with No Vegetation and Wildland with No Vegetation classes.

Wildland Urban Interface areas within Hill County are presented in *Table 4-7*. Intermix, Interface, Sparsely Inhabited and Uninhabited areas are further broken down into sub levels. These interface buffers are also graphically depicted in *Map 4-4*.

Wildland / Urban Interface Type	WUI Attributes	
	Acres	Percent of Total
Low Density Intermix	8381.23	0.46%
Medium Density Intermix	1266.51	0.07%
High Density Intermix	1.82	0.00%
Wildland Intermix	270787.49	14.90%
Total Intermix Acres	280437.05	15.43%
Low Density Interface	1043.44	0.06%
Medium Density Interface	1248.77	0.07%
High Density Interface	585.84	0.03%
Total Interface Acres	2878.05	0.16%
Sparsely Inhabited Agricultural	598572.38	32.94%
Wildland with No Vegetation	2.01	0.00%
Total Sparsely Inhabited Acres	598574.39	32.94%
Uninhabited Agricultural	751137.01	41.34%
Uninhabited with Vegetation	183572.78	10.10%
Uninhabited with No Vegetation	487.18	0.03%
Total Uninhabited Acres	935196.97	51.47%
Total Acres	1817086.5	100.00%

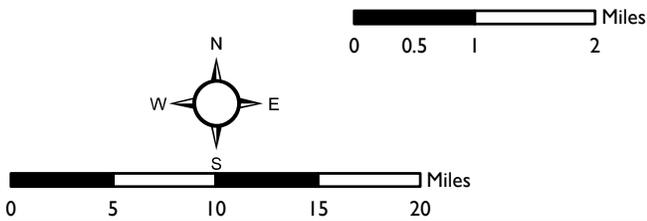
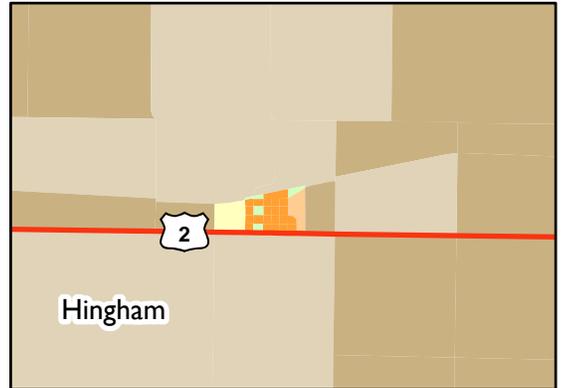
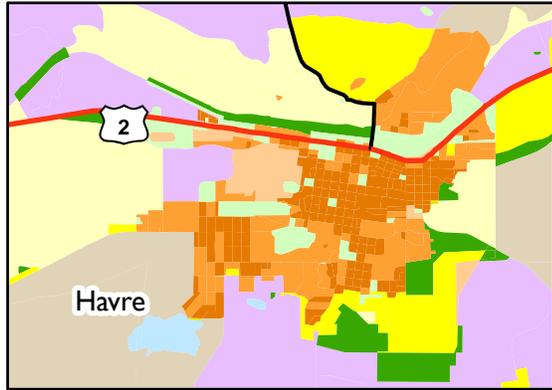
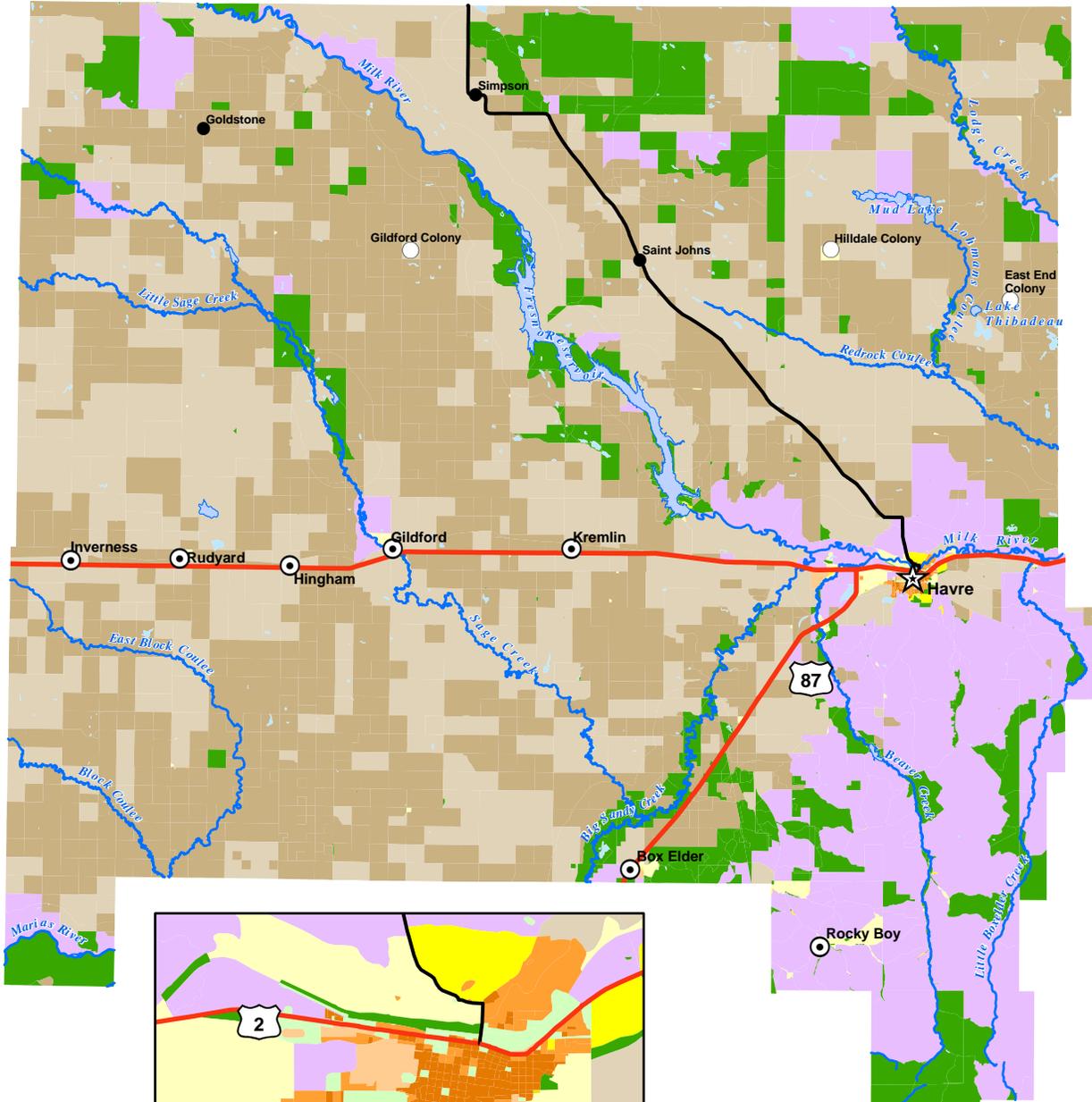
Thirty Three percent of the area in Hill County is dispersed low density habitation surrounded by wildland and agricultural fuels. Virtually all town areas are defined as Intermix or Interface. Forty one percent of the county is uninhabited. Most of the structures and habitations in the county are exposed to some level of wildland fire risk.

4.6 HISTORICAL WILDFIRE EVENTS

A wildfire is an unplanned fire, a term which includes grass fires, forest fires and scrub fires caused by man or natural in origin. Severe wildfire conditions have historically represented a threat of potential destruction within Montana.

According to the National Interagency Fire Centers (NIFC) unofficial statistics prepared for 2004, the state of Montana had a total of 2,267 wildland fires which consumed a total of 64,374 acres. Of these fires, 787 were prescribed burns impacting a total of 44,634 acres. Twenty five fires impacting 1,294 acres were designated as Wildland Fire Use (NFIC 2005). Distribution of land ownership and management for these fires is presented in *Table 4-8*.

Hill County



- | | | |
|--|---|--|
| Low_Dens_Intermix | Med_Dens_Interface | Uninhabited_Veg |
| Med_Dens_Intermix | High_Dens_Interface | Wildland_NoVeg |
| High_Dens_Intermix | Sparse_Ag | Water |
| Wildland_Intermix | Uninhabited_Ag | |
| Low_Dens_Interface | Uninhabited_NoVeg | |

Agency / Manager	Wildland Fires		Prescribed Fires		Wildland Fire Use	
	Number of Fires	Number of Acres	Number of Fires	Number of Acres	Number of Fires	Number of Acres
Bureau of Indian Affairs (BIA)	448	3,076	50	3,598	0	0
Bureau of Land Management (BLM)	63	1,564	10	2,872	0	0
Fish and Wildlife Service (FWS)	8	708	6	2,885	0	0
National Parks Service (NPS)	5	1	2	20	9	0
Other	55	105	0	0	0	0
State of Montana	299	9,249	57	2,340	0	0
US Forest Service (USFS)	577	3,743	662	32,919	16	1,294
State of Montana 2004 Totals	1,455	18,446	787	44,634	25	1,294

Source: NIFC 2005

According to survey information obtained from local fire officials within and adjacent to Hill County, a number of wildfires have occurred in the county within the past ten years. *Tables 4-9 and 4-10* summarize these historical occurrences below. The complete listing for historic wildfire occurrences for this region are presented in *Appendix F*.

Year of Record	Statistical Fire Details			
	Total Wildfires	Human Cause	Natural Cause	Not Specified
2001	14	10		4
2002	7	3	2	2
2003	16	10	2	4
2004	5	3		2
Totals	32	26	4	12

Source: County and Local VFD's and Hill County Officials

Year of Record	Statistical Fire Details			
	Total Wildfires	Human Cause	Natural Cause	Not Specified
1991	1		1	
2003	1		1	
Totals	2		2	

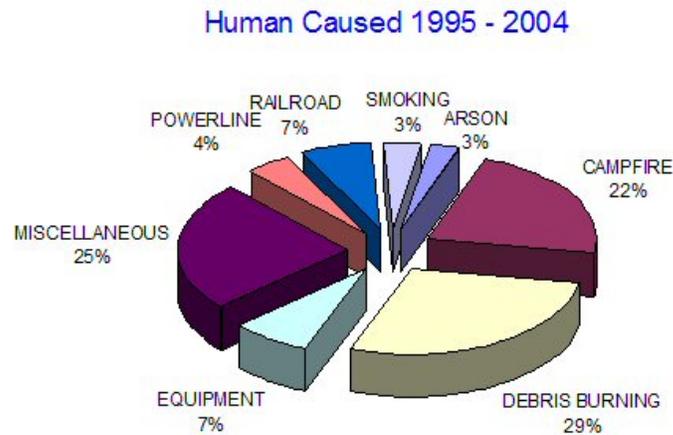
Source: BLM

4.7 IGNITION RISKS

According to the DNRC Forestry Division – Fire and Aviation Management Bureau, 2004 fire statistics indicated lightning was the most common ignition source for the year with 162 instances throughout the state, followed by debris burning 59 instances, and campfires with 45 instances. Other ignition causes included railroads, power lines, equipment, smoking, fireworks, debris burning and miscellaneous causes. Power line fires are caused by sparking, arcing or other means by any electrical transmission line. This includes, but is not limited, to lines downed by winds or other natural events, lines pushed into surrounding vegetation by wind events or vegetation growing into power lines in poorly maintained right

of ways. Equipment fires are fires caused by mechanical equipment other than railroad operations such as airplane crashes, exhaust pipes, fuel sparks, electrical equipment, chain saws or broken electrical fences. Smoking fires caused by smoker’s matches, lighters or by burning tobacco in any form, but excludes smoking by railroad personnel. Debris burning ignitions are considered to be any fire originally intentionally set for hazard reduction, clean-up, site preparation, or fuel manipulation that is illegal, abandoned or spreads and requires suppression action. Fires set to clear land and burn trash, stubble, meadow, rights-of way, logging slash, dumps or other prescribed burning are included. Excluded is debris burning by railroad operations. Lightning can present particularly difficult problems when dry thunderstorms move across an area suffering from seasonal drought. In north-central Montana, the railroad is a common ignition source of wildfires. Railroad fires are those caused by all railroad operations, including burning of rights-of-way, construction, operation or maintenance. This includes fires from carbon sparks, brake shoes, hose, fuses, or carelessness of any employee or passenger (DNRC 2004).

In 2004, 49 percent of fires on a state wide basis were attributed to lightning and 51 percent were determined to be human caused fires. The figure below depicts the percentage of human caused fires in Montana for the period from 1995 to 2004.



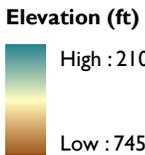
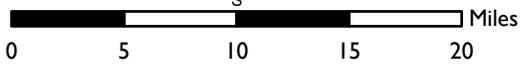
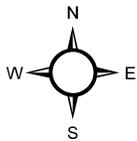
(Source: DNRC 2004)

Historical wildfire ignition sources recorded in Hill County are varied. A history of ignition sources for past fires is presented in *Table 4-11* below. The complete listing for historic wildfire occurrences for this region are presented in *Appendix F*. Historical wildfire occurrences are also depicted on **Map 4-5**.

Year of Record	Total Number of Fires	Debris Burning	Railroad	Power Line	Equipment Use	Lighting	Smoking	Fireworks	Misc.	Children	Not Noted
2001	14		1		1		2		4	5	1
2002	7				2	2	1		2		
2003	16	1	3		1	2	1		4	3	1
2004	5	1			2				2		
Totals	42	2	4	0	6	4	4		12	8	2

Source: County and Local Volunteer Fire Departments and Hill County Officials 2005

Hill County



* Fire Occurrences

Historical Wildfire Occurrences
Hill County
Northeast Montana
Community Wildfire Preparedness Plan
Map 4-5

The BLM also reports that two lightning cause fires occurred in 1991 and 2003.

Location and Extent of Previous Wildfire Events

One wildfire in 2000 was declared a Federal disaster. A description of some wildland fires that have occurred in north-central Montana is presented below.

July 25, 1999 – Several acres on both sides of the Milk River were burned when a fire was started by an abandoned campfire at the first boat landing in the Rookery. The first fire was reported about five miles west of Havre. Members of the St. Joe VFD responded and had the fire under control. Sparks from the fire had jumped across the river and ignited grasses and trees in the forest on the south side of the river. Fire fighters from Havre responded to the second fire initially by boat and later doused hot spots on the fire by foot (*Dry Weather Sparks Fire Danger Havre Daily News, July 27, 1999*).

July 1999 – A grass fire in Harron's park (located five miles southwest of Havre) burned about an acre in a residential neighborhood. A 45 foot storage trailer and its contents sustained minimal damage. Only a snowmobile appeared to have sustained extensive damage. Area residents used garden hoses to help contain the fire until two Havre FD trucks could respond (*Grass Fire Spreads across Acre of Herron Park, Havre Daily News, July 28, 1999*).

September 8, 1999 – Two lightning-caused fires occurred during a thunderstorm Friday evening. Four firefighters responded with grass fire trucks to the grass fire just west of four homes on Assiniboine Avenue. A fifth firefighter and Havre police officer responded to a tree fire that was reported at MSU Northern (*Lightning, Power Lines Combine to Ignite Fire, Havre Daily News, September 13, 1999*).

July 12, 2001 – A widespread thunderstorm caused several fires around the Havre area. Lightning caused a grass fire that burned 50 acres south of the Havre City-County Airport. Havre firefighters fought the blaze with help from the Bears Paw VFD. Lightning caused another fire on Pike Street. Two fire engines and two ambulances responded to the fire that damaged one-half of a duplex. Two residents were hospitalized. Overall several fires started around Hill County, but rain put them out (*Storms Douse Area, Cause Several Fires, Havre Daily News, July 13, 2001*).

April 24, 2002 – More than 200 acres of tribal rangeland was burned in the fourth and largest suspected arson fire in recent weeks. Until it was contained, 125 Seasonal firefighters from Rocky Boy's fought the grass, brush and timber fire. Most of the fire burned itself out. The start of the fire occurred in the Duck Creek area near the center of the reservation about a mile west of Stone Child College. No structures were damaged and no injuries occurred. Fire fighters took precautionary measures to protect homes by excavating grass, brush and weeds around them. Four power poles were burned causing 15 homes to lose power until backup generators were activated. The fire cost the tribe tens of thousands of dollars for the large crew and equipment (*Firefighters Suspect Arson in Recent Fires, Havre Daily News, April 24, 2002*).

July 2003 – Smoke from a grass fire obscured visibility on Highway 2 and caused a two vehicle crash that injured a Hill County sheriff's deputy. Over a three mile stretch, several fires began west of Havre early in the day. Firefighters from Havre, Kremlin and Wildhorse responded. Firefighters determined the fires were caused by a westbound locomotive and the exhaust sparks were probably the cause (*Grass Fire Sparks Crash on U.S. Highway 2, Havre Daily News, July 1, 2003*).

July 2003 – Grassfires along a four miles stretch north of U.S. Highway 2 threatened several houses and the Big Red Barn before being contained by area fire crews and volunteers. The fire started on the railroad tracts. BNSF temporarily closed the section of the tracks to allow containment of the blaze. Flames came within several dozen feet of some houses. When the fire reached the trees, the flames leapt up to 40 feet high. No building losses or injuries occurred from the fires. Losses included crop losses and railroad ties. Three total wildfires were reported. Havre dispatched 10 fire fighters, three wildland trucks, a larger fire engine and water tender. Crews from the Bears Paw, Wildhorse, Kremlin, Gildford, and St. Joe volunteer fire departments helped along with several small crews of BNSF workers. Farmers and ranchers assisted with equipment and water. The temperatures in Havre reached 105 degrees (*Fires Burn Acreage West of Havre*, Havre Daily News, July 7, 2004).

August 7, 2003 – Two large fires and several smaller ones were reported in the Gildford area. Over 30 volunteer firefighters and residents turned out to combat a fire eight miles south of Gildford. Crews from Gildford, Kremlin, Hingham and area farmers responded to the fire. Three trucks from the Gildford VFD and about eight other water trucks were used to combat the blaze. The fire burned about 150 acres and was contained in about 90 minutes (*Lighting Storms Spark Fires*, Havre Daily News, August 7, 2003).

4.8 FIRE HAZARD MODELING

The purpose of fire hazard modeling is to identify the locations in the county that are at highest risk to wildfire. This information can then be used to identify community assets that are most at risk, prioritize areas for treatment, and locate areas where interagency planning may be needed to help manage fire risk.

Fire hazard modeling for Hill County was conducted using GIS based fire modeling software. The outputs from the model are maps of different types of fire risk characteristics that were combined to determine overall risk.

4.8.1 Overview

The fire hazard modeling for Hill County was conducted using FlamMap2 (Finney et al. 2004). FlamMap2 is a GIS-based fire modeling and analysis program developed and distributed by the Fire Sciences Lab of the Rocky Mountain Research Station located in Missoula, MT. Using topographic data, fuel models, and weather data FlamMap2 calculates rate-of-spread, flame length, heat and other characteristics of fire behavior.

FlamMap2 assesses fuel hazard in terms of fire behavior. It is able to produce maps of surface and crown fire behavior characteristics across a landscape. FlamMap2 is designed to generate outputs that allow comparison of fire behavior across the landscape for a given set of weather and/or fuel moisture data inputs. FlamMap2 uses the same data and core fire modeling algorithms as Farsite (Fire Area Simulator).

4.8.2 Model Inputs and Configuration

There are five required and three optional spatial data elements used in FlamMap -

Required Data

- Elevation
- Slope
- Aspect

- Surface Fuel Model
- Canopy Cover

Optional Data

- Stand Height
- Canopy Base Height
- Canopy Bulk Density

Due to lack of adequate data only the required data elements were used for this effort. Elevation, slope and aspect were derived from the USGS National Elevation Dataset (NED) which is raster based digital elevation models with 30 meter pixel resolution. As previously described in section 4.1, the surface fuel model and canopy cover were derived from the USGS National Landcover Dataset (NLCD) which is classified Landsat Thematic Mapper imagery. The NLCD also has 30 meter pixel resolution. The layers were resampled so that they match pixel for pixel and exported to grid ASCII format using the ArcGIS Workstation Grid extension. ASCII grid layers were then imported into a FlamMap2 landscape file. The latitude was set to 48 degrees north.

FlamMap2 weather and wind files were created from Remote Automated Weather Stations (RAWS) data and compiled using the FireFamily Plus program, both provided by the National Interagency Fire Center (NIFC). The RAWS data used for the project area were Rocky Boy's (240601), Fort Belknap (240705), and Zortman Mine (240807). The weather for these stations was grouped using the FireFamily Plus program. The weather file created for use within FlamMap2 described the weather for the summer of 2003 (June 1 to August 30th). The wind and weather files used in the FlamMap2 analysis are displayed in *Appendix G*.

The FlamMap2 fuel moisture file was also computed using FireFamily Plus. The Fort Belknap RAWS station was used to calculate grassland fuel moistures and Rocky Boy's and Zortman Mine stations were used for upland pine parkland areas. The fuel moisture file used in the analysis is also displayed in *Appendix H*.

FlamMap2 was run using the following parameters. Winds were set to a wind speed of 15 mph at 270 degrees. Canopy characteristics were set to a height of 12 meters, canopy base height of 1 meter, canopy bulk density of 0.2 kilograms per cubic meter, and foliar moisture content of 100 percent. Fuel moisture was set using fuel moisture conditioning with the weather and wind files. The conditioning period was set to July 1, 2005 at 12:01 AM to July 31, 2005 at 2:00 PM. This fuel drying period represents an exceptionally hot and dry period that is also the fourth year of an extended drought. There were 18 fires reported by BLM during July of 2003 in the Hill, Blaine and Phillips county area, a ten year record. This period was modeled to represent a worst case scenario for planning purposes.

