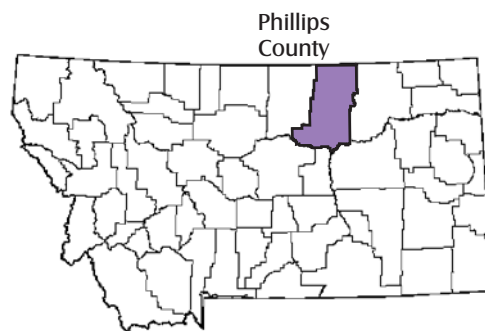


# Phillips County Community Wildfire Preparedness Plan



FINAL

September 2005



Bear Paw Development Corporation  
of Northern Montana

**MAXIM**  
TECHNOLOGIES

ENGINEERING & ENVIRONMENTAL CONSULTANTS

**FINAL**

**PHILLIPS COUNTY MONTANA  
COMMUNITY WILDFIRE PROTECTION PLAN**

*Prepared for:*

Phillips County Court House  
P.O. Box 360  
Malta, Montana 59538  
406-654-2465

*Prepared by:*

Maxim Technologies  
P.O. Box 4699  
Helena, Montana 59601  
(406) 443-5210  
[fgifford@maximusa.com](mailto:fgifford@maximusa.com)

Bear Paw Development Corporation  
48 2<sup>nd</sup> Avenue Suite 202  
Havre, Montana 59501  
(406) 265-9226

September 2005



## TABLE OF CONTENTS

<b>1.0</b>	<b>EXECUTIVE SUMMARY .....</b>	<b>1</b>
1.1	INTRODUCTION.....	1
1.2	AUTHORITY .....	1
1.3	ACKNOWLEDGEMENTS.....	2
1.4	PLAN OVERVIEW .....	2
<b>2.0</b>	<b>COUNTY PROFILE .....</b>	<b>3</b>
2.1	PROJECT AREA AND LOCATION .....	3
2.2	CLIMATE AND WEATHER.....	3
2.3	REGIONAL ECONOMY .....	6
2.4	LAND TENURE .....	6
<b>3.0</b>	<b>SCOPE AND PLAN ORGANIZATION.....</b>	<b>9</b>
3.1	PLANNING PROCESS .....	9
3.2	CONTACT LIST .....	9
3.3	STAKEHOLDER INTERVIEWS AND MEETINGS .....	9
3.4	FORMAL PUBLIC MEETINGS.....	10
3.5	OTHER PROJECT MEETINGS .....	10
3.6	PLAN REVIEW .....	10
<b>4.0</b>	<b>HAZARD EVALUATION AND RISK ASSESSMENT .....</b>	<b>12</b>
4.1	COMMUNITY ASSESSMENTS AND MITIGATION ACTIVITIES .....	12
4.1.1	INDIVIDUAL INCORPORATED COMMUNITIES .....	12
4.1.1.1	DODSON .....	12
4.1.1.2	MALTA.....	13
4.1.1.3	SACO .....	14
4.1.2	INDIVIDUAL UNINCORPORATED COMMUNITIES .....	15
4.1.2.1	LANDUSKY .....	15
4.1.2.2	LORING.....	15
4.1.2.3	WHITEWATER.....	16
4.1.2.4	ZORTMAN .....	17
4.1.3	PHILLIPS COUNTY FIRE SUPPRESSION RESOURCES.....	17
4.1.3.1	FEDERAL WILDFIRE SUPPRESSION RESOURCES .....	18
4.1.3.2	DNRC WILDFIRE SUPPRESSION RESOURCES .....	18
4.1.3.3	PHILLIPS COUNTY VFD .....	19
4.1.3.4	MALTA VFD .....	19
4.1.3.5	SACO VFD.....	20
4.1.3.6	LANDUSKY VFD .....	20
4.1.3.7	ZORTMAN VFD .....	20
4.1.3.8	NORTHWEST ENERGY .....	21
4.2	FUELS.....	21
4.3	WEATHER.....	27
4.4	TOPOGRAPHY.....	28
4.5	WILDLAND / URBAN INTERFACE .....	30
4.6	HISTORICAL WILDFIRE EVENTS.....	32
4.7	IGNITION RISKS .....	34
4.8	FIRE HAZARD MODELING .....	38