4.8.3 Fire Modeling Results

Flame length was used to model fire hazard for Hill County and is displayed in **Map 4-6**. Flame length is a direct output from FlamMap2 and combines Fire Rate of Spread and Heat Per Unit Area. Flame length is used in the wildfire haul charts to quickly determine what strategies are required to fight wildland fires.

Wildfire Haul Categories

- Category I - Wildfires with flame lengths of less than 4 feet. These fires have relatively low heat and are slower moving. They can be fought by hand crews digging fireline and directly attacking the fire front. These are the least dangerous fires and have the lowest risk to life and property.

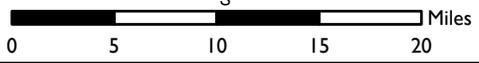
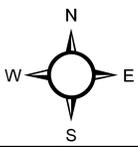
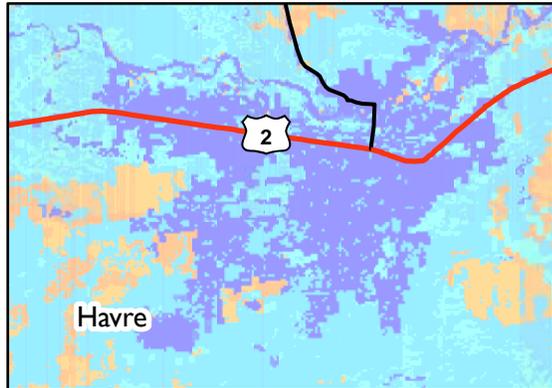
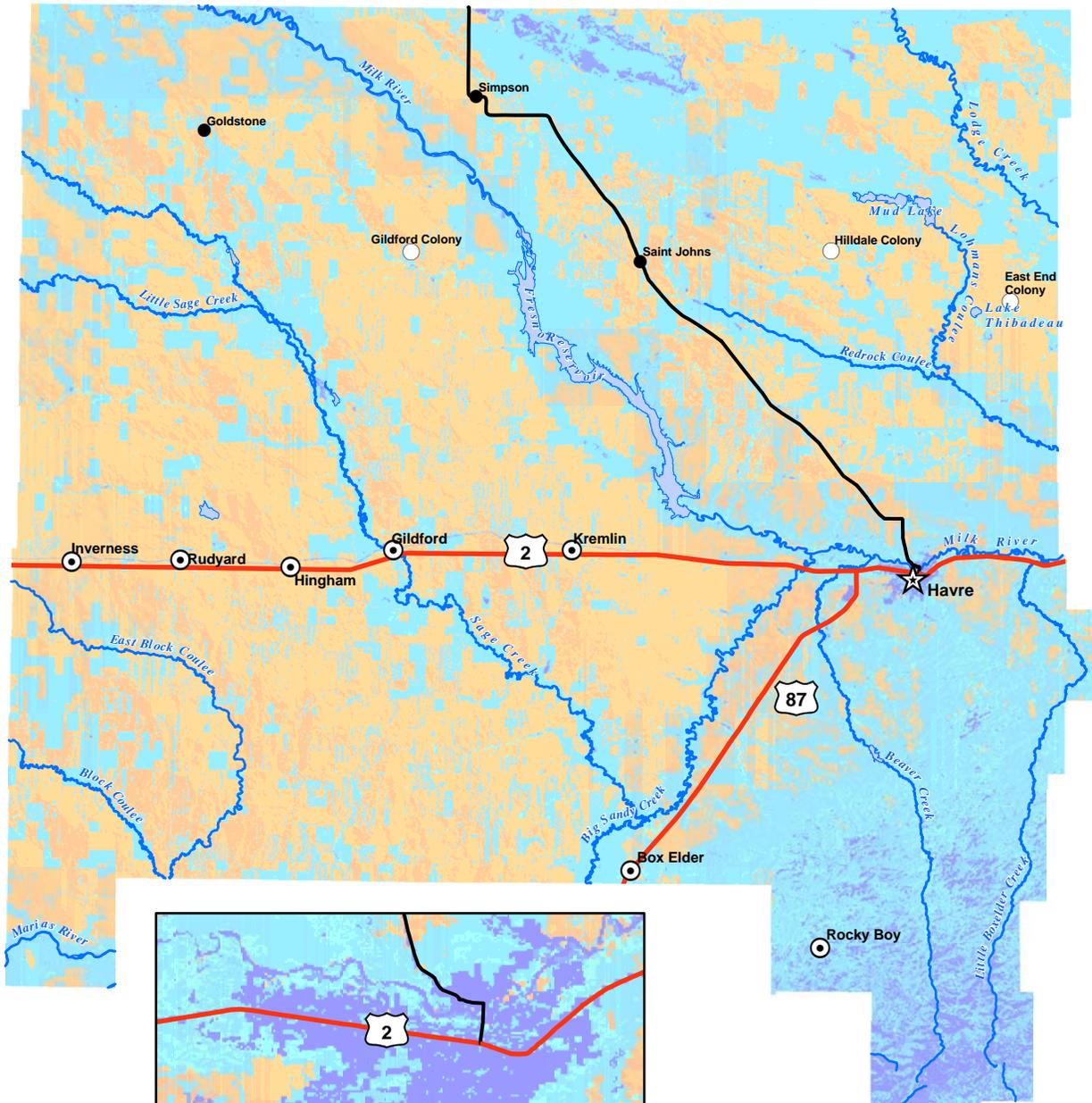
- Category 2 – Wildfires with flame lengths between four and eight feet. These fires are faster moving and hotter. They can be fought by mechanical earthmoving machines and fire engines that are directly attacking the fire front.
- Category 3 – Wildfires with flame lengths between eight and 11 feet. These fires are fast moving and very hot. They are fought by mechanical earthmoving machines and fire engines that are indirectly attacking the fire.
- Category 4 – Wildfires with flame lengths of 11 feet or more. These fires spread very rapidly and are very dangerous. They are difficult to impossible to contain. These fires have the highest risk to life and property.

Flame length is closely tied to fuel type. It is readily noticeable that the Category 4 areas in the county are those associated with small grain farming. This is the result of small grains being categorized as Tall Grass fuel type. This fuel type would only be present during the late summer months, once the grain has cured and before harvest is completed. The high hazard comes into play when the cured crops and harvest crews coincide with dangerous fire conditions, which is normally the case. Once the fields are harvested, stubble fields would no longer be classified as Tall Grass but Short Grass and fire danger would reduce accordingly.

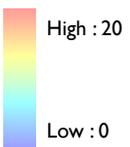
Grassland areas not used for agriculture have reduced fire danger and are Category 2 according to the model. This category makes up most of Hill County. Given proper conditions, this land category can carry very devastating fires as was demonstrated by the Blaine County fire of October 1991. For the most part, fires in areas of this category are easier to contain than fires in cured grain fields.

Forest and badland areas within the project area contain mostly Category 1 and 2 lands. Forests in these areas are mostly widely spaced parkland. Fires usually stay on the ground and are slow moving with relatively low heat and rarely become crown fires. During drought conditions areas with conifer stands will exhibit Category 3 and 4 behaviors especially during low relative humidity combined with wind.

Hill County



Flame Length (ft)



5.0 ASSESSING VULNERABILITY AND RISK: IDENTIFYING ASSETS, VALUES & VULNERABLE POPULATIONS

Assessing vulnerability requires understanding the location and importance of those things the community values. For purposes of this risk assessment the effects of wildfire on economic, ecological, and social values were assessed.

Where possible, models of the locations and characteristics of community assets were developed so that they could be analyzed relative to the wildfire risk model developed for Hill County. Specific community resources assessed as valued community resources included building structural values, critical facilities, people, ecological resources, and agricultural stocks.

Assessing wildfire risk was accomplished by evaluating community assets and vulnerabilities in relationship to wildfire extent and severity. To perform the assessment the wildfire severity maps developed in Section 4 of this plan were used to calculate the types and amounts of community assets at risk by fire severity type.

5.1 ASSESSMENT OF ECONOMIC VALUES

An assessment of economic assets within Hill County was prepared using data available from a variety of sources including the US Census Bureau census block building stock data, the U.S. Department of Agriculture (USDA) census of agriculture, and the critical facility infrastructure data provided by the County.

5.1.1 Building Values

Analysis of building stock values is based on the building stock data available from the FEMA HAZUS software. Building stock data available in HAZUS was compiled at the census block.

Table 5-1 shows the total building values by fire hazard category. Table 5-2 shows the Building Stock Values by Fire Hazard by WUI Type.

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low-medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
Hill	532,977,164	378,315,754	1,021,023	110,110,059
Havre	443,527,333	105,574,122	77,713	2,293,832
Hingham	7,898,507	1,046,834	0	406,659

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low-medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
Low Density Intermix	9,017,940	41,757,435	128,837	11,158,789
Medium Density Intermix	9,791,342	48,977,640	29,915	1,331,104

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low- medium)	Category 3 Fire Intensity (medium- high)	Category 4 Fire Intensity (high)
High Density Intermix	500,552	1,763,448	0	0
Wildland Intermix	19,911,420	134,519,070	761,526	14,756,984
Total Intermix Values	39,221,254	227,017,592	920,277	27,246,877
Low Density Interface	1,445,153	6,050,882	0	2,643,965
Medium Density Interface	149,489,389	55,882,017	77,713	4,751,881
High Density Interface	316,921,542	40,112,357	0	658,101
Total Interface Values	467,856,084	102,045,257	77,713	8,053,946
Sparsely Inhabited Agricultural	1,114,439	41,804,512	23,033	71,404,017
Wildland with No Vegetation	288,000	0	0	0
Total Sparsely Inhabited Values	1,402,439	41,804,512	23,033	71,404,017
Uninhabited Agricultural	0	241,288	0	3,385,712
Uninhabited with Vegetation	630,941	1,621,059	0	0
Uninhabited with No Vegetation	23,866,446	5,586,046	0	19,508
Total Uninhabited Values	24,497,387	7,448,393	0	3,405,220

5.1.2 Agricultural Stock

Agricultural values were derived from available land ownership and use information and the 2002 census value of county agricultural assets based on data available from USDA. The estimated value of agricultural production in Hill County for 2002 was \$43,456,000 (USDA 2002).

Agricultural lands were derived from the USGS NLCD. NLCD land cover type used to define agricultural areas are Pasture/Hay (81), Row Crops (82), Small Grains (83), and Fallow (84). *Map 4-1* depicts agricultural areas in Hill County. The economic value of agricultural lands as related to wildfire was determined by taking the total agricultural production for 2002 and dividing it by the total number acres of agricultural lands in the county as defined by the NLCD – \$43,456,000/1,808,835 Acres = \$24.03 per acre. *Table 5-3* lists total agricultural areas by fire risk category. *Table 5-4* list Agriculture Values by Fire Hazard by WUI.

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low- medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
Hill County	37,808,000	2,945,064	654,964	\$57.73

Low Density Intermix	0	2,914	0	1,643
Medium Density Intermix	0	1,040	0	372
High Density Intermix	0	0	0	0
Wildland Intermix	0	9,988,271	0	6,952,734
Total Intermix Values	0	9,992,225	0	6,954,749
Low Density Interface	0	23,737	0	23,827
Medium Density Interface	0	3,197	0	1,464
High Density Interface	0	0	0	0

Total Interface Values	0	26,934	0	25,290
Sparsely Inhabited Agricultural	0	4,777,312	0	4,349,032
Wildland with No Vegetation	0	255,048	0	209,692
Total Sparsely Inhabited Values	0	5,032,360	0	4,558,724
Uninhabited Agricultural	0	3,216,165	0	2,572,596
Uninhabited with Vegetation	0	3,402,800	0	1,821,292
Uninhabited with No Vegetation	0	60,992	0	42,352
Total Uninhabited Values	0	6,679,957	0	4,436,239

5.1.3 Critical Facilities, Resources and Infrastructure

Critical facilities are of particular concern because they provide, or are used to provide, essential products and services that are necessary to preserve the welfare and quality of life and fulfill important public safety, emergency response, and/or disaster recovery functions.

Critical facilities are defined as facilities critical to government response and recovery activities (i.e., life safety and property and environmental protection). Critical facilities include: 911 emergency call centers, emergency operations centers (EOC's), police and fire stations, public works facilities, sewer and water facilities, hospitals, bridges and roads, and shelters; and facilities that, if damaged, could cause serious secondary impacts (i.e., hazardous material facility). Critical facilities also include those facilities that are vital to the continued delivery of community services or have large vulnerable populations. These facilities may include: buildings such as jails, law enforcement centers, public services buildings, courthouses, juvenile services buildings and other public facilities such as hospitals, nursing homes and schools. *Appendix I* lists critical facilities in Hill County.

Critical facilities data was gathered by obtaining lists from DES county officials and then reviewing, correcting, and enhancing them during public meetings. Accurate location information was not available for many of the critical facilities listed in *Appendix I*. Only those facilities that could be located accurately were included in the analysis. *Table 5-5* lists number of critical facilities by fire risk. *Table 5-6* lists the number of critical facilities by fire hazard by WUI.

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low-medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
County	36	20	0	6
Havre	19	1	0	0
Hingham	3	0	0	0
Havre and Hingham included in the County total.				

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low-medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
Low Density Intermix	3	1	0	0
Medium Density Intermix	0	3	0	0
High Density Intermix	0	0	0	0
Wildland Intermix	1	4	0	1
Total Intermix Values	4	8	0	1
Low Density Interface	0	0	0	0
Medium Density Interface	19	2	0	0
High Density Interface	4	0	0	0
Total Interface Values	23	2	0	0
Sparsely Inhabited Agricultural	0	4	0	3
Wildland with No Vegetation	0	0	0	0
Total Sparsely Inhabited Values	0	4	0	3
Uninhabited Agricultural	0	3	0	2
Uninhabited with Vegetation	0	3	0	0
Uninhabited with No Vegetation	9	0	0	0
Total Uninhabited Values	9	6	0	2

5.2 ASSESSMENT OF ECOLOGICAL VALUES

An assessment of ecological values within Hill County was prepared using data available from a variety of sources including Montana Department of Environmental Quality (MDEQ), US Geological Service (USGS), and Montana Fish Wildlife and Parks (MFWP). The ecological effects of fire to wildlife and water resources were evaluated quantitatively. Other impacts to notable ecological resources are discussed.

Wildfires are a naturally occurring component of functioning ecosystems. Wildfires are common in forests and grasslands in the western United States where large, continuous areas exist in arid and semi-arid conditions. Wildfire is considered a type of disturbance that is not inherently positive or negative. Disturbance is defined as an event that abruptly kills, displaces, or damages one or more individual plants or animals, thereby creating an opportunity for new individuals to establish (Sousa 1984).

The immediate effects of fire include burning of vegetation, wood debris and soil organic matter. Wildfire can also kill animals unable to escape flames, heat, and smoke. Wildfires ecological effects are highly dependent on the amount of change in the overall composition of vegetative communities. Many species that have evolved in fire dependent ecosystems show positive responses to wildfire. Fire exclusion, agricultural practices, and invasion of weedy species since European settlement have changed vegetation and fuels and have increased the chances of fires that burn hotter or over larger areas than historical wildland fires and have more negative effects. Negative effects of fire can include changes in soil productivity and absorption capacity which in turn affects vegetation development and erosion. Wildfire can affect the health of streams and watersheds due to increased erosion and increased water temperature due to removal of shade.

When advisable, Minimum Impact Suppression Tactics (MIST) as opposed to aggressive suppression actions could be implemented in sensitive habitats, riparian zones, road-less and wilderness areas to prevent ecosystem degradation. Prescribed fire treatments as opposed to mechanical treatments provide a more ecologically sound method for fuels reduction as mechanical treatments that could

potentially cause adverse environmental impacts such as soil compaction, sedimentation into watersheds and streams and the spread of invasive weed species (Western Fire Ecology Center 2005).

5.2.1 Wildlife Habitat

Table 5-7 documents wildlife habitat acres by species and fire risk zone.

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low-medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
Antelope-general	64,042	802,486	121,019	960,740
Antelope-winter	2,367	22,794	2,367	9,314
Bighorn Sheep-general	0	0	0	0
Elk-summer	900	2,717	50	28
Elk-winter	0	0	0	0
Mule Deer-year round	1,900	759,055	1,064	956,036
Mule Deer-year round/winter	326	9,053	37	5,202
Whitetail Deer-general	66,540	826,484	1,582	970,343
Blue Grouse	32,754	38,700	560	42
Hungarian Partridge	46,254	768,836	1,016	969,932
Pheasant-good	10,419	170,033	606	53,614
Pheasant-fair	4,213	62,453	62	32,150
Sage Grouse-year round	13,638	210,976	246	121,019
Sage Grouse-year round/nesting and brooding	0	0	0	0
Sharp-tailed Grouse	66,449	825,450	1,582	970,233
Wild Turkey	1,946	9,517	30	1,900

5.2.2 Watersheds and Streams

Table 5-8 documents acres of fourth code watershed for Hill County.

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low-medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
Beaver	56,534	810,476	678	85,754
Cottonwood	6,755	197,994	510	18,191
Fort Peck Reservoir	147,044	681,405	9,548	13,663
Frenchman	5,212	141,468	665	3,862
Middle Milk	16,371	603,820	308	116,588
Peoples	12,287	54,978	101	7,692
Rock	78	7,011	0	0
Whitewater	5,745	296,108	23	31,824

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low-medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
	Category 1	Category 2	Category 3	Category 4
Alkali Creek	1.09	27.66	0.00	0.37
Assiniboine Creek	0.94	29.14	0.01	2.50
Beauchamp Creek	2.27	45.46	0.15	0.24
Beaver Creek	35.59	151.64	0.12	31.56
Big Warm Creek	6.05	55.97	0.26	2.18
Black Coulee	3.08	2.95	0.00	0.00
C K Creek	1.84	44.46	0.69	0.31
Cottonwood Creek	5.01	48.79	0.30	0.03
Creek	0.73	8.62	0.00	2.94
Dodson Creek	1.04	23.30	0.15	1.05
Dodson South Canal	11.61	25.13	0.00	6.55
East Fork Whitewater Creek	2.02	27.88	0.00	1.72
Flat Creek	15.78	12.27	0.00	7.70
Fourchette Creek	2.97	34.36	0.24	1.73
Frenchman Creek	8.77	60.13	0.15	2.99
Larb Creek	1.63	9.09	0.00	6.00
Little Cottonwood Creek	0.71	34.50	0.06	0.11
Little Warm Creek	2.00	32.83	0.00	0.44
Lodge Pole Creek	3.34	0.54	0.13	0.00
Milk River	60.59	49.01	0.03	22.44
Missouri River	33.29	3.73	0.56	0.15
Mud Creek	0.06	13.58	0.06	0.18
Peoples Creek	3.18	14.36	0.30	0.61
Rock Creek	6.41	30.43	0.31	0.48
Second Creek	0.89	22.29	0.11	3.41
Slippery Ann Creek	2.39	34.51	0.38	0.50
Telegraph Creek	0.51	29.58	0.06	7.11
White Creek	1.57	33.00	0.03	0.03
Whitewater Creek	9.01	52.34	0.00	1.02
Wild Horse Creek	1.82	25.27	0.00	0.86
Woody Island Coulee	6.63	14.28	0.00	0.95
Totals	232.82	997.11	4.10	106.15

The Fresno Reservoir, is located on the Milk River 14 west of Havre, Montana. The reservoir consists of 7,388 surface acres of water and 65 miles of shoreline. It supports many species of fish, such as Walleye, Northern Pike, Perch and Whitefish (BOR 2005).

Creedman Coulee National Wildlife Refuge is a 2,728 acre easement refuge. The majority of the acreage in private ownership is farmed. The Creedman Coulee National Wildlife Refuge is located 30 miles north of Havre. The refuge was established as a refuge and breeding ground for migratory birds and other wildlife. Migratory birds utilize the Creedman Coulee Reservoir. Prong horns and coyotes inhabit the sagebrush grasslands and croplands surrounding the reservoir (FWP 2005).

5.3 ASSESSMENT OF SOCIAL VALUES

A significant wildfire impact is the effect it has on people. The severity of the impact is related to the population affected and the population's ability to protect itself. To determine the number of persons

potentially affected and to model the ability to self-protect and recover from hazards demographic information including age and indicators of economic well being were used to develop a population vulnerability model. The data used to develop the vulnerability model was derived from the 2000 Census. To model overall vulnerability the following equation was used:

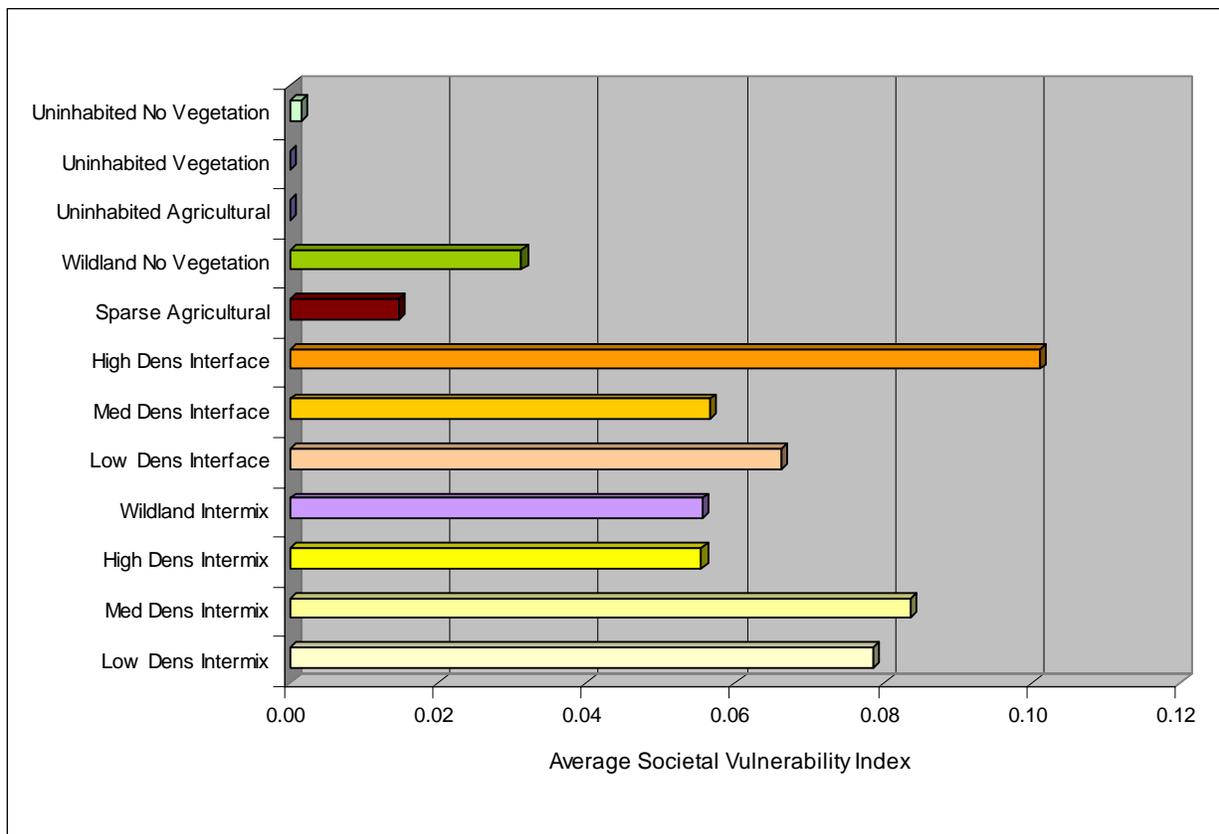
- Vulnerability Score = (societal variable for the census block / total societal variable in jurisdiction) / maximum societal variable for any census block in the jurisdiction)

This formula creates a score for each variable that is based on the percentage of that variable in the jurisdiction and is normalized to a scale that is the same as the other variables. The societal variables that were used to determine the overall societal vulnerability per census block were:

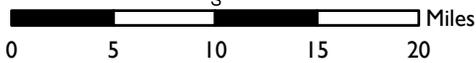
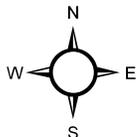
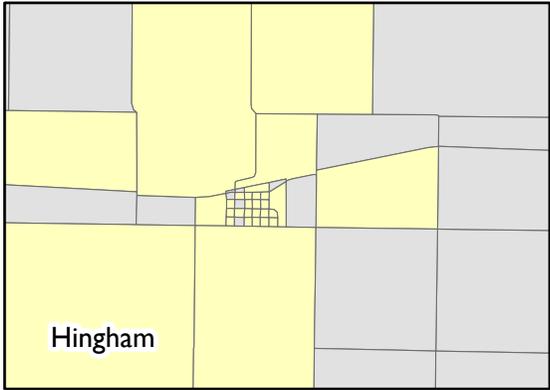
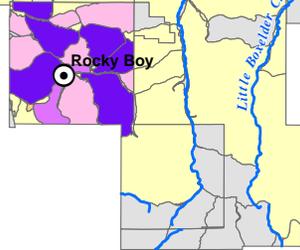
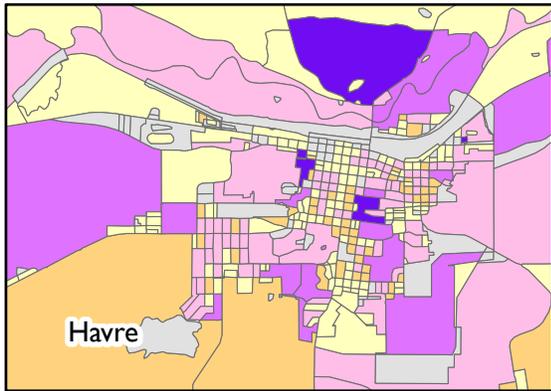
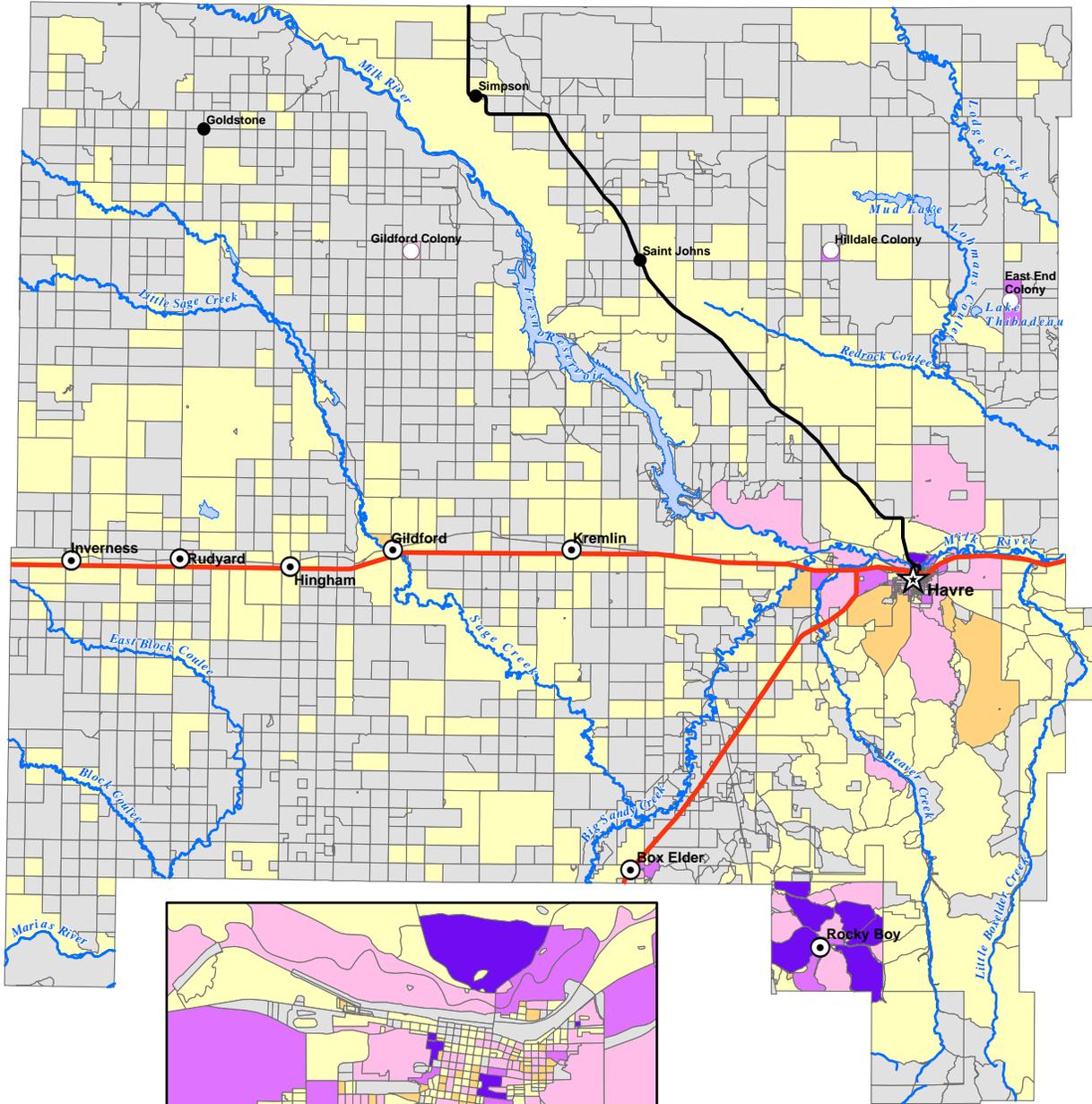
- Population Density
- Age > 65
- Age < 18
- Income < Poverty Level
- No High School Diploma
- Population with Disabilities
- Population on Public Assistance

Each block was assigned a score for each societal vulnerability and an overall societal vulnerability by adding the individual societal vulnerability scores and dividing by seven, which is the total number of variables evaluated. **Map 5-1** depicts total societal vulnerability by census block.

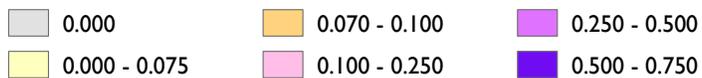
Average Societal Vulnerability by Wildland/Urban Interface



Hill County



Societal Vulnerability Score



6.0 MITIGATION STRATEGY

Specific mitigation goals and projects were developed for Hill County in conjunction with public meetings held in three communities and stakeholder interviews. A matrix developed for project ranking emphasizing cost-benefit and input from local officials was used to determine project prioritization. Following is a description of goals and objectives used to mitigate human and natural caused wildfire hazards that builds on the community's existing capabilities. Project implementation and legal framework are discussed at the conclusion of this section.

6.1 EXISTING SITUATION

Between 1991 and 2004 over 76 wildfire events were documented in Hill County. Further information on these wildfire events is presented in subsequent sections of this Plan.

Two public meetings were held in the communities of Havre and Hingham. Additionally, meetings and interviews were held with public officials numerous times during development of the plan. Generally, Hill County residents identified recent drought conditions and fire suppression assets are their primary obstacles in minimizing the risk of wildfire hazards.

Wildfire hazard prioritization was accomplished by determining which wildfire causes had caused any prior fatalities; resulted in property damage; had the potential to cause the most economic hardship within the County; and had the potential to affect Hill County residents in the future. Based on review of the historical record and local knowledge, Hill County identified four major wildfire ignition hazards that consistently affect this geographic area – debris burning, lightning, railroad and equipment use.

6.2 MITIGATION OBJECTIVES AND ACTIONS

6.2.1 Hazard Mitigation Goals

The Plan goals describe the overall direction that Hill County agencies, organizations, and citizens can take to work toward mitigating risk from wildfire hazards. Goals and objectives of the Plan were developed during interviews and meetings with public officials and at the public meetings held in Harlem and Havre. The broad range of potential wildfire mitigation activities were considered, and below is a list of mitigation objectives and the actions (projects) identified by the County. Although these projects may not be eligible for HFA or FEMA grant funding, Counties may secure alternate funding sources to implement these projects in the future. Mitigation projects specific to individual jurisdictions are noted within the list.

Enhance Early Warning Capabilities

- Upgrade sirens in Havre and Hingham (Havre, Hingham)

Enhance Communication Systems

- Obtain Portable repeaters to use during emergencies
- Update and replace FM radios for Fire Develop a County Wildfire and All Risk Emergency Operations Plan (EOP). Include a County/Interagency communications plan with cooperators
- With rural, county, and municipal fire departments and County DES with cooperators develop a standardized communication plan for rural fires using available frequencies and cooperator frequencies or repeaters during emergency incidents

Minimize Risk of Wildfire at Urban Interface

- Coordinate with BNSF for earlier spraying of weeds along railroad right-of-way (Inverness, Rudyard, Hingham, Gilford, Kremlin, Havre)

Improve Fire Fighting Capabilities

- Construct fast fill water station north of Kremlin to reduce distance trucks have to travel to fill during fires (Kremlin)
- Obtain radios with adequate power to communicate during fire fighting efforts
- Recruit people for volunteer fire departments
- Update Volunteer Fire Department Personal Protective Equipment (PPE) (turnouts) and obtain Self Contained Breathing Apparatus (SCBA's)
- Develop GPS database of water sources for distribution and inclusion in County and municipality fire apparatus
- Identify sites for temporary water sources such as large bladders to be filled and used during summer and fall fire seasons
- Coordinate with State Regional DES and Federal partners for scheduling and attendance at Incident Command System (ICS) 100/200 and/or IS 700 or State of Montana DES training requirement
- Develop Type III Incident Management Team table of organization utilizing expertise within the county and adjacent counties within the MT State DES Region. Utilize the National Incident Management System (NIMS) as structure to identify Incident Commander (DES)
- Reduce the number of railroad ignitions through coordination with railroad representatives. Coordinate and request railroad right-of-way fuel reduction to include mowing/spraying and removal at appropriate times (Inverness, Rudyard, Hingham, Gilford, Kremlin, Havre)
- With cooperators, provide classroom or video fire suppression training for rural area citizens and County employees who will respond to wildland fire (DNRC).
- Utilize County and cooperators expertise for Global Positioning System (GPS) training. Provide incentive for fire fighters and emergency services personnel to attend this training. Practice until proficient with County GPS units. Use GPS and other information for County Wildland Fire and All Risk Incident database
- Utilize and enforce Hill County Burning Permit requirements. Compare and review neighboring county burn permits for selection of standardized burn permits. Compare and review neighboring county burn permits for selection of standardized burn permit requirements
- Implement fuel reduction measures along highways, at communication sites, and on the perimeter and within communities by cutting or mowing where feasible.
- Locate and identify roads that have wooden bridges within the County. Plan protection measures and alternate routes in the event of a wildfire compromising or burning these bridges

Reduce Wildfire Hazards

- Implement Firewise practices through creation of defensible space around communities and private homes. Utilize standard Fire Protection Guidelines for Residential Development in the Wildland/Urban Interface as identified in NFPA 1144 Standard for Protection
- Employ fuel reduction and/or containment treatments on CRP lands. With cooperators and landowners apply treatments such as double row plow/disk of perimeter, mow vegetation, introduce prescribed fire or a combination of these.

- Continue grazing in sustainable areas with wild and domestic ungulates to reduce fuel loading and decrease potential wildfire intensity

Maintain Integrity of Water Supply

- Assist with reconstruction of St. Mary's water pipeline that supplies Milk River

Enhance Emergency Response Capabilities

- Provide additional Haz-Mat training to fire departments (Havre)
- Designate emergency shelters and increase public awareness on shelters (Box Elder)

6.2.2 Prescribed Fires

Prescribed fire treatments for fuel reductions are generally ecologically and economically sound methods. Fuels targeted are small-diameter dead surface fuels and understory vegetation such as grass, brush, saplings, and pole-sized trees. Areas targeted for fuels management projects include sites with potential for uncontrollable disaster fires and sites where the ecosystem could be improved through fire use. Fuel treatments are costly and average \$250 to \$2,200 an acre. Funds are awarded through the NFP for hazardous fuels treatment on private land, but require cost share from landowners (DNRC 2005). In its effort to enhance entire ecosystems, the BLM continues to work closely with other federal, state and local agencies, including rural fire departments, and the public throughout the planning and implementation. *Table 6-2* illustrates BLM prescribed fire statistics over a three year period.

Year	Number of Projects	Acreage by Benefiting Program								Total
		Forestry	Range	Wildlife	Hazard Reduction	Watershed	Ecosystem Health	Other	Not Specified	
2001	11		640	580	2820		3,671	700		8,411
2000	9	93		819	1856		875	52		3,695
1999	22	50	600	980	8,548	50	556	32		18,816

6.2.3 Grants

The DNRC has federal funds available on an annual basis through the Volunteer Fire Assistance (VFA) Program. VFA, Title IV, is a federal matching funds program with dollars provided by the USDA Forest Service. Title II/IV authorizes the Secretary of Agriculture to provide funds and technical assistance to DNRC to organize, train and equip local forces for preventing and suppressing wildfires. Requirements from the grant include that the financial assistance on a project can exceed 50 percent of the total project cost and only communities with a population less than 10,000 can partake in the application process. The projects covered by the funds include the following:

Fire Protection Organization and Planning

- Formation of Rural and Volunteer Fire Districts
- Fire Plans

Fire Training

- Structural fire protection
- Wildland fire protection

Fire Equipment

- Communications systems
- Conversion of Excess Military Property

- New equipment purchases

Fire Prevention

- Signs, posters, and educational materials
- Smoke detectors, tools, and equipment
- Prevention projects

Wildland Personal Protective Equipment (PPE)

- Construction or improvement of fire stations for housing fire equipment, normal operational expenses, and maintenance expenses cannot qualify for Volunteer Fire Assistance funds.

As a result of the National Fire Plan (NFP), the Volunteer and Rural Fire Assistance (VFA/RFA) Program provides assistance to county fire agencies for equipment, training, and fire prevention materials. In 2003, the Department of the Interior agencies (BLM, FWS & BLM) contributed their budgeted Rural Fire Assistance Program dollars to be combined with the VFA funds granted by the USDA Forest Service. The total assistance available in Montana exceeded \$1.1 million in 2004. The DNRC and its partners were recognized with the Ben Franklin Award, given by the Forest Service annually to one state for excellence in delivering these programs. Hill County received \$18,381 VFA/RFA dollars between 2001 and 2003 (DNRC 2005).

The main goal of the DNRC's Community Protection Fuels Mitigation Grant Program is to protect communities and subdivisions from fires that cross onto private property from adjacent federal property. Assistance is provided to private landowners to reduce fuel hazards. Funding for the program is made possible through the USDA Forest Service as part of the National Fire Plan. Ideal projects are those which treat multiple ownerships and/or contiguous acreage, promoting equal landscape treatment. Past grant recipients include communities, homeowner associations, local governments, and fire departments. Resource Conservation & Development Areas (RC&Ds) can also apply on behalf of individual homeowners, subdivisions, or communities.

The Assistance to Firefighters Grant (AFG) of 2005 is a program provided by the Office for Domestic Preparedness of the U.S. Department of Homeland Security in cooperation with the U.S. Fire Administration. The program is designed to assist local fire departments in protecting citizens and firefighters against the effects of fire and fire-related incidents (Homeland Security 2005).

6.3 PROJECT RANKING AND PRIORITIZATION

A cost-benefit matrix was developed to rank the mitigation projects using the following criteria. Each project was assigned a "high", "medium", or "low" rank for *Population Impacted*, *Property Impacted*, and *Cost*. For the *Population Impacted* category, a "high" rank represents greater than 50 percent of County residents; a "medium" rank represents 20 to 50 percent of County residents; and a "low" rank represents less than 20 percent of County residents. For the *Property Impacted* and *Project Cost* categories, a "high" rank represents greater than \$500,000, a "medium" rank represents between \$100,000 and \$500,000, and a "low" rank is less than \$100,000. The matrix was completed by assigning each rank a numeric value as follows:

	Population Impacted	Property Impacted	Cost
High	5	5	1
Medium	3	3	3
Low	1	1	5

The overall cost-benefit was then calculated by summing the total score for each project. *Table 6-3* presents the Hazard Mitigation Project Cost-Benefit Matrix for Hill County.

The DES Coordinator also ranked each mitigation project as “high”, “medium”, and “low” based on community priorities. Projects identified by Hill County as top priorities and their cost/benefit ranking are presented in *Table 6-4*.

**TABLE 6-3
CWPP MITIGATION PROJECT COST BENEFIT MATRIX**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	Box Elder Jurisdiction	Havre Jurisdiction	Hingham Jurisdiction	Inverness Jurisdiction	Rudyard Jurisdiction	Kremlin Jurisdiction	Hill County Jurisdiction	DES Jurisdiction	DNRC Jurisdiction	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Enhance Communication Systems	Obtain portable repeaters to use during emergencies.	Fire, Flooding, Technological, Tornadoes, Winter Storms							X			High	High	Medium	High
Enhance Communication Systems	Develop a County Wildfire and All Risk Emergency Operations Plan. Include a County/Interagency communications plan with cooperators and communities.	Fire							X			High	High	Low	High
Enhance Communication Systems	With rural, county, and municipal fire departments and County DES with cooperators develop a standardized communication plan for rural fires using available frequencies and cooperator frequencies or repeaters during emergency incidents.	Fire, Flooding, Technological, Tornadoes, Winter Storms							X			High	High	Low	High
Enhance Early Warning Capabilities	Upgrade sirens in Havre and Hingham.	Fire, Flooding, Technological, Tornadoes			X							Medium	Low	Low	High
Enhance Emergency Response Capabilities	Update maps to showing new housing developments.	Fire, Flooding, Technological, Tornadoes, Winter Storms	X									Low	High	High	High
Enhance Emergency Shelter Facilities	Designate emergency shelters and increase public awareness on shelters.	Fire, Flooding, Technological, Tornadoes, Winter Storms							X			High	High	Low	High
Enhance Haz-Mat Response Capabilities	Provide additional Haz-Mat training to fire departments.	Technological							X			High	High	High	High
Enhance Integrity of Dams	Investigate ways to mitigate siltation problem at Fresno Reservoir	Flooding							X			Medium	High	Medium	High
Improve Fire Fighting Capabilities	Recruit people for volunteer fire departments.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Update Volunteer Fire Department PPE (turnouts) and obtain SCBA's.	Fire			X							Medium	Medium	Low	High
Improve Fire Fighting Capabilities	Identify sites for temporary water sources such as large bladders to be filled and used during summer and fall fire seasons.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Coordinate with State Regional DES and Federal partners for scheduling and attendance at Incident Command System (ICS) 100/200 and/or IS 700 or State of Montana DES training.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Develop Type III Incident Management Team table of organization utilizing expertise within the county and adjacent counties within the MT State DES Region. Utilize the National Incident Management System (NIMS) as structure to identify Incident Commander.	Fire							X	X		High	High	Low	High

**TABLE 6-3
CWPP MITIGATION PROJECT COST BENEFIT MATRIX**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	Box Elder Jurisdiction	Havre Jurisdiction	Hingham Jurisdiction	Inverness Jurisdiction	Rudyard Jurisdiction	Kremlin Jurisdiction	Hill County Jurisdiction	DES Jurisdiction	DNRC Jurisdiction	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Improve Fire Fighting Capabilities	Reduce the number of railroad ignitions through coordination with railroad representatives. Coordinate and request railroad right-of-way fuel reduction to include mowing/spraying and removal at appropriate times.	Fire			X	X	X					Medium	High	Low	High
Improve Fire Fighting Capabilities	With cooperators, provide classroom or video fire suppression training for rural area citizens and County employees who will respond to wildland fires.	Fire							X		X	High	High	Low	High
Improve Fire Fighting Capabilities	Utilize County and cooperators expertise for GPS training. Provide incentive for fire fighters and emergency services personnel to attend this training. Practice until proficient with County GPS units. Use GPS and other information for County Wildland Fires.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Utilize and enforce Hill County Burning Permit requirements. Compare and review neighboring county burn permits for selection of standardized burn permits. Compare and review neighboring county burn permits for selection of standardized burn permit requirements.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Implement fuel reduction measures along highways, at communication sites, and on the perimeter and within communities by cutting or mowing where feasible.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Locate and identify roads that have wooden bridges within the County. Plan protection measures and alternate routes in the event of a wildfire compromising or burning these bridges.	Fire							X			High	High	Low	High
Maintain Integrity of Water Supply	Assist with reconstruction of St. Mary's water pipeline that supplies Milk River.	Fire							X			High	High	High	High
Minimize Risk of Wildfire at Urban Interface	Coordinate with BNSF for earlier spraying of weeds along railroad right-of-way	Fire			X	X	X					Medium	High	Low	High
Reduce Wildfire Hazards	Employ fuel reduction and/or containment treatments on CRP lands. With cooperators and landowners apply treatments such as double row plow/disk of perimeter, mow vegetation, introduce prescribed fire or a combination of these.	Fire							X			High	High	Low	High
Enhance Emergency Response Capabilities	Consider additional railroad crossings in Havre because existing crossings east and west of town are commonly blocked by trains.	Fire, Flooding, Technological, Tornadoes, Winter Storms		X								Medium	High	High	Medium
Improve Fire Fighting Capabilities	Construct fast fill water station north of Kremlin to reduce distance trucks have to travel to fill during fires.	Fire						X				Medium	Medium	Medium	Medium
Improve Fire Fighting Capabilities	Obtain radios with adequate power to communicate during fire fighting efforts.	Fire							X			High	High	Low	Medium
Improve Fire Fighting Capabilities	Develop GPS database of water sources for distribution and inclusion in County and municipality fire apparatus.	Fire							X			High	High	Low	Medium

**TABLE 6-3
CWPP MITIGATION PROJECT COST BENEFIT MATRIX**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	Box Elder	Hayre	Hingham	Inverness	Rudyard	Kremlin	Hill County	DES	DNRC	POPULATION	PROPERTY	COST	COST/BENEFIT
			Jurisdiction	IMPACTED	IMPACTED										
Reduce Wildfire Hazards	Continue grazing in sustainable areas with wild and domestic ungulates to reduce fuelloading and decrease potential wildfire instnsity.	Fire							X			High	High	Low	Medium
Reduce Wildfire Hazards	Implement Firewise practices through creation of defensible space around communities and private homes. Utilize standard Fire	Fire							X			High	High	Low	Medium
Enhance Communication Systems	Update and replace FM radios for Fire Department.	Fire, Flooding, Technological, Tornadoes, Winter Storms							X			High	High	Low	Low

<i>POPULATION IMPACTED</i>	<i>PROPERTY IMPACTED & PROJECT COST</i>	<i>COST BENEFIT FORMULA</i>	<i>COST/BENEFIT RANKING</i>
High = > 50% of County residents	High = > \$500,000	High = "5" for Population Impacted & Property Impacted; "1" for Cost	High = 11 to 15
Medium = 20 to 50% of County residents	Medium = \$100,000 to \$500,000	Medium = "3" for Population Impacted & Property Impacted; "3" for Cost	Medium = 6 to 10
Low = < 20% County residents	Low = < \$100,000	Low = "1" for Population Impacted & Property Impacted; "5" for Cost	Low = 0 to 5

**TABLE 6-4
HIGH PRIORITY MITIGATION PROJECTS**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	Box Elder Jurisdiction	Havre Jurisdiction	Hingham Jurisdiction	Inverness Jurisdiction	Rudyard Jurisdiction	Kremlin Jurisdiction	Hill County Jurisdiction	DES Jurisdiction	DNRC Jurisdiction	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Enhance Early Warning Capabilities	Upgrade sirens in Havre and Hingham.	Fire, Flooding, Technological, Tornadoes			X							Medium	Low	Low	High
Enhance Communication Systems	Obtain portable repeaters to use during emergencies.	Fire, Flooding, Technological, Tornadoes, Winter Storms							X			High	High	Medium	High
Enhance Communication Systems	Develop a County Wildfire and All Risk Emergency Operations Plan. Include a County/Interagency communications plan with cooperators and communities.	Fire							X			High	High	Low	High
Enhance Communication Systems	With rural, county, and municipal fire departments and County DES with cooperators develop a standardized communication plan for rural fires using available frequencies and cooperator frequencies or repeaters during emergency incidents.	Fire, Flooding, Technological, Tornadoes, Winter Storms							X			High	High	Low	High
Minimize Risk of Wildfire at Urban Interface	Coordinate with BNSF for earlier spraying of weeds along railroad right-of-way	Fire			X	X	X					Medium	High	Low	High
Improve Fire Fighting Capabilities	Recruit people for volunteer fire departments.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Update Volunteer Fire Department PPE (turnouts) and obtain SCBA's.	Fire			X							Medium	Medium	Low	High
Improve Fire Fighting Capabilities	Identify sites for temporary water sources such as large bladders to be filled and used during summer and fall fire seasons.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Coordinate with State Regional DES and Federal partners for scheduling and attendance at Incident Command System (ICS) 100/200 and/or IS 700 or State of Montana DES training.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Develop Type III Incident Management Team table of organization utilizing expertise within the county and adjacent counties within the MT State DES Region. Utilize the National Incident Management System (NIMS) as structure to identify Incident Commander.	Fire							X	X		High	High	Low	High
Improve Fire Fighting Capabilities	Reduce the number of railroad ignitions through coordination with railroad representatives. Coordinate and request railroad right-of-way fuel reduction to include mowing/spraying and removal at appropriate times.	Fire			X	X	X					Medium	High	Low	High
Improve Fire Fighting Capabilities	With cooperators, provide classroom or video fire suppression training for rural area citizens and County employees who will respond to wildland fires.	Fire							X		X	High	High	Low	High
Improve Fire Fighting Capabilities	Utilize County and cooperators expertise for GPS training. Provide incentive for fire fighters and emergency services personnel to attend this training. Practice until proficient with County GPS units. Use GPS and other information for County Wildland Fires.	Fire							X			High	High	Low	High

**TABLE 6-4
HIGH PRIORITY MITIGATION PROJECTS**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	Box Elder Jurisdiction	Bevere Jurisdiction	Hingham Jurisdiction	Inverness Jurisdiction	Rudyard Jurisdiction	Kremlin Jurisdiction	Hill County Jurisdiction	DES Jurisdiction	DNRC Jurisdiction	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Improve Fire Fighting Capabilities	Utilize and enforce Hill County Burning Permit requirements. Compare and review neighboring county burn permits for selection of standardized burn permits. Compare and review neighboring county burn permits for selection of standardized burn permit requirements.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Implement fuel reduction measures along highways, at communication sites, and on the perimeter and within communities by cutting or mowing where feasible.	Fire							X			High	High	Low	High
Reduce Wildfire Hazards	Employ fuel reduction and/or containment treatments on CRP lands. With cooperators and landowners apply treatments such as double row plow/disk of perimeter, mow vegetation, introduce prescribed fire or a combination of these.	Fire							X			High	High	Low	High
Improve Fire Fighting Capabilities	Locate and identify roads that have wooden bridges within the County. Plan protection measures and alternate routes in the event of a wildfire compromising or burning these bridges.	Fire							X			High	High	Low	High
Maintain Integrity of Water Supply	Assist with reconstruction of St. Mary's water pipeline that supplies Milk River.	Fire							X			High	High	High	High
Enhance Haz-Mat Response Capabilities	Provide additional Haz-Mat training to fire departments.	Technological							X			High	High	High	High
Enhance Emergency Shelter Facilities	Designate emergency shelters and increase public awareness on shelters.	Fire, Flooding, Technological, Tornadoes, Winter Storms							X			High	High	Low	High
Enhance Emergency Response Capabilities	Update maps to showing new housing developments.	Fire, Flooding, Technological, Tornadoes, Winter Storms	X									Low	High	High	High

POPULATION IMPACTED

PROPERTY IMPACTED & PROJECT COST

COST BENEFIT FORMULA

COST/BENEFIT RANKING

High = > 50% of County residents

High = > \$500,000

High = "5" for Population Impacted & Property Impacted; "1" for Cost

High = 11 to 15

Medium = 20 to 50% of County residents

Medium = \$100,000 to \$500,000

Medium = "3" for Population Impacted & Property Impacted; "3" for Cost

Medium = 6 to 10

Low = < 20% County residents

Low = < \$100,000

Low = "1" for Population Impacted & Property Impacted; "5" for Cost

Low = 0 to 5

6.4 PROJECT IMPLEMENTATION AND LEGAL FRAMEWORK

Once the Hill County CWPP is formally adopted, the County will use the cost-benefit analysis in the Plan to focus project prioritization. Mitigation projects will be considered for funding through federal and state grant programs, and when other funds are made available through the County. Coordinating organizations may include local, county, or regional agencies that are capable of, or responsible for, implementing activities and programs. The DES Coordinator will be responsible for mitigation project administration.

A number of state and local regulations and policies form the legal framework available to implement Hill County's hazard mitigation goals and projects. A list of these regulations and plans is presented below.

State of Montana

- Montana Subdivision and Platting Act
- Montana Building Codes
- Montana Sanitation in Subdivision

Local

- Havre Subdivision Regulations
- Hill County Subdivision Regulations
- Hill County Zoning Ordinance
- Septic Sewer permits
- Hill County Ordinance #88-22 Regulation Governing the Siting of Anhydrous Ammonia Plants
- Hill County Burn Permit Regulations

A summary of how the CWPP Plan can be integrated into this legal framework is presented below:

- Use the CWPP to help the County's Comprehensive Growth Policy meet the goal of protecting public health and property from natural hazards
- Partner with other organizations and agencies with similar goals to promote building codes that are more disaster resistant on the State level
- Develop incentives for local governments, citizens, and businesses to pursue hazard mitigation projects
- Allocate county resources and assistance for mitigation projects
- Partner with other organizations and agencies in north-central Montana to support hazard mitigation activities

6.5 ROLES AND RESPONSIBILITIES

6.5.1 Coordinated Groups

The National Interagency Fire Center is comprised of the USFS, FWS, NPS, BLM, BIA, National Association of State Foresters (NASF), NWS, Office of Aircraft Services and the U.S. Fire Administration an entity of FEMA. NIFC provides outreach programs, prevention techniques, and organized education to participating organizations.

The National Wildfire Coordinating Group (NWCG) provides strategic coordination between wildland firefighting agencies in Montana, northern Idaho, North Dakota and parts of South Dakota. Its primary mission is to foster interagency cooperation across jurisdictional and administrative boundaries by

providing direction, adopting standards, and resolving issues common to its members. NWCG offers advanced fire fighting courses and certification for firefighters such as the "Red Card" Wildland Firefighter program. Hill County fire entities have representation and participate in the activities of the Northern Rockies Geographic Area.

The Lewistown Interagency Dispatch Center provides initial attack dispatch service for the Lewistown Field Office of the BLM, the CM Russell Game Range of the US Fish & Wildlife Service, and the Judith and Musselshell Districts of the Lewis and Clark National Forest. The dispatch office is located at the Airport at the BLM Initial Attack Headquarters in Lewistown.

6.5.2 Federal

The BLM Offices and stations are located in Lewistown and Zortman. BLM provides fuel treatments on public lands that are adjacent to communities and provides information as to the "clear and mutual understanding of education and mitigation" for example wildfire training to various departments with the counties.

FEMA is responsible for providing fire suppression assistance grants. Major assistance and hazard mitigation grants in response to fires are also provided by FEMA when warranted. FEMA's goal is to encourage comprehensive disaster preparedness plans and to help increase the capabilities of state and local governments in emergency management. FEMA provides programs at the federal, state and local level regarding emergency management.

6.5.3 DRNC

The Montana Cooperative Fire Agreement of 2005 and the Hill County Cooperative Management Plan of 2004 prepared by the DNRC, clearly define the rolls and responsibilities of the DNRC, local fire departments and other supporting agencies. The DNRC is required by statute to provide training at no cost to state firefighters and other cooperators. Training includes activities such as fire prevention, detection, and prescribed burns in addition to fire suppression. Dozens of training courses are provided yearly to state firefighting personnel and to State/County Cooperative Fire Program personnel in every county in the State. The DNRC coordinates with federal, tribal, and local agencies in the design development, and delivery of advanced courses as a member of the interagency Northern Rockies Coordinating Group (NRCG). All Montana counties participate in and have signed agreements with the state to fight wildland fires on state and federal lands not protected by an existing fire agency. The DNRC provides training, equipment and assistance when fires exceed the capabilities of local departments. DNRC provides inspection of equipment loaned to local fire departments.

The DNRC Forestry Division Northeastern Land Office in Lewistown is the office providing fire protection to the county. Unit offices in the DNRC Northeastern Land Office district that provide assistance to the county are located in Havre and Glasgow. There are no initial attack units located in the DNRC district. The DNRC provides assistance to Counties through Direct Assistance, Mutual Aid and Direct Protection. In the case of a Direct Protection incident the DNRC has primary responsibility because this fire occurred on land protected by DNRC as part of a forest fire district, this fire occurred on land covered by a DNRC fire protection affidavit or this fire poses a direct threat to lands protected by DNRC. County Assist fires are those when the DNRC is providing assistance to a County Co-op. A letter of assistance signed by the county commissioners must be submitted requesting DNRC to assist the county. Mutual aid is assistance provided by a Supporting Agency at no cost to the Protecting Agency. Mutual aid is limited to those initial attack resources that have been determined to be appropriate and which are preplanned and shown in Annual Operating Plans or mobilization guides.

DNRC also provides mutual aid to one of the Fire Departments in the state under the Montana Mutual Aid Act (DNRC 2005).

6.5.4 LOCAL

Hill County is responsible for providing and maintaining the budgets for the FD's and VFD's. Coordination of meetings amongst fire officials and relevant parties is provided by Hill County.

The County Sheriff's Department is responsible for enforcing fire laws and maintaining public safety. A list of responsibilities and activities the Sheriff's Department provides are as follows:

- Issue and Enforce Burn Permit Requirements (*Appendix J*)
- Notify and Evacuate Residents and Provide Security to Evacuated Areas
- Provide Traffic Control and Escort Fire Equipment
- Conduct Fire Investigations to determine ignition sources

Fire Departments and Volunteer Fire Departments are responsible for the following:

- Provide public services regarding fire suppression and prevention
- Provide public service announcements regarding emergency operations
- Conduct fire inspections
- Perform public safety demonstrations
- Educate public by holding first aid and CPR classes
- Provide wildland protection

The DES is responsible for activating EOC's and coordinating resource ordering and allocation. DES is the point of contact for disseminating information for rural VFD's and assists the VFD's to be more efficient and streamlined in their department documentation procedures. It also ensures that timely and periodic broadcasts or announcements are issued to the public and press to advise them of hazards, conditions, and emergency information. Issuance of Emergency Declarations is an authority of the DES. This DES is active in promoting via hands on or contacting appropriate agencies training for all Rural VFD's.

DES actively pursues available grants such as AFG 2005 which was applied for in 2005 to obtain communication equipment for all departments and PPE for one department. DES has applied for and has received used computers from the Education Department that will go to VFD's.

6.5.5 FIREWISE

FIREWISE is a Community-wide Outreach Program sponsored by the NWCG. Members of the NWCG are responsible for wildland fire management in the United States and include USDA-Forest Service, the Department of Interior, the National Association of State Foresters, the U.S. Fire Administration and the National Fire Protection. FIREWISE promotes fire wise practices with the following objectives:

- Educating the public and local organization by providing public out reach programs regarding wildfire hazards
- Encouraging residents to take responsibility in reducing the risk of a wildfire by creating defensible space around their home and other structures
- Increasing awareness on the benefits of prescribed burning and managed natural wildland fires to obtain ecological benefits
- Maintaining firefighter and public safety
- Provide programs such as the "Red Rock – Green Rock" program to allow communities to easily identify at risk homes and communities (FIREWISE 2005).

7.0 PLAN MAINTENANCE PROCEDURES

The Plan maintenance section of this document details the formal process that will ensure that the Hill County Community Wildfire Preparedness Plan remains an active and relevant document. The Plan maintenance process includes a schedule for monitoring and evaluating the Plan and producing a Plan revision every five years. This section describes how the county will integrate public participation throughout the Plan maintenance process. Also included in this section is an explanation of how Hill County government intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms.

7.1 MONITORING, EVALUATING AND UPDATING THE PLAN

The Hill County Community Wildfire Preparedness Plan will be reviewed every *year* or as deemed necessary by knowledge of new wildfire hazards, environmental conditions, or other pertinent reasons. The review will determine whether a Plan update is needed prior to the required five year update. The Plan review will identify new mitigation projects and evaluate the effectiveness of wildfire mitigation priorities and existing programs.

The DES Coordinator will be responsible for scheduling a meeting of the Hill County board of Commissioners (Board) to review and update the Plan. The meeting will be open to the public and advertised in the local newspaper to solicit public input. The Board, assisted by the public will review the goals and wildfire mitigation measures or projects to determine their relevance to changing situations in the county, as well as changes in state or federal policy, and to ensure they are addressing current and expected conditions. The Board and public will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The list of critical facilities will also be reviewed and enhanced with additional details. The DES Coordinator will give a status report detailing the success of various wildfire mitigation projects, difficulties encountered, success of coordination efforts, and which strategies should be revised. The status report will be published in the local newspaper to update local citizens.

The DES Coordinator will be responsible for the five year update of the Plan, and will have six months to make appropriate changes to the Plan before submitting it to the Board and public for review and approval. Before the end of the five-year period, the updated Plan will be submitted to the Regional National Fire Plan Coordinators Office in Helena, Montana for acceptance. The DES Coordinator will notify all holders of the CWPP when changes have been made.

7.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

Hill County is currently developing a Comprehensive Growth Policy to address statewide planning goals and legislative requirements. The CWPP provides a series of mitigation steps or projects – many of which will be closely related to the goals and objectives of the County Growth Policy. Hill County will have the opportunity to implement wildfire hazard mitigation projects through existing programs and procedures. Local officials will work with the County departments to ensure wildfire hazard mitigation projects are consistent with planning goals and integrate them, where appropriate.

A number of different state administered federal program periodically have funds available to assist counties with hazardous fuels reduction projects, fire fighting training and others. The County Building Department is responsible for administering the building codes in local municipalities. After the adoption of the mitigation plan, they will work with the State Building Code Office to make sure that the

County adopts, and is enforcing, the minimum standards established in the State Building Codes. In addition, the County Building Department will work with other agencies at the state level to review, develop and ensure building construction codes that are adequate to mitigate or prevent damage by wildfire hazards. This is to ensure that life-safety criteria and flame retardant building material standards are met for new construction.

Within six months of formal adoption of the CWPP, wildfire mitigation goals will be incorporated into the County Comprehensive Growth Policy. Meetings of the Board will provide an opportunity for local officials to report back on the progress made on the integration of mitigation planning elements into county planning documents and procedures.

7.3 CONTINUED PUBLIC INVOLVEMENT

Hill County is dedicated to involving the public directly in review and updates of the Community Wildfire Preparedness Plan. The public will have many opportunities to provide feedback about the Plan. Copies of the Plan will be catalogued and kept at all appropriate agencies in the County as well as at the Public Library. The existence and location of these copies will be publicized in the County newspaper. Section 2.0 of the Plan includes the address and the phone number of the DES Coordinator responsible for keeping track of public comments on the Plan.

A series of public meetings will also be held prior to each annual review and five year update, or at lesser intervals when deemed necessary by the Board. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The DES Coordinator will be responsible for using county resources to publicize the annual public meetings and maintain public involvement through the newspapers and radio.

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Hill County

***Community Wildfire
Preparedness Plan***

Appendix A

Resolution of Jurisdiction

Hill County

Community Wildfire Preparedness Plan

Appendix B

Planning Documentation

- **Contact List**
- **List of Stakeholders Interviews/Meetings**
- **Copy of Press Release/Media Contact List**
- **Public Meeting Sign-In Sheets**

Hill County Contact Information									
County	Organization	Title	Name	Address	City	State	Zip	Phone	Email Address
Hill County	Rocky Boy's Reservation	Fire & Forestry Manager	William Lodgepole	P.O. Box 542	Box Elder	MT	59521	406-395-4207	william@cct.rockyboy.org
Hill County	Box Elder Rural Fire District	Fire Chief	Roland Menard	Box 7	Box Elder	MT	59521	406-352-4032	
Hill County	Rocky Boy Reservation	Fire Management Officer	Emery Nault	P.O. Box 542	Box Elder	MT	59521	406-395-4207	emery@cct.rockyboy.org
State/Blaine & Hill	DES	DES District 2 Coordinator	Ed Gierke	20 4th Ave SW	Conrad	MT	59425	(406) 450-1998	egierke@marsweb.com
Hill County	Gildford Rural Fire District	Fire Chief	Brett Preeshl	Box 162	Gildford	MT	59525	406-376-3127	
Hill and Blaine	NOAA	National Weather Service	Rick Dittman	5324 Tri-Hill Frontage Rd	Great Falls	MT	59401	(406) 453-5469	rick.dittman@noaa.gov
State/Blaine & Hill	Hartland Colony	Blaine County Citizen	John Waldner	HC 30 Box 69	Havre	MT	59501	406-398-5350	
Hill County	Hill County	Commission Secretary	Lois Ann Nichols	315 4th Street	Havre	MT	59501	406-265-5481	nicholsl@co.hill.mt.us
Hill County	Hill County	Commissioner	Doug Kaercher	316 4th Street	Havre	MT	59501		hillco@mtintouch.net
Hill County	Hill County	Commissioner	Kathy Bessette	317 4th Street	Havre	MT	59501	406-265-5481	bessette@co.hill.mt.us
Hill County	Hill County	Commissioner	Mike Anderson	318 4th Street	Havre	MT	59501	406-265-5481	hillco@mtintouch.net
Hill County	Hill County	County Sanitarian	Clay Vincent	315 4th Street	Havre	MT	59501		vincentc@co.hill.mt.us
Hill County	Hill County DES	DES Coordinator	Ron Knudson	315 4th Street	Havre	MT	59501	406 265-5481 ext 269	knudsonr@co.hill.mt.us
Hill County	Rural Fire #1 District	Fire Chief	Bob Jacobson	2539 Old Post Road	Havre	MT	59501	406-265-2631	
Hill County	Hill County VFD	Fire Chief	Cal Brown	4019 16 Ne	Havre	MT	59501	265-8194	cbrown@havremt.net
Hill County	Havre Fire Department	Fire Chief	Dave Sheppard	520 4th Avenue	Havre	MT	59501	406-265-6511	hfd@onewest.net
Hill County	Bear Paw Volunteer Fire Dept.	Fire Chief	Gary Gregiore	Box 354, Shambo Route	Havre	MT	59501	406-395-4530	
Hill County	Wildhorse Rural Fire District	Fire Chief	Joe Pruys	34557 Cottonwood Road	Havre	MT	59501	406-394-2284	
Hill County	St. Joe Rural Fire District	Fire Chief	Randy Bessette	HC 30, Box 70	Havre	MT	59501	406-398-5525	
Hill County	Havre Daily News	Journalist	Ellen Thompson		Havre	MT	59501		
Hill County	Havre	Mayor	Bob Rice	520 4th Avenue	Havre	MT	59501	406-265-6719	brice@ci.havre.mt.us
Hill County	Havre Daily News	Publisher	Harvey Brock	119 2nd Street	Havre	MT	59501	406-265-6795	hbrock@havredailynews.com
Hill County	Hill County	Sheriff	Don Brostrom	1450 2nd Street W	Havre	MT	59501	406-265-2512	brostrom@hillso.ci.havre.mt.us
Hill County	Hill County Road Department	Superintendent	Jerry Otto	315 4th Street	Havre	MT	59501	406-265-8507	hillco@mtintouch.net
Hill County	Hingham	Councilman	Roger Haas		Hingham	MT	59528	406-397-3111	
Hill County	Hingham Fire District	Fire Chief	Larry Horinek	Box 154	Hingham	MT	59528	406-397-3217	
Hill County	Hingham	Mayor	Ray Lipp	115 5th Avenue	Hingham	MT	59528	406-397-3213	rlipp@ttc-cmc.net
Hill County	Inverness Rural Fire District	Fire Chief	Elton Bixby	110 Main	Inverness	MT	59530		
Hill County	Kremlin Rural Fire District	Fire Chief	Barry Donovan	Kremlin Rural Fire District	Kremlin	MT	59532	406-372-3288	
Hill County	Kremlin VFD	Fire Chief	Norm Dyrland	33997 Road 78 N	Kremlin	MT	59532	372-3277	tnd@ttc-cmc.net
Hill County	New Media Broadcasters (KOJMKPQX/KRYK)	Radio	Dave Leeds		North of Havre	MT	59501	406-265-7841	nmb@nmbi.com

Multi-County Contact Information

JURISDICTION	Organization	TITLE	NAME	ADDRESS	CITY	ZIP	TELEPHONE	EMAIL
Consultants	Bear Paw Development Corp	Public Involvement	Craig Erickson	P.O. Box 170	Havre	59501	406 265-9226	cerickson@bearpaw.org
Federal	BLM	Fire Mitigation Specialist	Shannon Downey	P.O. Box 1160	Lewistown	59457	406 538-1989	
Federal	BLM	Assistant Field Manager	Stanley Jaynes	P.O. Box 1160	Lewistown	59457	406 538-1989	Stanley_Jaynes@blm.gov
State	DNRC	Wildfire Mitigation Coordinator	Jerry Buhre		Lewistown		406-538-7789	jbuhre@state.mt.us
Consultants	Jeff Bass Consulting	Fire Mitigation	Jeff Bass	350 Middlefork Road	Garden Valley, ID	83622	208 462-3131	jebass@earthlink.net
Consultants	Maxim Technologies	PDM Specialist	Daphne Digrindakis	303 Irene Street	Helena	59601	406 443-5210	ddigrind@maximusa.com
Consultants	Maxim Technologies	Project Manager	Fred Gifford	303 Irene Street	Helena	59601	406 443-5210	fgifford@maximusa.com
State	MT Fish, Wildlife, and Parks	Warden	Ryan Linder		Havre		406-265-6177	rlinder@state.mt.us
State	MT Fish, Wildlife, and Parks	Warden	Shane Reno		Havre		406-265-6177	sreno@mt.gov
State	MT Fish, Wildlife, and Parks	Wildlife Biologist	Al Rosgaard	2165 Highway 2 East	Havre, MT	59501	406-265-6177	arosgaard@mt.gov
Federal	United States Fish and Wildlife Service	Assistant Fire Management Officer	Paul Pallas	P.O. Box 89	Roy	59471	406 464-5151 ext. 204	paul_pallas@fws.gov

**Kickoff Meeting Announcement
Hill, Phillips, and Blaine Counties Pre-Disaster Mitigation
and Community Fire Plans**

Hill, Phillips, and Blaine Counties, have contracted with Maxim Technologies to prepare their Pre-Disaster Mitigation and Community Fire Plans. Once adopted, these Plans will enable the Counties to qualify for FEMA funds available for natural and technological hazard mitigation projects. A one page handout describing the project is attached. If you have questions regarding the project please contact me or one of the other project contacts listed on the project description.

To start the planning process, project kickoff meetings will be held at times and locations listed below. At the kickoff meetings we will review overall project objectives, answer questions regarding the project, and attempt to schedule times and locations for the required public meetings.

Please plan to attend one of the meetings. If you know of someone else who may be interested in attending, please pass this meeting announcement on to them.

All meetings will be on November 17th, 2004

Hill County – 10 am
Hill County Court House
Timmons Meeting Room
315 4th Ave, Havre

Blaine County – 1 pm
Harlem City Hall
10 First Ave SW, Harlem

Phillips County – 3:30 pm
1st Sate Bank Meeting Room
I S I E, Malta

Kickoff Meeting
Hill, Phillips, and Blaine Counties Pre-Disaster Mitigation
And Community Wildfire Protection Plans
November 17, 2004

- I. Welcome and Introductions
 - a. Maxim Technologies – Fred Gifford (Project Manager)
 - b. Bear Paw Development Corp – Paul Tuss (Public Involvement)
 - c. Blaine County DES – Haley Gustitis (Contract Manager)
 - d. You!!

2. Meeting Objectives
 - a. Project Overview
 - b. Answer Questions
 - c. Identify Additional Project Participants
 - d. Preliminary public meeting schedule

3. Project Overview
 - a. Pre-Disaster Mitigation Plan
 - i. Why Do It – Protect the community and required to qualify for hazard mitigation funding from FEMA
 - ii. Components
 1. Community Overview
 2. Risk Assessment – What and where are the hazards?
 3. Vulnerability Assessment – Where is the community at risk?
 4. Public Involvement – Let the public give their input
 5. Mitigation Strategies – What the community does to reduce loss from known hazards
 - b. Community Wildfire Protection Plans
 - i. Why Do It - Protect the community and required to qualify for hazard mitigation funding from FEMA and a variety of community assistance programs
 - ii. Community Fire Plans can serve as the Fire hazard section of a PDM Plan
 - iii. Components
 1. All PDM components
 2. Assessment of community response capability
 - c. Differences between Pre-Disaster Mitigation Plan and Community Wildfire Protection Plans
 - i. Pre-Disaster Mitigation Plan focus is assessing risk to community for all hazards.
 - ii. Pre-Disaster Mitigation Plans should allow community to align risks with mitigation projects

- iii. Community Wildfire Protection Plans focused only on fire so provide more detail

4. Example Plans

Boise County Fire Mitigation Plan

http://www2.state.id.us/lands/nat_fire_plan/county_wui_plans/boise/boise_county_plan.htm

Daniels County PDM Plan

http://www.state.mt.us/dma/des/Library/PDM/Daniels_County_Plan.pdf

5. Why Combine the Efforts

- a. Consolidate public involvement efforts and expense ✓
- b. Consolidate plan development tasks ✓
- c. Insure integration of fire with other community hazards

6. Schedule (See Attachment)

7. Your Role

- a. Provide expert local knowledge
 - i. Hazard identification
 - ii. Mitigation project identification
 - iii. Response capabilities
 - iv. Local data resources
- b. Help insure public involvement
 - i. When
 - ii. Where
 - iii. Who
- c. Review draft plans
- d. Implementation

8. Our Role

- a. PDM and Community Wildfire Plan expertise
- b. Risk assessment
- c. Public meetings
- d. Documentation
- e. Plan Development

9. Additional Project Participants

10. Preliminary Public Meeting Schedule

11. Questions??????

6.0 HAZARD PRIORITIZATION, MITIGATION GOALS

Hazard prioritization and mitigation goals are in accordance with the stated objectives and priorities, specifically: Protection of Life, Property and Values at Risk. The prioritization and goals were developed by both the Wildfire and VFD/Structure branch. An extensive list of mitigation goals has been developed by the VFD/Structure branch. These priorities and goals are addressed separately from the Wildfire Branch. It is important to use two sets of hazard priorities and mitigation goals to reflect the inherently different requirements, needs and hazards examined and identified by the VFD/Structure and Wildfire Branches. Wildfire does not recognize ownership, property boundaries, or management policies. WUI watersheds at risk were provided by the Wildfire Branch and reviewed by the VFD/Structure Branch. Non-WUI watersheds at risk are identified in appendix A Map 5, Fire Regimes. These are watersheds in Boise County that are in condition Class II or III depicted by color on the map, most notably the Deadwood River Drainage. Watershed risk includes and addresses hazards associated with vegetation type, health, condition, deviation from historic wildfire, and possible soil erosion/watershed contamination.

The Boise County Wildfire Group has provided the following prioritization **recommendations** and mitigation goals for the County Administrators.

6.1 VFD/Structure Branch

Hazard Prioritization addressed by the VFD/Structure Branch was developed according to the Plan Priorities, with protection of life and property as the top priority. Mitigation actions to address these priorities are:

1. **Hazard: County Emergency Services Communication Center Computer Support.** The server that supports dispatching of county wide emergency services is operating at maximum capacity. The software currently used for dispatching in the county is not supported (outdated). This potential hazard for dispatching emergency services for wildfires or other emergencies directly affects the priorities stated in the Boise County Wildland Fire Mitigation Plan.
Mitigation Goal: Upgrade County Dispatch Server and update software.
2. **Hazard: Limited radio frequencies and repeaters for Fire Departments in Boise County.** Communications is vital to fire fighter and public safety on all wildfires.
Mitigation Goal: Provide additional VHF-FM frequency and repeater for Boise County dispatchers and Fire departments.
3. **Hazard: Mobilization/Communications Plan does not include State or Federal Cooperators.** An interagency County/State/Federal mobilization/communications plan is needed for multiple or extended incidents for public and fire fighter safety.
Mitigation Goal: Develop County Fire-Emergency Mobilization Plan, and County/Interagency Communications Plan with Landowners and Cooperators in Boise County.

4. **Hazard: County VFD fire fighters are unable to meet standards or requirements pertaining to: Training, PPE, Communications, Equipment, Apparatus and Facilities.**
Mitigation Goal: Provide Boise County VFDs with current and future required training, communications, PPE, Apparatus, Facility improvements and equipment as identified in the State of Idaho Survey of Volunteer Fire Departments.
5. **Hazard: Numerous county roads, communication sites, developments and communities require hazardous fuels reduction.**
Mitigation Goal: Reduce identified hazardous fuels buildup in high-risk areas on a county-wide scale.
6. **Hazard: Fire Departments and Law Enforcement missions are conducted in areas with limited or no County radio communication.**
Mitigation Goal: Secure “Emergency Use Only” agreement with cooperator/other agency communications repeater system.
7. **Hazard: Lack of defensible space in developments and at private homes.**
Mitigation Goal: Create and implement defensible space standards by homeowners and developments.
8. **Hazard: Developments/subdivisions/homeowners are without emergency wildfire plans or other emergency plans in place.**
Mitigation Goal: Develop subdivision/homeowners wildfire and other emergency operations plan(s).
9. **Hazard: Wildfire risk continues for future developments/subdivisions in Boise County Wildland/Urban Interface areas.**
Mitigation Goal: Utilize Boise County Fire Protection Guidelines for Residential Development In the Wildland/Urban Interface for subdivisions as identified in County Planning and Zone Requirements.
10. **Hazard: Additional Firewise Education, information and activities needed.**
Mitigation Goal: Gain community or development participation in firewise education, information distribution and activities.
11. **Hazard: No current Wildfire County Wildfire Council has been appointed.**
Mitigation Goal: Solicit wildfire liaison or experts to participate in County “All Hazards Group and Local Emergency Planning Council”.

6.2 Recommended Wildfire Branch Hazard Priorities and Mitigation Goals

1. **Hazard: Many areas within the County require immediate fuels treatment in 2003.**
Mitigation Goal: Apply required fuels treatment – hand, mechanical, prescribed fire or combination of treatments to meet fuels reduction, resources and forestry practices objectives.

2. **Hazard: Wildland Urban Interface Watershed areas are at risk from wildfire due to vegetation condition, vegetative fuel build up, soil stability, watershed contamination or in condition classes that are susceptible to larger, more intense and severe wildfires (these watersheds include or are adjacent to developments, subdivisions or communities).**

Mitigation Goal: Provide wildfire protection to these watersheds as displayed in Protection Districts ,Appendix A, Map 3. Plan and execute fuel reductions actions and forestry practices for WUI watershed risk reduction.

3. **Hazard: Areas within watersheds in Boise County are at risk from wildfire due to vegetative condition, vegetative fuels build up, soil stability, watershed contamination, or are in condition class conducive to larger, more intense and severe wildfires.**

Mitigation Goal: Provide wildfire protection to these watersheds as displayed in Protection Districts, Appendix A, Map 3. Plan fuels reduction actions and forestry practices for risk reduction to watersheds within Boise County.

TABLE 4-2
SHERIDAN COUNTY RANKING OF HAZARD MITIGATION PROJECTS

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	PLENTYWOOD JURISDICTION	MEDICINE LAKE JURISDICTION	OUTLOOK JURISDICTION	WESTBY JURISDICTION	SHERIDAN COUNTY JURISDICTION	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Minimize Risk of Wildfire Impacts at Urban Interface	Develop GIS system to manage resource protection including procurement of computer and training	Fire, Flooding, Winter Storms, Tornadoes	X	X	X	X	X	High	Low	Low	High
Enhance Emergency Response Capabilities	Provide generators for wells and lift stations in Plentywood, Antelope and Res	Technological	X	X	X	X	X	High	Low	Low	High
Minimize Risk of Wildfire Impacts at Urban Interface	Institute ordinance not allowing CRP within 1/2-mile of towns	Fire	X	X	X	X	X	High	High	Low	High
Enhance Early Warning Capabilities	Update sirens system in Plentywood and in rural communities	Fire, Flooding, Winter Storms, Tornadoes	X	X	X	X	X	High	High	Low	High
Enhance Early Warning Capabilities	Purchase weather radios for critical facilities (consider solar radios). Provide weather radios at discount to rural residents	Fire, Flooding, Winter Storms, Tornadoes	X	X	X	X	X	High	High	Low	High
Enhance Early Warning Capabilities	Provide AWOS or ASOS sytem at airport for air ambulance.	Fire, Winter Storms, Tornadoes	X				X	Medium	Medium	Low	High
Secure Integrity of Utilities and Infrastructure	Perform seismic evaluation of Box Elder Dam above Plentywood	Flooding	X				X	Medium	High	Low	High
Enhance Early Warning Capabilities	Install seismic equipment to detect movement on Box Elder Dam	Flooding	X				X	Medium	High	Low	High
Minimize Risk of Wildfire Impacts at Urban Interface	Remove old abandoned buildings around towns	Fire		X	X	X	X	Low	High	Low	High
Enhance Early Warning Capabilities	Improve siren system on Box Elder Dam (above Plentywood)	Flooding	X					Medium	High	Low	High
Reduce Impacts from Flooding	Update dike at Plentywood Golf Course	Flooding	X					Medium	High	Low	High
Minimize Risk of Wildfire Impacts at Urban Interface	Negotiate for haying of CRP land	Fire	X	X	X	X	X	Medium	Medium	Low	High
Minimize Risk of Wildfire Impacts at Urban Interface	Institute public education program in fire prone areas (Outlook – due to grade	Fire			X		X	Low	High	Low	High
Minimize Risk of Wildfire Impacts at Urban Interface	Construct a fire break network for certain CRP locations	Fire		X	X		X	High	High	Low	High
Reduce Risk of Hazardous Material Incidents	Review Plentywood city ordinances regarding haz-mat truck traffic through to	Technological	X					Medium	Medium	Low	High

PRE-DISASTER MITIGATION AND COMMUNITY FIRE PLANS Hill, Phillips, and Blaine Counties

Hill, Phillips, and Blaine Counties are currently working on a project to evaluate the risk from hazards in the region and develop plans to mitigate them. These Pre-Disaster Mitigation and Community Fire Plans will conform with the Federal Disaster Mitigation Act of 2000 and National Fire Plan Guidance. The Plans are being developed to qualify for federal funds available through FEMA to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural and technological disasters. Development of the plans has been contracted to Maxim Technologies out of Helena.

❖ Why Develop Hazard Mitigation Plans?

The rising cost of natural disasters has led to a renewed interest in identifying effective ways to reduce vulnerability to disasters. Natural hazard mitigation plans assist communities in reducing risk from natural hazards by identifying resources, information, and strategies for risk reduction, while helping to guide and coordinate mitigation activities through the country.



The resources and information within the Mitigation Plans will: (1) identify disaster risks within the communities; (2) identify and prioritize future mitigation projects; (3) assist in meeting the requirements of federal assistance programs; and (4) establish a foundation for coordination and collaboration among agencies and the public in the multi-jurisdictional area.

For jurisdictions with approved Mitigation Plans, FEMA can fund up to 75% of the eligible costs of hazard mitigation project. The remaining 25% is a local match that does not need to be cash; in-kind services or materials may be used.

❖ What is the Objective of the Plans?

The objective of the Pre-Disaster Mitigation Plans and Community Fire Plans is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from natural and technological hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide the jurisdictions towards building a safer, more sustainable community. The Plan will describe the overall direction that the jurisdictional agencies, organizations, and citizens can take to work toward mitigating risk from natural hazards. Plans must be formally adopted by governing bodies of each jurisdiction requesting approval.

❖ *Plan Components*

Public involvement is critical to development of the Plan. Public meetings will be scheduled in communities across the region during early March 2005. The purpose of the meetings is to solicit input for the risk assessment component of the Plan and to identify potential mitigation projects.

The risk assessment is an integral part of the Plan. It describes the type, location and extent of all natural hazards that can affect the jurisdiction with information on previous occurrences of hazard events, and the probability of future hazard events. Each jurisdiction's vulnerability to the hazard is described, including the hazards potential impact on the community.

Vulnerability is described in terms of types and numbers of buildings, infrastructure, and critical facilities located in the identified hazard areas. An estimate of the potential dollar losses to vulnerable structures is also developed. Land uses and development trends within the community are identified so that mitigation options can be considered in future land use decisions.

A mitigation strategy will be developed for each Plan whereby goals are identified to reduce or avoid long-term vulnerabilities to the identified hazards. Through public involvement, a comprehensive range of specific mitigation projects will be developed to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure. The mitigation strategy will identify how the projects will be prioritized, implemented, and administered by the local jurisdiction. Prioritization will include emphasis on the extent to which benefits are maximized according to a cost benefit review.

❖ *Schedule*

Local governments must obtain approval for their mitigation plans and submit them to the State DES coordinator for acceptance prior to being eligible for project funding. Maxim's project schedule is to complete the Plans by September 1, 2005.

❖ *Contacts*

Fred Gifford
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HAVRE DAILY NEWS

SERVING NORTH-CENTRAL MONTANA • FOUNDED 1914 • JAN. 18, 2005

THURSDAY
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Disaster-preparedness to be discussed at area meetings

Residents of Phillips, Blaine and Hill counties have an opportunity to develop predisaster mitigation plans and community wildfire protection plans designed to reduce the loss of life and property, human suffering, and economic disruption if a disaster strikes.

Disaster and emergency services coordinators for the counties have scheduled meetings in eight communities to ask the public for information on developing the plans. The meetings will last about 90 minutes and will cover three major topics of disaster and wildfire protection.

The first phase involves a risk assessment. Planners will ask the public questions such as: What disasters have occurred previously in the area? What damage occurred? How likely is it that the disaster could occur again? What damage would it cause now? What's the most serious hazard in the community?

Understanding the community's vulnerability is the second phase of the planning process, and planners at the public meetings will ask questions such as: What facilities are located in the hazard area — hospitals, schools, fire halls, police stations, public works facilities, bridges, shelters? How much would it cost to replace those facilities? Are new facilities being planned in the area? How much would it cost to replace them?

The final part will be devoted to finding specific projects that

will reduce the effect of hazards. Projects could include removing dead and dry brush and leaves to reduce wildfire potential, maintaining flood control/diversion channels to control flooding, developing strategies for reaching families or animals stranded by severe winter storms, developing strategies for managing overhead utility lines to minimize danger during windstorms, and establishing a hay hotline during drought conditions.

The Federal Emergency Management Agency can fund up to 75 percent of the eligible costs of hazard mitigation projects for counties and tribes that have approved predisaster mitigation plans. The remaining 25 percent is a local match that does not need to be cash; in-kind services or materials may be used.

The meeting schedule is:

- Wednesday at 1 p.m., Little Rockies Senior Center in Harlem
- Wednesday at 7 p.m., Triple E Room in the Blaine County Annex in Chinook
- Next Thursday at 1 p.m., Hi-Line Insurance Basement Meeting Room
- Next Thursday at 7 p.m., Hill County Annex in Havre
- Feb. 22 at 1 p.m., First State Bank in Malta
- Feb. 22 at 7 p.m., Saco Town Hall
- Feb. 23 at 1:30 p.m., Dodson School
- Feb. 23 at 7 p.m., Zortman Elementary School.

For tips or corrections: Call
City Editor Dan Hollow at 791-1491
or (800) 438-6600; Fax: 791-1431;
e-mail: tribcity@sotfast.net



■ IN BLAINE, HILL AND PHILLIPS COUNTIES

Disaster meetings this week

By KAREN OGDEN
Tribune Regional Editor

Residents of Hill, Phillips and Blaine counties are invited to a series of public meetings today and Thursday to help guide disaster preparedness plans.

The Pre-Disaster Mitigation Plan will allow counties to seek FEMA funding for items such as emergency siren systems, GPS mapping equipment, radios or other disaster preparedness equipment.

The plans were required under the Federal Disaster Mitigation Plan of 2000, said Craig Erickson of the Bear Paw Development Corp. in Havre, which is handling public outreach for the process.

"If the plans aren't there, there's a possibility that the funding might not be there, so there's a real big carrot on the end of the stick for the local governments to get these things done," Erickson said.

The counties also must draw up a Community Wildfire Protection Plan. Each county received \$30,000 in funding from the Bureau of Land Management for the process.

County officials want the public to help them determine what type of disaster prevention or coping efforts are needed in their area, said Haley Gustitis, Blaine County disaster and emergency services coordinator. Gustitis is coordinating the three-county effort.

Scenarios could range from a "big hail storm, big wind storm to a train derailment that's caused a chemical spill," Gustitis said.

The Harlem area, for example, has struggled for years with flooding of 30-mile creek on the north side of town, Gustitis said. The plan could include measures to prevent flooding or to better warn area residents, she said.

Meeting times are as follows:

Today:

● 1 p.m. at the Little Rockies Senior Center in Harlem.

● 7 p.m. at the Blaine County Annex in Chinook.

Thursday:

● 1 p.m. Hi-Line Insurance Building in Hingham.

● 7 p.m. Hill County Annex in Havre.

02/14/05

Press Release

FOR IMMEDIATE RELEASE

CONTACT:

Scott Moran, Phillips County DES Coordinator, 654-2350
Craig Erickson, Bear Paw Development, 265-9226 ext. 27

DATE: Monday, February 14, 2005

HEADLINE: Disaster Mitigation Plan Public Meetings Scheduled

BODY: Wildfires, flooding, severe winter storms, high winds, drought, terrorism or human-caused hazards - all disasters that we've either experienced or heard about. Residents of Phillips, Blaine, and Hill Counties have an opportunity to develop Pre-Disaster Mitigation Plans and Community Wildfire Protection Plans designed to reduce the loss of life and property, human suffering, and economic disruption, if a disaster strikes.

Scott Moran, Disaster and Emergency Services Coordinator for Phillips County has scheduled meetings in four (4) communities to ask the public for information on developing these plans. The meetings will last approximately 90 minutes and will cover three major topics disaster and wildfire protection. The first phase involves a "risk assessment." Planners will ask the public questions such as: What disasters have occurred previously in the area? Where? When? What damage occurred? How likely is it that this disaster could occur again? What damage would it cause now? What's the most serious hazard in the community?

Understanding the community's "vulnerability" is the second phase of the planning process, and planners at the public meetings will ask questions such as: What facilities are located in the hazard area - hospitals, schools, fire halls, police stations, public works facilities, bridges, shelters? How much would it cost to replace those facilities? Are new facilities being planned in the area? How much would it cost to replace them?

The final part of the Pre-Disaster Mitigation Plan meetings will be devoted to finding specific projects that will reduce the effect of hazards. We need to identify projects such as removing dead and dry brush and leaves to reduce wildfire potential, maintaining flood control/diversion channels to control flooding, developing strategies for reaching families or animals stranded by severe winter storms, developing strategies for managing overhead utility lines to minimize danger during windstorms, and establishing a hay hotline during drought conditions. FEMA can fund up to 75% of the eligible costs of hazard mitigation projects for Counties and Tribes that have approved Pre-Disaster Mitigation Plans. The remaining 25% is a local match that does not need to be cash; in kind services or materials may be used.

Please plan to attend and share your ideas with the planning team.

MEETING SCHEDULE

Date	Community	Location	Start Time
22-Feb-05	Malta	First State Bank	1:00 p.m.
22-Feb-05	Saco	Saco Town Hall	7:00 p.m.
23-Feb-05	Dodson	Dodson School	1:30 p.m.
23-Feb-05	Zortman	Zortman Elementary School	7:00 p.m.

01/06/05

Press Release

FOR IMMEDIATE RELEASE

CONTACT:

Haley Gustitis, Blaine County DES Coordinator, 357-3310
Ron Knudson, Hill County DES Coordinator, 265-5481 ext. 269
Scott Moran, Phillips County DES Coordinator, 654-2350

DATE: Friday, January 7, 2005

HEADLINE: Disaster Mitigation Plan Public Meetings Scheduled

BODY: Wildfires, flooding, severe winter storms, high winds, drought, terrorism or human-caused hazards - all disasters that we've either experienced or heard about. Residents of Phillips, Blaine, and Hill Counties have an opportunity to develop Pre-Disaster Mitigation Plans and Community Wildfire Protection Plans designed to reduce the loss of life and property, human suffering, and economic disruption, if a disaster strikes.

Disaster and Emergency Services Coordinators for the Counties have scheduled meetings in eight (8) communities to ask the public for information on developing these plans. The meetings will last approximately 90 minutes and will cover three major topics disaster and wildfire protection. The first phase involves a "risk assessment." Planners will ask the public questions such as: What disasters have occurred previously in the area? Where? When? What damage occurred? How likely is it that this disaster could occur again? What damage would it cause now? What's the most serious hazard in the community?

Understanding the community's "vulnerability" is the second phase of the planning process, and planners at the public meetings will ask questions such as: What facilities are located in the hazard area - hospitals, schools, fire halls, police stations, public works facilities, bridges, shelters? How much would it cost to replace those facilities? Are new facilities being planned in the area? How much would it cost to replace them?

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Please plan to attend and share your ideas with the planning team.

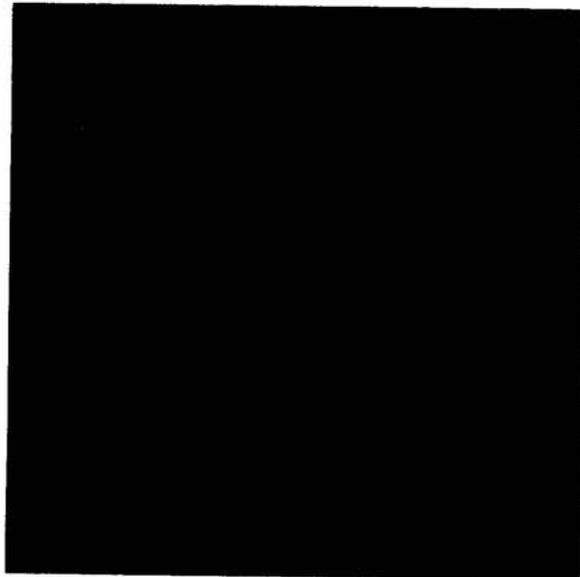
MEETING SCHEDULE

Date	Community	Location	Start Time
19-Jan-05	Harlem	Little Rockies Senior Center	1:00 p.m.
19-Jan-05	Chinook	Triple E Room - Blaine County Annex	7:00 p.m.
20-Jan-05	Hingham	Hi-Line Insurance - Basement Meeting Rm.	1:00 p.m.
20-Jan-05	Havre	Hill County Annex	7:00 p.m.
22-Feb-05	Malta	First State Bank	1:00 p.m.
22-Feb-05	Saco	Saco Town Hall	7:00 p.m.
23-Feb-05	Dodson	Dodson School	1:30 p.m.
23-Feb-05	Zortman	Zortman Elementary School	7:00 p.m.

*Pre-Disaster Mitigation and Community Fire Plans
Hill, Phillips, and Blaine Counties
Community Meetings*

Date	Community	Location	Start Time
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23-Feb-05	Zortman	Zortman Elementary School	7:00 p.m.



Craig Erickson

From: Craig Erickson
Sent: Tuesday, January 18, 2005 11:03 AM
To: Karen Ogden (kogden@greatfal.gannett.com)
Cc: Craig Erickson
Subject: PreDisaster Planning

Contacts: Karen Ogden

Dear Karen:

Hill, Phillips, and Blaine Counties to develop Pre-Disaster Mitigation (PDM) and Community Wildfire Protection Plans (CWPP) for each jurisdiction have hired Maxim Technologies of Helena. Each of these plans will conform to the Federal Disaster Mitigation of 2000 and National Fire Plan Guidance. The plans are being developed to qualify for federal funds available through FEMA to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural and technological disasters. Bear Paw Development and Jeff Bass Consulting have been hired by Maxim to assist with the development of these plans. I am sharing this information with you to make you aware of the project and to invite you to attend one or more of the following meetings at which we will gather public input.

Harlem City Hall:	January 18 @ 7:00 p.m.
Little Rockies Senior Center in Harlem:	January 19 @ 1:00 p.m.
Triple E Room – Blaine County Annex in Chinook:	January 19 @ 7:00 p.m.
Hi-Line Insurance Building in Hingham:	January 20 @ 1:00 p.m.
Hill County Annex in Havre:	January 20 @ 7:00 p.m.

As a journalist we feel your coverage of this process is critically important and we welcome your questions. I hope you can find time in your busy schedule to attend at least one of the meetings.

Tonight's meeting in Harlem will focus solely on the Community Wildfire Protection Plan. Each of the Fire Chief's in Blaine County: Kraig Hanson, Robert Scheffelmaer, Adam Billmeyer, and Steve Humphrey will be at the meeting, as will Michael Longknife from Fort Belknap's Forestry Dept. I hope you will be able to join us.

Please feel free to contact me with your questions at 265-9226 ext. 27.

Craig Erickson
Director of Community Planning
cerickson@bearpaw.org
P.O. Box 170
Havre, MT 59501
tel: {406} 265-9226 ext. 27
fax: {406} 265-5602

Want a signature like this?

P.O. Box 140
48 Second Avenue
Havre, MT 59501

**Bear Paw
Development**

Fax

To: Dan Shepherd **From:** Craig Erickson 

Fax: 265-8855 **Pages:** 1

Phone: 265-7841 **Date:** 1/18/05

Re: Wildfire Protection Planning **CC:** Project File

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Greetings,

Hill, Phillips, and Blaine Counties to develop Pre-Disaster Mitigation (PDM) and Community Wildfire Protection Plans (CWPP) for each jurisdiction have hired Maxim Technologies of Helena. Each of these plans will conform to the Federal Disaster Mitigation of 2000 and National Fire Plant Guidance. The plans are being developed to qualify for federal funds available through FEMA to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural and technological disasters. Bear Paw Development and Jeff Bass Consulting have been hired by Maxim to assist with the development of these plans. I am sharing this information with you to make you aware of the project and to invite you to attend one or more of the following meetings at which we will gather public input.

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Please feel free to contact me with your questions at 265-9226 ext. 27.

Craig Erickson

From: Craig Erickson
Sent: Tuesday, January 18, 2005 11:05 AM
To: Tim Leeds (tleeds@havredailynews.com)
Cc: Craig Erickson; Karen Datko
Subject: PreDisaster Planning

Contacts: Tim Leeds

Tim,

Hill, Phillips, and Blaine Counties to develop Pre-Disaster Mitigation (PDM) and Community Wildfire Protection Plans (CWPP) for each jurisdiction have hired Maxim Technologies of Helena. Each of these plans will conform to the Federal Disaster Mitigation of 2000 and National Fire Plan Guidance. The plans are being developed to qualify for federal funds available through FEMA to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural and technological disasters. Bear Paw Development and Jeff Bass Consulting have been hired by Maxim to assist with the development of these plans. I am sharing this information with you to make you aware of the project and to invite you to attend one or more of the following meetings at which we will gather public input.

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Director of Community Planning
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P.O. Box 170
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fax: {406} 265-5602

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48 Second Avenue
Havre, MT 59501

**Bear Paw
Development**

Fax

To: Keith Hanson

From: Craig Erickson 

Fax: 357-3736

Pages: 1

Phone:

Date: 1/18/05

Re: Wildfire Protection Planning

CC: Project File

Urgent **For Review** **Please Comment** **Please Reply** **Please Recycle**

Greetings,

Hill, Phillips, and Blaine Counties to develop Pre-Disaster Mitigation (PDM) and Community Wildfire Protection Plans (CWPP) for each jurisdiction have hired Maxim Technologies of Helena. Each of these plans will conform to the Federal Disaster Mitigation of 2000 and National Fire Plan Guidance. The plans are being developed to qualify for federal funds available through FEMA to reduce the loss of life and property, human suffering, economic disruption, and disaster assistance costs resulting from natural and technological disasters. Bear Paw Development and Jeff Bass Consulting have been hired by Maxim to assist with the development of these plans. I am sharing this information with you to make you aware of the project and to invite you to attend one or more of the following meetings at which we will gather public input.

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Please feel free to contact me with your questions at 265-9226 ext. 27.

PreDisaster Mitigation & Community Wildfire Protection Planning

Public Meeting

Havre, MT ~ January 20, 2005

Name (Please Print)	Title	Jurisdiction	Phone Number	E-mail Address
Joe Pruys	Chief	Wild horse	406-394-2284	
Ron Knudson	DES	Hill County	406-265-8858	knudsonr@co.hill.mt.us
WILBUR NAGEL	DES	Rocky Boy RES.	406 396-5706	
Roland Menard	Chief	By Eldon	406-352-4032	
DAVID SHEPPARD	CHIEF	HAVRE FIRE	406-265-6511	hfd@newwest.net
Clay Vincent	Health	Hill County	265-5481	vincentc@co.hill.mt.us
Cal Brown		Hill Count	265-8194	cbrown@havre.mt.mt
Norm Dypland	pres	Kremlohn	372-3277	tnd@ttc.cmc.net
Rick Pester		Rudyard	355-4416	7bullets@tk.smc.net
JERRY BUIRE	FIRE DGM MGR	JNRC	406-538-7789	jbuire@mt.gov
Kathy Bessette	Hill Co. Commission	Hill Co	265-5481	bessettek@co.hill.mt.us
Shane Reno	FWP Warden	Hill/Blaine Co.	265-6177	sreno@mt.gov
Haley Gustitis	DES	Blaine County	357-3310	

Hill County

***Community Wildfire
Preparedness Plan***

Appendix C

**State of Montana Criteria Wildland/Urban Fire
Assessment and Mitigation Planning**

Wildland / Urban Interface Fire Assessments and Mitigation Planning Guide

Summary

Wildland/Urban Interface (WUI) Assessments and Mitigation Plans are key implementation tasks to achieving the goals of the National Fire Plan and the 10-year Strategy. These assessments and plans can also be important components to the FEMA Pre-Disaster Mitigation (PDM) planning process. To facilitate the inclusion of NFP documents into the PDM plan, all WUI community assessments and plans within Montana will be conducted at a countywide level. The Federal Wildland Fire Agencies involved in the delivery of the National Fire Plan in Montana fully support the state and county Pre-Disaster Mitigation Planning effort as required by the Disaster Mitigation Act.

Introduction

This paper provides the **minimum** elements to be addressed in a WUI Assessment and Mitigation Plan as needed for the National Fire Plan. Many, if not all of the components of the Wildland Assessment and Mitigation Plan parallel the requirements of the Pre-disaster Mitigation Plan. It is recognized that the needs and planning complexities of WUI communities vary widely. Assessments and plans may include additional elements, as appropriate for the specific community or planning area. WUI assessments and plans must be prepared and implemented through a coordinated interagency effort with a high degree of community involvement. Additionally, roles and responsibilities of respective participants must be defined clearly. Federal agencies will provide technical and financial assistance to communities within legislative authorities. For their part, participating counties will plan, implement, and manage the county mitigation projects. These county-based efforts are critical to the long-term success of the National Fire Plan and the 10-Year Strategy.

WUI assessments provide analysis of the county values at risk, levels of protection, and fire hazards to the county. Assessment of risks, hazards, values, and fire protection capabilities are used as a basis for the subsequent Mitigation Plan. A Mitigation Plan articulates strategies to reduce loss from fire, identifies projects and activities that address risks, hazards and operational or infrastructure deficiencies identified in the assessment. It includes a tactical component that assigns roles and responsibilities for carrying out specific tasks. The strategy should include some type of educational component.

WUI Assessments and Mitigation Plans can be facilitated in-house, particularly for small counties with less complex issues. Some offices have opted for contract services to perform the bulk of the work associated with these documents when dealing with larger areas or more complex planning scenarios. Contracting and procurement personnel can provide assistance in securing the services of a qualified contractor and management of contracts. Information within this guidance will assist in the preparation of specifications and statements of work. Either way, it is essential to remember that the essence of the Community Assistance Program is the active, cooperative, and ongoing participation of the county. Each county is unique, and federal employees who are well acquainted with the county issues are best suited to determine how to establish and maintain working relationships with key participants in these communities.

Elements of the WUI Community Assessment

1. Executive Summary: The document should begin with a concise summary of the findings of the Community Assessment.

2. Identification and Description of Areas to be Evaluated: This section includes a detailed discussion of the community, including demographics, location, topography, and basic climate data. This narrative should include a description of the current fire protection organization within the community and past wildland/urban interface fire history.

3. Assessment of Risk: **Identify** the primary risks associated with identified values and determine if patterns or trends exist (i.e. along major travel corridors from car fires; in a lightning strike zone, campfires left unattended in a recreational use area, along railway corridors, etc.). Assign adjective or frequency ratings

appropriate to the area. Example: ignition risk is high, medium or low. Risk Assessment and Mitigation Strategies (RAMS) prevention data for the area may be incorporated if it is available.

4. Assessment of Hazards:

- a. **Assessment of Vegetative Fuel Hazards:** Identify wildland and landscape/ornamental fuels within the WUI areas. Describe fuels composition, type, arrangement, etc. Photo points are appropriate, but if the terrain and fuels are relatively homogenous throughout, such as in a grassland or brush type, only a few representative points are necessary. If fuels and terrain vary, include a suite of photo points that sufficiently portray a cross-sectional representation of the fuels profile. Assign adjectives or hazard severity ratings using a rating system appropriate for your practical use. RAMS data for the area may be used if it is available.
- b. **Assessment of Structural Fuel Hazards:** Assess vulnerability of structures to ignition from firebrands, radiation, and convection. Structures can be surveyed individually and averaged to calculate a rating for a subdivision or neighborhood. This provides a very accurate rating but is potentially very time consuming. If a neighborhood in the assessment area is fairly homogenous, with lot sizes and building style, a sampling scheme can be used, such as every third or fourth house. Those scores can then be averaged for the area. Assign adjectives or hazard severity ratings using a rating system appropriate for your practical use. "The Wildland / Urban Interface Fire Hazard Assessment Methodology" developed by the National Wildland / Urban Interface Fire Protection Program is one useful procedural reference, and there are many others which have been developed to meet the needs of specific communities.
- c. **Identification of Unique Regional or Site Specific Wildfire Severity Factors:** Identify and discuss local conditions that may occur and contribute to the probability of increased fire ignitions (human or natural) and or extreme/severe fire behavior.

Examples include increased human activities (i.e. large recreational gatherings, seasonal and holiday celebrations, etc.) unique or seasonal weather events (i.e. Santa Ana winds, inversions, etc.), topographic features that influence wildfire behavior (i.e. steep slopes, canyons and draws, saddles, etc.) and other circumstances (widespread insect or freeze-related mortality of vegetation, heavy fuel loadings, etc). Describe normal fire behavior parameters, resistance to control, rates of spread, fire safety issues, and unique situations and conditions. Assign adjectives or hazard severity ratings using a rating system appropriate for your practical use.

5. Values to be Protected: Assess, identify and prioritize community values to be protected or those things, places, activities, resources or qualities that agencies, citizens and stakeholders consider as significant and would be severely impacted by wildfire. Assign an adjective rating or scale to values as appropriate for the area.

a. Assessment of Economic Values

b. Assessment of Ecological Values

c. Assessment of Social Values

6. Assessment of Fire Protection Preparedness and Capability: Identify the level of emergency preparedness and the response capability of local infrastructure and area fire protection personnel and resources.

a. Community Preparedness

b. Fire Protection

7. Appendices: Includes maps, photos, and other supporting documentation

The wildland fire mitigation plan identifies, prioritizes, and outlines a strategy and specific actions that are needed to reduce the risk of wildfire-related loss of the priority values to be protected identified in the assessment. The plan provides a timeline of activities and identifies the roles and responsibilities of stakeholders. Funding needs and workloads can be estimated with a properly prepared plan. A well-developed background section and project methodology section will be helpful in the preparation of NEPA documentation, if needed. The following components, as a minimum, should be a part of a mitigation plan:

1. **Executive Summary**: Provide a succinct description of the community and the findings of the WUI Community Assessment (risks, hazards, values to be protected, fire protection and emergency services capability). Provide the basic findings, goals and strategy of the WUI Mitigation Plan and project(s) or activities proposed. Explain how the recommended actions will mitigate losses to the priority community values identified in the WUI assessment.
2. **Background**: The background provides specific information on the individual community the plan addresses, the threat of wildland fire based on fire history, fire behavior characteristics, and values to be protected.

a. Existing situation: Summarize the community's current conditions and circumstances. Specifically, the historic role of wildland fire in the regions surrounding the community. Discuss the community's vulnerability to wildfire, including identified risk and hazard factors, values at risk, and level of fire protection.

b. Organizational structure: Identify organizational process used to identify and assemble stakeholder group. Provide a list of involved stakeholders and partners. Describe the organization/group and identify primary leadership and support positions (i.e. Firesafe Council, chairperson, agency liaison, technical specialists, etc.) Describe how the group will function in the short (planning stage) and long (implementations phase) term. Discuss items such as frequency of meetings, communications, plan review and evaluations, consensus process, etc.

3. **Goals and Objectives**: Goals are broad statements of intent. For example, a goal is to reduce dangerous vegetative fuel accumulations in and near subdivisions. Objectives are specific statements describing conditions that would meet a goal.

For example, the removal of bug-killed trees and ladder fuels within subdivisions and adjacent areas within the next 12 months.

4. **Strategic Plan/Desired Condition** This section succinctly and specifically describes the priority values to be protected as determined in the assessment process and identifies strategies to achieve desired conditions (i.e. Mule Creek Canyon Watershed; reduce vulnerability of watershed from stand-replacement wildfires by reducing fuel load through planning and implementing fuel treatments projects; Local Fire Protection Capabilities: Enhance safety and response capabilities of local fire department by improving communications and dispatch procedures and system, providing annual wildfire prevention and response training, and ensuring an adequate complement of Personal Protective Equipment (PPE); Mule Creek Canyon Summer Homes: Improve survivability of residences in this subdivision through Firewise educational programs, workshops and demonstration projects).
5. **Actions and Methodology (Tactical Plan)**: This section describes the specific projects and types of actions to be employed, such as fuels treatments, rural fire assistance, and public education, and the methods by which they are carried out. For example, Mule Creek Canyon subdivision: reduce vulnerability of the subdivision to wildfire damage by use of a Youth Conservation Crew to remove all bug-killed white fir and all live white fir less than 6 inches within a 300 feet buffer zone around the subdivision.
6. **Roles and Responsibilities (local, state, federal, etc.)**: From the beginning of the assessment and planning process, it is vital to clearly define roles and responsibilities. The WUI Community

Assessment and Mitigation Planning process is a community-based, collaborative project to help WUI communities reduce wildfire-related damages and losses. This collaboration requires a strong joint effort and stakeholder commitment. Federal land management agencies facilitate various projects and provide financial, logistical, and technical support in specific areas. For their part, the communities assume certain responsibilities, tasks and resource commitments that are appropriately theirs to accomplish and fulfill within a given schedule. It is essential to clearly articulate what BLM can provide within the process and how the agency can assist or support mitigation and to establish a clear and mutual understanding of education and mitigation, and what actions or resources the community, individual agencies, organizations, and homeowners must accomplish or contribute in order for the effort to be as fully successful as possible.

Funding Guidelines: A number of funding sources are available to communities for various aspects of mitigation and preparedness. It is important to understand what funds are available, how to access them, restrictions and authorities on how specific funds may be used.

Hill County

***Community Wildfire
Preparedness Plan***

Appendix D

Severity Checklists and Ratings

BOX ELDER, MONTANA-WILDFIRE CHECKLIST

Wildfire Hazard Severity Checklist

Wildfire Hazard Severity Checklist									
A.. Subdivision Design					E. Roofing Material				
1. Ingress and egress (pick one only)					1. Construction material (pick one only)				
a. Two or more roads in/out	0		0		Class A roof	0		0	
b. One road in/out	7		0		Class B roof	3		3	
2. Road Width (pick one only)					Class C roof	15		0	
a. ≥7.3 M (24ft)	0		0		Not rated	25		0	
b. ≥6.1 M (20 ft) and ≤7.3 M 924 ft)	2		2		F. Building Construction				
c. ≤6.1 M (20ft)	4		0		1. Materials (predominate) (pick one only)				
3. All Season Road Condition (pick one only)					2. Building setback relative to slopes of 30% or more (pick one)				
a. Surfaced Road, grade <5%	0		0		a. Non-cumbersome/fire-resistive siding, eaves & deck (see Chapter 8)	0		0	
b. Surfaced Road, grade >5%	2		0						
c. Non-Surfaced Road, grade <5%	2		2		b. Non-cumbersome/fire-resistive siding, eaves & deck	5		5	
d. Non-Surfaced Road, grade >5%	5		0		c. Combustive siding & deck	10		0	
e. Other than all season	7		0		2. Building setback relative to slopes of 30% or more (pick one)				
4. Fire Service Access (pick one only)									
a. ≤91.4 M (300 ft) with turnaround	0		0		a. ≥9.14 M (30 ft) to slope	1		1	
b. >91.4 M (300 ft) with turnaround	2		2		b. >9.14 M (30 ft) to slope	5		0	
c. <91.4 M (300 ft) w/o turnaround	4		0		G. Available Fire Protection				
d. ≥91.4 M (300 ft) w/o turnaround	5		0		1. Water source availability (pick one only)				
5. Street Signs (pick one only)					a. Pressurized water source availability				
a. Present (10.2 (4 in) in size and reflectorized	0		1		1892L/min (500 gpm) hydrants < 304.8 m (1000ft apt	0		0	
b. Not Present	5		0		946.4 L/min (250gpm)hydrants , 304.8 m (1000ft apt	1		0	
B. Vegetation (Fuel Models)					b. Nonpressurized water source availability (off site)				
1. Characteristics of predominate vegetation (pick one only)					1. Water source availability (pick one only)				
Within 91.4 M (300 ft)					≥946.4 L/min (250 gpm) continuous for 2 hrs				
a. Light (Grasses, Forbs, Sawgrass, Tundra NFDRS Fuel Models A, C, L, N, S, & T	5		5		≤946.4 L/min (250 gpm) continuous for 2 hrs	5		5	
b. Medium (light brush & small trees) NFDRS Fuel Models D, E, F, H, P, Q, & U	10		0		c. Water unavailable	10		0	
c. Heavy (dense brush, timber & hardwoods NFDRS Fuel Models B, G, & O	20		0		2. Organized response resources (pick one only)				
d. Slash (timber harvesting residue) NFDRS Fuel Models J, K, & L	25		0						
2. defensible space (pick one only)					a. Station ≤8km (5 mi) from structure				
a. More than 100 ft of vegetation treatment from structure	1		0		b. Station > 8km (5 mi) from structure	3		0	
b. 71 to 100 ft of vegetation treatment from structure	3		3						
c. 30 to 70 feet of vegetation treatment from structure	10		0						
d. <9.14 M (30 ft) of vegetation treatment from structure	25		0						
C. Topography					H. Utilities (Gas and Electric)				
1. Slope < 10%	1		1		1. Placement (pick one only)				
2. Slope 10% to 20%	4		0		All underground utilities	0		0	
3. Slope 21% to 30%	7		0		One underground, one aboveground	3		3	
4. Slope 31% to 40%	8		0		All aboveground	5		0	
5. Slope ≥40%	10		0		I. Totals for Subdivision				
D. Additional Rating Factors (rate all that apply)					(check-point totals) – Hazard assessment				
Note: Place a number from 0-5 in the appropriate yellow box.					1. Low hazard				
1. Topographical features that adversely affect fire wildland fire behavior	0-5		0		<40 points				
2. Areas with history of higher fire occurrence than surrounding areas due to special situations (heavy lightning, railroads, escaped debris burning.	0-5		3		2. Moderate hazard:	45			
3. Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0-5		5		3. High hazard:	70-112 points			
4. Separation of adjacent structures that can contribute to fire spread.	0-5		2		4. Extreme hazard	>112 points			
2. debris burning=3					DEVELOPMENT/COMMENTS				
3. Dry winds=4					Fire Behavior fuel model 1 for cultivated lands and fuel model 3 for some CRP lands.				
4. Structures on perimeter and outside Box Elder=2					Wildfires ignited when vegetation cures combined with a dry wind event can yield high rates of spread and increased intensities.				

GILFORD, MONTANA - WILDFIRE CHECKLIST

Wildfire Hazard Severity Checklist

Wildfire Hazard Severity Checklist									
A.. Subdivision Design					E. Roofing Material				
1. Ingress and egress (pick one only)					1. Construction material (pick one only)				
a. Two or more roads in/out	0		0		Class A roof	0		0	
b. One road in/out	7		0		Class B roof	3		3	
2. Road Width (pick one only)					Class C roof	15		0	
a. ≥7.3 M (24ft)	0		0		Not rated	25		0	
b. ≥6.1 M (20 ft) and ≤7.3 M 924 ft)	2		2		F. Building Construction				
c. ≤6.1 M (20ft)	4		0		1. Materials (predominate) (pick one only)				
3. All Season Road Condition (pick one only)					a. Non-cumbersome/fire-resistive siding, eaves & deck (see Chapter 8)	0		0	
a. Surfaced Road, grade <5%	0		0						
b. Surfaced Road, grade >5%	2		0						
c. Non-Surfaced Road, grade <5%	2		2		b. Non-cumbersome/fire-resistive siding, eaves & deck	5		0	
d. Non-Surfaced Road, grade >5%	5		0		c. Combustive siding & deck	10		7	
e. Other than all season	7		0		2. Building setback relative to slopes of 30% or more (pick one)				
4. Fire Service Access (pick one only)									
a. ≤91.4 M (300 ft) with turnaround	0		0		a. ≥9.14 M (30 ft) to slope	1		0	
b. >91.4 M (300 ft) with turnaround	2		2		b. >9.14 M (30 ft) to slope	5		0	
c. <91.4 M (300 ft) w/o turnaround	4		0		G. Available Fire Protection				
d. ≥91.4 M (300 ft) w/o turnaround	5		0		1. Water source availability (pick one only)				
5. Street Signs (pick one only)					a. Pressurized water source availability				
a. Present (10.2 (4 in) in size and reflectorized	0		0		1892L/min (500 gpm) hydrants < 304.8 m (1000ft apt	0		0	
b. Not Present	5		0		946.4 L/min (250gpm)hydrants , 304.8 m (1000ft apt	1		0	
B. Vegetation (Fuel Models)					b. Nonpressurized water source availability (off site)				
1. Characteristics of predominate vegetation (pick one only)					2. Organized response resources (pick one only)				
Within 91.4 M (300 ft)					a. Station ≤8km (5 mi) from structure				
					b. Station > 8km (5 mi) from structure				
					≥946.4 L/min (250 gpm) continuous for 2 hrs				
a. Light (Grasses, Forbs, Sawgrass, Tundra NFDRS Fuel Models A, C, L, N, S, & T	5		5		≤946.4 L/min (250 gpm) continuous for 2 hrs				
b. Medium (light brush & small trees) NFDRS Fuel Models D, E, F, H, P, Q, & U	10		0		c. Water unavailable				
c. Heavy (dense brush, timber & hardwoods NFDRS Fuel Models B, G, & O	20		0		2. Organized response resources (pick one only)				
d. Slash (timber harvesting residue) NFDRS Fuel Models J, K, & L	25		0		a. Station ≤8km (5 mi) from structure				
2. defensible space (pick one only)					b. Station > 8km (5 mi) from structure				
a. More than 100 ft of vegetation treatment from structure	1		0		3				
b. 71 to 100 ft of vegetation treatment from structure	3		3		0				
c. 30 to 70 ft. of vegetation treatment from structure	10								
d. <30 ft of vegetation treatment from structure	25		0						
c. Topography within 91.4 M (300 ft) of Structure									
1. Slope <10%	1		1						
2. Slope 10% to 20%	4		0		H. Utilities (Gas and Electric)				
3. Slope 21% to 30%	7		0		1. Placement (pick one only)				
4. Slope 31% to 40%	8		0		All underground utilities	0		0	
5. Slope ≥40%	10		0		One underground, one aboveground	3		3	
D. Additional Rating Factors (rate all that apply)					All aboveground	5		0	
Note: Place a number from 0-5 in the appropriate yellow box.					I. Totals for Subdivision				
(check-point totals) – Hazard assessment									
1. Topographical features that adversely affect fire wildland fire behavior	0-5		0		1. Low hazard	<40 points			
2. Areas with history of higher fire occurrence than surrounding areas due to special situations (heavy lightning, railroads, escaped debris burning.	0-5		5		2. Moderate hazard:	40-69 points	44		
3. Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0-5		5		3. High hazard:	70-112 points			
4. Separation of adjacent structures that can contribute to fire spread.	0-5		2		4. Extreme hazard	>112 points			
					DEVELOPMENT/COMMENTS				
					During dry wind events when fuels are cured around Gilford, hazards from wildfires to Gilford and the surrounding area will increase.				
					Fuel model 1 around Gilford on agriculture lands, fuel model 3 on CRP lands and cured grains before harvest.				

HAYRE, MONTANA - WILDFIRE CHECKLIST									
Wildfire Hazard Severity Checklist									
A.. Subdivision Design					E. Roofing Material				
1. Ingress and egress (pick one only)					1. Construction material (pick one only)				
a. Two or more roads in/out	0		0	Class A roof	0				
b. One road in/out	7			Class B roof	3			3	
2. Road Width (pick one only)					Class C roof				
a. ≥7.3 M (24ft)	0			Not rated	15				
b. ≥6.1 M (20 ft) and ≤7.3 M 924 ft)	2		2	F. Building Construction					
c. ≤6.1 M (20ft)	4			1. Materials (predominate) (pick one only)					
3. All Season Road Condition (pick one only)					a. Non-cumbersome/fire-resistive siding, eaves & deck (see Chapter 8)				
a. Surfaced Road, grade <5%	0		1		0				
b. Surfaced Road, grade >5%	2								
c. Non-Surfaced Road, grade >5%	2			b. Non-cumbersome/fire-resistive siding, eaves & deck	5				
d. Non-Surfaced Road, grade >5%	5			c. Combustive siding & deck	10			10	
e. Other than all season	7			2. Building setback relative to slopes of 30% or more (pick one)					
4. Fire Service Access (pick one only)									
a. ≤91.4 M (300 ft) with turnaround	0			a. ≥9.14 M (30 ft) to slope	1			1	
b. >91.4 M (300 ft) with turnaround	2			b. >9.14 M (30 ft) to slope	5				
c. <91.4 M (300 ft) w/o turnaround	4		4	G. Available Fire Protection					
d. ≥91.4 M (300 ft) w/o turnaround	5			1. Water source availability (pick one only)					
5. Street Signs (pick one only)					a. Pressurized water source availability				
a. Present (10.2 (4 in) in size and reflectorized	0		0	1892L/min (500 gpm) hydrants < 304.8 m (1000ft apt	0			0	
b. Not Present	5			946.4 L/mon (250gpm)hydrants , 304.8 m (1000ft apt	1				
B. Vegetation (Fuel Models)					b. Nonpressurized water source availability (off site)				
1. Characteristics of predominate vegetation (pick one only)					≥946.4 L/mion (250 gpm) continuous for 2 hrs				
Within 91.4 M (300 ft)					3				
a. Light (Grasses, Forbs, Sawgrass, Tundra NFDRS Fuel Models A, C, L, N, S, & T	5		5	≤946.4 L/min (250 gpm) continuous for 2 hrs	5				
b. Medium (light brush & small trees) NFDRS Fuel Models D, E, F, H, P, Q, & U	10			c. Water unavailable	10			10	
c. Heavy (dense brush, timber & hardwoods NFDRS Fuel Models B, G, & O	20			2. Organized response resources (pick one only)					
d. Slash (timber harvesting residue) NFDRS Fuel Models J, K, & L	25								
2. defensible space (pick one only)					a. Station ≤8km (5 mi) from structure				
a. More than 30.48 M (100 ft) of vegetation treatment from structure	1			b. Station > 8km (5 mi) from structure	3			1	
b. 21.6 M to 30.48 M (71 to 100 ft) of vegetation treatment from structure	3		3						
d. <9.14 M (30 ft) of vegetation treatment from structure	25								
C. Topography									
1. Slope < 10 %				H. Utilities (Gas and Electric)					
2. Slope 10% to 20%	4			1. Placement (pick one only)					
3. Slope 21% to 30%	7			All underground utilities	0				
4. Slope 31% to 40%	8		8	One underground, one aboveground	3			3	
5. Slope ≥40%	10			All aboveground	5				
D. Additional Rating Factors (rate all that apply)					I. Totals for Subdivision				
<i>Note: Place a number from 0-5 in the appropriate yellow box.</i>					(check-point totals) – Hazard assessment				
1. Topographical features that adversely affect fire wildland fire behavior	0-5		2	1. Low hazard	<40 points				
2. Areas with history of higher fire occurrence than surrounding areas due to special situations (heavy lightning, railroads, escaped debris burning.	0-5		4	2. Moderate hazard:	40-69 points	65			
3. Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0-5		4	3. High hazard:	70-112 points				
4. Separation of adjacent structures that can contribute to fire spread.	0-5		4	4. Extreme hazard	>112 points				
1. Slopes= 2				DEVELOPMENT/COMMENTS					
2. Railroad=4				Moderate high rating for perimeter of Havre and off site developments in response area.					
3. Dry winds=4									
4. Home placement, perimeter and outlying=4									

KREMLIN, MONTANA- WILDFIRE CHECKLIST

Wildfire Hazard Severity Checklist

Wildfire Hazard Severity Checklist									
A.. Subdivision Design					E. Roofing Material				
1. Ingress and egress (pick one only)					1. Construction material (pick one only)				
a. Two or more roads in/out	0		0		Class A roof	0		0	
b. One road in/out	7		0		Class B roof	3		3	
2. Road Width (pick one only)					Class C roof	15		0	
a. ≥7.3 M (24ft)	0		0		Not rated	25		0	
b. ≥6.1 M (20 ft) and ≤7.3 M 924 ft)	2		2		F. Building Construction				
c. ≤6.1 M (20ft)	4		0		1. Materials (predominate) (pick one only)				
3. All Season Road Condition (pick one only)					a. Non-cumbersome/fire-resistive siding, eaves & deck (see Chapter 8)	0		0	
a. Surfaced Road, grade <5%	0		0						
b. Surfaced Road, grade >5%	2		0						
c. Non-Surfaced Road, grade <5%	2		2		b. Non-cumbersome/fire-resistive siding, eaves & deck	5		5	
d. Non-Surfaced Road, grade >5%	5		0		c. Combustive siding & deck	10		0	
e. Other than all season	7		0		2. Building setback relative to slopes of 30% or more (pick one)				
4. Fire Service Access (pick one only)									
a. ≤91.4 M (300 ft) with turnaround	0		0		a. ≥9.14 M (30 ft) to slope	1		0	
b. >91.4 M (300 ft) with turnaround	2		2		b. >9.14 M (30 ft) to slope	5		0	
c. <91.4 M (300 ft) w/o turnaround	4		0		G. Available Fire Protection				
d. ≥91.4 M (300 ft) w/o turnaround	5		0		1. Water source availability (pick one only)				
5. Street Signs (pick one only)					a. Pressurized water source availability				
a. Present (10.2 (4 in) in size and reflectorized	0		1		1892L/min (500 gpm) hydrants < 304.8 m (1000ft apt	0		0	
b. Not Present	5		0		946.4 L/mon (250gpm)hydrants , 304.8 m (1000ft apt	1		0	
B. Vegetation (Fuel Models)									
1. Characteristics of predominate vegetation (pick one only)					b. Nonpressurized water source availability (off site)				
Within 91.4 M (300 ft)					≥946.4 L/mion (250 gpm) continuous for 2 hrs	3		0	
a. Light (Grasses, Forbs, Sawgrass, Tundra NFDRS Fuel Models A, C, L, N, S, & T	5		5		≤946.4 L/min (250 gpm) continuous for 2 hrs	5		5	
b. Medium (light brush & small trees) NFDRS Fuel Models D, E, F, H, P, Q, & U	10		0		c. Water unavailable	10		0	
c. Heavy (dense brush, timber & hardwoods NFDRS Fuel Models B, G, & O	20		0		2. Organized response resources (pick one only)				
d. Slash (timber harvesting residue) NFDRS Fuel Models J, K, & L	25		0						
2. defensible space (pick one only)					a. Station ≤8km (5 mi) from structure	1		1	
a. More than 100 ft of vegetation treatment from structure	1		0		b. Station > 8km (5 mi) from structure	3		0	
b. 71 to 100 ft of vegetation treatment from structure	3		3						
c. 30 to 70 ft of vegetation treatment from structure	10		0						
d. <30 ft of vegetation treatment from structure	25		0						
Topography									
1. Slope < 10%	1		1		H. Utilities (Gas and Electric)				
2. Slope 10% to 20%	4		0		1. Placement (pick one only)				
3. Slope 21% to 30%	7		0		All underground utilities	0		0	
4. Slope 31% to 40%	8		0		One underground, one aboveground	3		3	
5. Slope ≥40%	10		0		All aboveground	5		0	
D. Additional Rating Factors (rate all that apply)					I. Totals for Subdivision				
Note: Place a number from 0-5 in the appropriate yellow box.					(check-point totals) – Hazard assessment				
1. Topographical features that adversely affect fire wildland fire behavior	0-5		0		1. Low hazard	<40 points			
2. Areas with history of higher fire occurrence than surrounding areas due to special situations (heavy lightning, railroads, escaped debris burning.	0-5		4		2. Moderate hazard:	40-69 points	44		
3. Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0-5		5		3. High hazard:	70-112 points			
4. Separation of adjacent structures that can contribute to fire spread.	0-5		2		4. Extreme hazard	>112 points			
2. Railroad= 4					DEVELOPMENT/COMMENTS				
3. Dry Winds= 5					Fuels around Kremlin are FB fuel model 1 and in some CRP lands Fuel Model 3. Defensible space rating of 3 for most structures.				
4. Structures around perimeter of Kremlin=2					Kremlin response resources rating for within 5 mi. of Kremlin though response area is greater.				

RUDYARD, MONTANA- WILDFIRE CHECKLIST

Wildfire Hazard Severity Checklist

Wildfire Hazard Severity Checklist									
A.. Subdivision Design					E. Roofing Material				
1. Ingress and egress (pick one only)					1. Construction material (pick one only)				
a. Two or more roads in/out	0				Class A roof	0			
b. One road in/out	7				Class B roof	3			
2. Road Width (pick one only)					Class C roof	15			
a. ≥7.3 M (24ft)	0				Not rated	25			
b. ≥6.1 M (20 ft) and ≤7.3 M 924 ft)	2				F. Building Construction				
c. ≤6.1 M (20ft)	4				1. Materials (predominate) (pick one only)				
3. All Season Road Condition (pick one only)					a. Non-cumulative/fire-resistive siding, eaves & deck (see Chapter 8)	0			
a. Surfaced Road, grade <5%	0				2. Building setback relative to slopes of 30% or more (pick one)				
b. Surfaced Road, grade >5%	2				a. ≥9.14 M (30 ft) to slope	1			
c. Non-Surfaced Road, grade <5%	2				b. >9.14 M (30 ft) to slope	5			
d. Non-Surfaced Road, grade >5%	5				G. Available Fire Protection				
e. Other than all season	7				1. Water source availability (pick one only)				
4. Fire Service Access (pick one only)					a. Pressurized water source availability				
a. ≤91.4 M (300 ft) with turnaround	0				1892L/min (500 gpm) hydrants < 304.8 m (1000ft apt)	0			
b. >91.4 M (300 ft) with turnaround	2				946.4 L/min (250gpm)hydrants , 304.8 m (1000ft apt)	1			
c. <91.4 M (300 ft) w/o turnaround	4				1. Water source availability (pick one only)				
d. ≥91.4 M (300 ft) w/o turnaround	5				2. Organized response resources (pick one only)				
5. Street Signs (pick one only)					a. Station ≤8km (5 mi) from structure	1			
a. Present (10.2 (4 in) in size and reflectorized	0				b. Station > 8km (5 mi) from structure	3			
b. Not Present	5				H. Utilities (Gas and Electric)				
B. Vegetation (Fuel Models)					1. Placement (pick one only)				
1. Characteristics of predominate vegetation (pick one only)					b. Nonpressurized water source availability (off site)				
Within 91.4 M (300 ft)					≥946.4 L/min (250 gpm) continuous for 2 hrs	3			
a. Light (Grasses, Forbs, Sawgrass, Tundra NFDRS Fuel Models A, C, L, N, S, & T	5				≤946.4 L/min (250 gpm) continuous for 2 hrs	5			
b. Medium (light brush & small trees) NFDRS Fuel Models D, E, F, H, P, Q, & U	10				c. Water unavailable	10			
c. Heavy (dense brush, timber & hardwoods NFDRS Fuel Models B, G, & O	20				2. Organized response resources (pick one only)				
d. Slash (timber harvesting residue) NFDRS Fuel Models J, K, & L	25				a. Station ≤8km (5 mi) from structure	1			
2. defensible space (pick one only)					b. Station > 8km (5 mi) from structure	3			
a. More than 100 ft of vegetation treatment from structure	1				I. Totals for Subdivision				
b. 71 to 100 ft of vegetation treatment from structure	3				(check-point totals) – Hazard assessment				
c. 30 to 70 ft. of vegetation treatment from structure	10				1. Low hazard	<40 points	45		
d. 30 ft of vegetation treatment from structure	25				2. Moderate hazard:	40-69 points			
c. Topography within 91.4 M (300 ft) of Structure					3. High hazard:	70-112 points			
1. Slope <10%	1				4. Extreme hazard	>112 points			
2. Slope 10% to 20%	4				H. Utilities (Gas and Electric)				
3. Slope 21% to 30%	7				1. Placement (pick one only)				
4. Slope 31% to 40%	8				All underground utilities	0			
5. Slope ≥40%	10				One underground, one aboveground	3			
D. Additional Rating Factors (rate all that apply)					All aboveground	5			
Note: Place a number from 0-5 in the appropriate yellow box.					I. Totals for Subdivision				
1. Topographical features that adversely affect fire wildland fire behavior	0-5				(check-point totals) – Hazard assessment				
2. Areas with history of higher fire occurrence than surrounding areas due to special situations (heavy lightning, railroads, escaped debris burning.	0-5				1. Low hazard	<40 points	45		
3. Areas that are periodically exposed to unusually severe fire weather and strong dry winds	0-5				2. Moderate hazard:	40-69 points			
4. Separation of adjacent structures that can contribute to fire spread.	0-5				3. High hazard:	70-112 points			
D. Additional Rating Factors (rate all that apply)					4. Extreme hazard	>112 points			
2. Railroad= 5					H. Utilities (Gas and Electric)				
3. Dry winds= 5					1. Placement (pick one only)				
4. Homes on perimeter= 2					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			
					All aboveground	5			
					H. Utilities (Gas and Electric)				
					1. Placement (pick one only)				
					All underground utilities	0			
					One underground, one aboveground	3			

Hill County

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Appendix E

Reclassification of Vegetation Descriptions

SILVIS Wildland/Urban Interface Reclassification

The original SILVIS WUI layer represents the project area pretty well but it does not account for the fire hazards presented by agricultural lands. This document explains what has been done to reclassify for agricultural areas.

- 1) Created a new field named VEG_AG where the values for these National Land Cover classes are summed by polygon 33, 41, 42, 43, 51, 71, 81, 83, 84, 91. This list drops 92 from the original classification and adds 81, 83, and 84.
- 2) Created a new field named AG where the values for these National Land Cover classes are summed by polygon 81, 83, 84.
- 3) Used all of the SILVIS criteria with the VEG_AG field rather than the VEGETATION field to reclassify each of the polygons.
- 4) Two more classifications were added "Sparse_Ag" and "Uninhabited_Ag". These classifications were populated by selecting the "Uninhabited_NoVeg" and "Wildland_NoVeg" with the addition of AG > 50%. Polygons with AG <= 50% retained the original classification. Agricultural lands are now considered vegetated rather than unvegetated.
- 5) The following classifications were changed from NoVeg to Interface "Low_Dens_NoVeg", "Med_Dens_NoVeg", "High_Dens_NoVeg". They are now surrounded by agriculturally vegetated lands.

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Appendix F

Historical Fire Occurrences

Hill County BLM Fires				
Date	BLM Fire Name	Acres	Latitude	Longitude
8/6/1991	WILLEN PK	1	48.13	-109.68
7/24/2003	Castle Creek	0.4	48.31	-110.43

County	Date	Ignition Source
Hill	7/2/2001	Children
Hill	7/3/2001	Children
Hill	7/5/2001	Children
Hill	7/6/2001	Miscellaneous
Hill	7/8/2001	Children
Hill	7/9/2001	Children
Hill	7/29/2001	Smoking
Hill	8/18/2001	Equipment Use
Hill	8/26/2001	Miscellaneous
Hill	8/31/2001	Railroad
Hill	9/5/2001	Smoking
Hill	9/26/2001	Miscellaneous
Hill	10/17/2001	Campfire
Hill	10/28/2001	Miscellaneous
Hill	2/6/2002	Miscellaneous
Hill	4/25/2002	Equipment Use
Hill	5/1/2002	Smoking
Hill	5/19/2002	Miscellaneous
Hill	7/25/2002	Equipment Use
Hill	7/26/2002	Lightning
Hill	9/3/2002	Lightning
Hill	3/19/2003	Debris Burning
Hill	4/13/2003	Miscellaneous
Hill	6/30/2003	Children
Hill	7/4/2003	Children
Hill	7/4/2003	Equipment Use
Hill	7/4/2003	Miscellaneous
Hill	7/5/2003	Children
Hill	7/8/2003	Lightning
Hill	7/13/2003	Lightning
Hill	7/17/2003	Miscellaneous
Hill	7/22/2003	Miscellaneous
Hill	7/24/2003	Railroad
Hill	8/6/2003	Railroad
Hill	8/14/2003	Campfire
Hill	10/3/2003	Smoking
Hill	10/13/2003	Railroad
Hill	7/6/2004	Miscellaneous
Hill	7/24/2004	Debris Burning
Hill	8/13/2004	Equipment Use
Hill	8/18/2004	Equipment Use
Hill	9/30/2004	Miscellaneous
Hill	1/19/2005	Equipment Use
Hill	2/2/2005	Railroad

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Preparedness Plan***

Appendix G

Wind and Weather Data Used in FlamMap

Weather file

Month Day Precip Hour1 Hour2 Temp1 Temp2 Humid1 Humid2 Elevation Rt1 Rt2

ENGLISH

6	1	2	400	1600	55	70	37	89	3708	1900	2000
6	2	1	400	1600	48	68	37	78	3708	1200	1300
6	3	30	400	1600	47	64	39	94	3708	2000	2300
6	4	10	400	1600	42	60	43	90	3708	1400	1600
6	5	13	400	1600	47	59	57	94	3708	700	800
6	6	12	400	1600	42	63	41	91	3708	900	1600
6	7	2	400	1600	42	60	42	90	3708	800	900
6	8	0	400	1600	43	72	32	80	3708		
6	9	34	400	1600	49	73	33	97	3708	1600	1900
6	10	0	400	1600	44	64	53	98	3708		
6	11	24	400	1600	49	63	57	94	3708	1600	1900
6	12	1	400	1600	45	70	34	95	3708		
6	13	0	400	1600	51	80	26	72	3708		
6	14	12	400	1600	51	83	23	92	3708	600	700
6	15	9	400	1600	52	78	31	88	3708	2200	2300
6	16	16	400	1600	54	78	31	73	3708	400	500
6	17	0	400	1600	57	81	30	82	3708		
6	18	0	400	1600	59	85	26	54	3708		
6	19	0	400	1600	64	89	24	51	3708		
6	20	21	400	1600	54	88	24	92	3708	1900	2000
6	21	12	400	1600	50	78	34	86	3708	1500	1700
6	22	0	400	1600	42	64	26	60	3708		
6	23	0	400	1600	44	64	25	63	3708		
6	24	0	400	1600	37	64	34	82	3708		
6	25	0	400	1600	39	64	30	72	3708		
6	26	2	400	1600	46	74	24	70	3708	2300	2350
6	27	2	400	1600	53	77	23	81	3708	2200	2300
6	28	32	400	1600	49	73	31	93	3708	2300	2345
6	29	0	400	1600	51	82	24	65	3708		
6	30	0	400	1600	62	91	19	54	3708		
7	1	0	400	1600	58	95	13	46	3708		
7	2	0	400	1600	57	89	14	66	3708		
7	3	0	400	1600	46	82	14	56	3708		
7	4	0	400	1600	51	78	10	46	3708		
7	5	0	400	1600	54	80	13	50	3708		
7	6	0	400	1600	41	81	15	79	3708		
7	7	0	400	1600	47	75	23	65	3708		
7	8	0	400	1600	55	79	23	89	3708		
7	9	0	400	1600	51	75	26	94	3708		
7	10	0	400	1600	51	80	21	68	3708		
7	11	0	400	1600	50	83	23	71	3708		
7	12	0	400	1600	62	94	16	43	3708		
7	13	0	400	1600	66	96	13	40	3708		
7	14	0	400	1600	55	90	16	55	3708		
7	15	0	400	1600	54	88	13	46	3708		
7	16	0	400	1600	59	91	14	47	3708		
7	17	0	400	1600	70	94	15	44	3708		
7	18	0	400	1600	62	98	11	53	3708		
7	19	0	400	1600	61	97	9	37	3708		
7	20	0	400	1600	55	97	10	63	3708		
7	21	0	400	1600	58	94	12	68	3708		
7	22	0	400	1600	60	94	14	51	3708		
7	23	0	400	1600	64	99	11	45	3708		
7	24	0	400	1600	68	100	9	41	3708		
7	25	0	400	1600	65	92	11	59	3708		
7	26	0	400	1600	53	81	29	76	3708		
7	27	0	400	1600	60	88	19	74	3708		

```

7 28 0 400 1600 61 92 12 55 3708
7 29 0 400 1600 63 94 10 53 3708
7 30 0 400 1600 56 90 18 57 3708
7 31 0 400 1600 60 92 18 71 3708
8 1 0 400 1600 57 86 23 58 3708
8 2 0 400 1600 64 92 17 35 3708
8 3 0 400 1600 67 96 14 56 3708
8 4 0 400 1600 62 84 24 61 3708
8 5 0 400 1600 57 85 24 80 3708
8 6 5 400 1600 61 91 21 67 3708 2200 2300
8 7 25 400 1600 58 92 21 91 3708 2000 2100
8 8 0 400 1600 62 93 17 66 3708
8 9 1 400 1600 62 88 27 56 3708 2200 2300
8 10 0 400 1600 62 93 18 64 3708
8 11 0 400 1600 65 98 9 50 3708
8 12 1 400 1600 63 95 13 71 3708 1800 1900
8 13 0 400 1600 63 93 20 63 3708
8 14 0 400 1600 64 96 8 56 3708
8 15 0 400 1600 62 95 8 44 3708
8 16 0 400 1600 69 99 12 42 3708
8 17 12 400 1600 59 99 16 91 3708 2100 2300
8 18 0 400 1600 54 86 16 75 3708
8 19 0 400 1600 61 90 16 60 3708
8 20 0 400 1600 60 92 17 55 3708
8 21 0 400 1600 51 86 21 77 3708
8 22 0 400 1600 65 91 16 33 3708
8 23 0 400 1600 64 91 15 65 3708
8 24 0 400 1600 56 83 22 56 3708
8 25 0 400 1600 54 85 18 59 3708
8 26 0 400 1600 54 89 13 44 3708
8 27 0 400 1600 64 91 11 53 3708
8 28 0 400 1600 47 73 36 78 3708
8 29 0 400 1600 39 68 28 93 3708
8 30 0 400 1600 45 74 17 67 3708

```

Month – Month number

Day – Day number

Precip – Daily rain amount in hundredths of an inch (integer)

Hour1 – Hour of minimum recorded temperature (0 to 2400)

Hour2 – Hour of maximum recorded temperature (0 to 2400)

Temp1 – Minimum temperature in degrees farenheit (integer)

Temp2 - Maximum temperature in degrees farenheit (integer)

Humid1 – Minimum humidity in percent (integer)

Humid2– Maximum humidity in percent (integer)

Elevation – Elevation in feet of weather measurements

Rt1 – Precipitation beginning time (0 to 2400). Blank if precip is zero.

Rt2 – Precipitation ending time (0 to 2400). Blank if precip is zero.

Wind file

Month Day Hour Speed Direction CloudCover

ENGLISH

6	1	1400	9	270	20
6	2	1400	10	270	20
6	3	1400	6	270	60
6	4	1400	16	270	20
6	5	1400	3	270	20
6	6	1400	14	270	20
6	7	1400	4	270	10
6	8	1400	10	270	0
6	9	1400	8	270	60
6	10	1400	10	270	0
6	11	1400	10	270	60
6	12	1400	5	270	0
6	13	1400	10	270	0
6	14	1400	11	270	20
6	15	1400	3	270	20
6	16	1400	6	270	30
6	17	1400	9	270	0
6	18	1400	13	270	0
6	19	1400	6	270	0
6	20	1400	7	270	30
6	21	1400	9	270	20
6	22	1400	8	270	0
6	23	1400	9	270	0
6	24	1400	5	270	0
6	25	1400	7	270	0
6	26	1400	11	270	0
6	27	1400	7	270	0
6	28	1400	6	270	60
6	29	1400	3	270	0
6	30	1400	9	270	0
7	1	1400	5	270	0
7	2	1400	7	270	0
7	3	1400	11	270	0
7	4	1400	13	270	0
7	5	1400	12	270	0
7	6	1400	10	270	0
7	7	1400	7	270	0
7	8	1400	7	270	0
7	9	1400	11	270	0
7	10	1400	9	270	0
7	11	1400	5	270	0
7	12	1400	5	270	0
7	13	1400	6	270	0
7	14	1400	11	270	0
7	15	1400	4	270	0
7	16	1400	13	270	0
7	17	1400	8	270	0
7	18	1400	5	270	0
7	19	1400	8	270	0
7	20	1400	8	270	0
7	21	1400	11	270	0
7	22	1400	10	270	0
7	23	1400	6	270	0
7	24	1400	8	270	0
7	25	1400	12	270	0
7	26	1400	8	270	0
7	27	1400	6	270	0

7 28 1400 9 270 0
7 29 1400 9 270 0
7 30 1400 6 270 0
7 31 1400 7 270 0
8 1 1400 7 270 0
8 2 1400 8 270 0
8 3 1400 7 270 0
8 4 1400 8 270 0
8 5 1400 6 270 0
8 6 1400 10 270 0
8 7 1400 3 270 50
8 8 1400 7 270 0
8 9 1400 9 270 0
8 10 1400 12 270 0
8 11 1400 9 270 0
8 12 1400 5 270 0
8 13 1400 4 270 0
8 14 1400 5 270 0
8 15 1400 10 270 0
8 16 1400 10 270 0
8 17 1400 7 270 20
8 18 1400 5 270 0
8 19 1400 5 270 0
8 20 1400 10 270 0
8 21 1400 9 270 0
8 22 1400 5 270 0
8 23 1400 13 270 0
8 24 1400 9 270 0
8 25 1400 9 270 0
8 26 1400 9 270 0
8 27 1400 12 270 0
8 28 1400 16 270 0
8 29 1400 6 270 0
8 30 1400 7 270 0

Month – Month number

Day – Day number

Hour – Hour (0 to 2400)

Speed – 20 foot windspeed in miles per hour

Direction – Degrees clockwise from north (integer 0 to 360)

CloudCover – percentage cloud cover (integer 0 to 100)

Hill County

***Community Wildfire
Preparedness Plan***

Appendix H

Fuel Moisture File

Fuel Moisture file

Model# 1hr 10hr 100hr LH LW

1	4	4	7	30	70
2	4	4	7	30	70
3	4	4	7	30	70
4	4	5	8	85	95
5	4	5	8	85	150
6	4	5	8	85	95
7	4	5	8	85	95
8	4	5	8	50	80
9	4	5	8	50	80
10	4	5	8	85	95
11	4	5	8	85	95
12	4	5	8	85	95
13	4	5	8	85	95

14 custom fuel models

...

50

Model# - FlamMap fuel model number

1hr – percent fuel moistures of 0 to ¼ in. fuels

10hr – percent fuel moistures of ¼ to 1 in. fuels

100hr – percent fuel moistures of 1 to 3 in. fuels

LH – percent fuel moistures of live herbaceous fuels

LW – percent fuel moistures of live woody fuels

Hill County

***Community Wildfire
Preparedness Plan***

Appendix I

Critical Facilities

Hill County Critical Facilities

Box Elder

Facility

Box Elder Rural Fire District

Box Elder School

Chippewa Cree Police Department

Gilford

Facility

Crude Oil Pumping Station

Gilford Colony School

Gilford Colony Water Supply

Gilford Rural Fire District

Rocky Boy High School

Harve

Facility

Airport Sands Ranch Airport

Anchor Academy

Bear Paw Volunteer Fire Department

City Of Havre/Havre City Hall

Cottonwood Public School

Davey School

Davey School District 12

Devlin Elementary School/Boys and Girls Club

Devon Energy Compressor Station

East End Colony School

Fire Department City

Havre 5th Ave Christian Church

Havre Ambulance

Havre Central Junior High School

Havre Christian School

Havre City Clerk

Havre City County Airport

Havre City Fire Department

Havre High School & Gym

Havre Mayor's Office

Havre Middle School
Havre Police Department
Havre Water Department
Helena Chemical Wildhorse Seeds
Highland Park School
Hill County Courthouse
Hill County Sheriff's Department
Hilldale Colony School
Human Resource Development Council
Human Resources Development
Immanuel Baptist Church
Montana Highway Patrol
Northern Montana Hospital
Northern Montana Medical Group
Northwestern Energy Substation
Northwestern Energy Substation
St. Joe Volunteer Fire Department
St. Jude's Thaddeus Havre Central School
Sunnyside Elementary School
Triangle Telephone Cooperative/Communication System
U.S. Coast Guard Loran Station
Wastewater Treatment Plant
Water Plant
Wildhorse Volunteer Fire Department

Hingham

Facility

Airport Lincolns Field
Hi Line Fertilizer Incorporated
Hi-Line Fertilizer Inc.
Hilldale Colony Water Supply
Hingham Community Center
Hingham Volunteer Fire Department
U.S. Post Office

Inverness

Facility

Inverness Rural Fire District
Joplin-Inverness K-6

Kremlin

Facility

Ag Wise Incorporated
Airport Sorenson Airport
Fertilizer Plant
Hi Line Water District
Kremlin Rural Fire District

Rudyard

Facility

Anhydrous Tanks (Cenex Harvest States)
Blue Sky Elementary School
Blue Sky High School
Rudyard Rural Fire District

Hill County

Facility

Eastend Colony Water Supply
Rocky Boy Repeater Stations
Rocky Boy's Clinic
Water Pumps Suppling Hi-Line Water District

Substations

Facility

Box Elder Substation
Fort Assiniboine Substation
Gildford Substation
Havre City Substation
Havre Eastside Substation
Havre Highland Park Substation
Hingham Substation
Inverness Substation
Kremlin Substation
Rudyard Substaton

Hill County

***Community Wildfire
Preparedness Plan***

Appendix J

Burn Permit Requirements

Burning Permits City Of Havre Fire District #1

Policy number

2-14-10

- (1) If over 1/4 of an acre, around buildings or any hazardous area, location must be inspected by someone in authority.
- (2) No burning if wind is over 10 MPH. Exception time of year or Chief allows.
- (3) Officer in charge must give authority to issue permit. Give number if issuing over the phone.
- (4) Permit to be given out within the hour burning to be done.
- (5) Burning must be done by dark.
- (6) Advise the individual that they are responsible for any damages caused.
- (7) No burning of garbage.

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