4.8.1	OVERVIEW.....	39
4.8.2	MODEL INPUTS AND CONFIGURATION.....	39
4.8.3	FIRE MODELING RESULTS.....	40
<b>5.0</b>	<b>ASSESSING VULNERABILITY AND RISK: IDENTIFYING ASSETS, VALUES &amp; VULNERABLE POPULATIONS .....</b>	<b>43</b>
5.1	ASSESSMENT OF ECONOMIC VALUES.....	43
5.1.1	BUILDING VALUES.....	43
5.1.2	AGRICULTURAL STOCK.....	44
5.1.3	CRITICAL FACILITIES, RESOURCES AND INFRASTRUCTURE .....	45
5.2	ASSESSMENT OF ECOLOGICAL VALUES.....	46
5.2.1	WILDLIFE HABITAT.....	47
5.2.2	WATERSHEDS AND STREAMS.....	48
5.3	ASSESSMENT OF SOCIAL VALUES.....	50
<b>6.0</b>	<b>MITIGATION STRATEGY.....</b>	<b>53</b>
6.1	EXISTING SITUATION.....	53
6.2	MITIGATION OBJECTIVES AND ACTIONS.....	53
6.2.2	PRESCRIBED FIRES.....	55
6.2.3	GRANTS.....	56
6.4	PROJECT IMPLEMENTATION AND LEGAL FRAMEWORK.....	63
6.5	ROLES AND RESPONSIBILITIES.....	63
6.5.1	COORDINATED GROUPS.....	63
6.5.2	FEDERAL.....	64
6.5.3	DRNC.....	64
6.5.4	LOCAL.....	65
6.5.5	FIREWISE.....	65
<b>7.0</b>	<b>PLAN MAINTENANCE PROCEDURES .....</b>	<b>67</b>
7.1	MONITORING, EVALUATING AND UPDATING THE PLAN.....	67
7.2	IMPLEMENTATION THROUGH EXISTING PROGRAMS.....	67
7.3	CONTINUED PUBLIC INVOLVEMENT.....	68
<b>8.0</b>	<b>REFERENCES .....</b>	<b>69</b>

## LIST OF TABLES

Table 2-1	Top Weather Events in Malta, Phillips County.....	6
Table 2-2	Land Stewardship in Phillips County.....	6
Table 4-1	Wildfire Suppression Resources, Phillips County Montana .....	18
Table 4-2	Phillips County NLCD Acreage Totals .....	24
Table 4-3	NLCD to FlamMap Code Conversions .....	24-5
Table 4-4	Anderson Fuel Type by Total Acreage for Phillips County.....	25
Table 4-5	Phillips County Average Humidity Per Month .....	27
Table 4-6	Percentages of Fires Occurring Per Month in Phillips County .....	28
Table 4-7	Distribution of Wildland/Urban Interface Types .....	32
Table 4-8	Distribution of 2004 Wildfire Land Ownership/Management for Montana .....	32
Table 4-9	Summary of Historical Wildfire Causes (Human vs. Natural) Phillips County.....	33
Table 4-10	Ten Year Summary of Wildfires in the Charles M. Russell National Wildlife Refuge .....	34
Table 4-11	Summary of Historical Wildfire Causes Phillips County.....	35-36

Table 5-1	Building Stock Values by Fire Hazard by Location .....	43
Table 5-2	Building Stock Values by Fire Hazard by WUI Type .....	44
Table 5-3	Agricultural Values by Fire Hazard .....	44
Table 5-4	Agricultural Values by Fire Hazard by WUI .....	45
Table 5-5	Number of Critical Facilities by Fire Hazard by Location .....	46
Table 5-6	Number of Critical Facilities by Fire Hazard by WUI .....	46
Table 5-7	Acres of Wildlife Habitat by Species for Phillips County .....	47
Table 5-8	Acres of Fourth Code Watershed for Phillips County .....	48
Table 5-9	Miles of Stream for Phillips County .....	48-49
Table 6-1	BLM Prescribed Fire Statistics for the State of Montana .....	55
Table 6-2	Cost Benefit Scoring Matrix .....	57
Table 6-3	CWPP Mitigation Project Cost-Benefit Matrix for Phillips County .....	58-60
Table 6-4	High Priority Mitigation Projects .....	61-62

## LIST OF MAPS

Map 2-1	Location Map .....	4
Map 2-2	Land Stewardship .....	7
Map 4-1	Land Cover .....	23
Map 4-2	Fuel Types .....	26
Map 4-3	Topography .....	29
Map 4-4	Wildland/Urban Interface Areas .....	31
Map 4-5	Historical Wildfire Occurrences .....	37
Map 4-6	Flame Length .....	41
Map 5-1	Total Societal Vulnerability by Census Block .....	52

## LIST OF APPENDICES

Appendix A	Resolution of Jurisdiction
Appendix B	Planning Documentation
	Contact List
	List of Stakeholders Interviews/Meetings
	Copy of Press Release/Media Contact List
	Public Meeting Sign-In Sheets
Appendix C	State of Montana Criteria Wildland/Urban Fire Assessment and Mitigation Planning
Appendix D	Severity Checklist and Ratings
Appendix E	Reclassification of Vegetation Descriptions
Appendix F	Historical Fire Occurrences
Appendix G	Wind and Weather Data used in FlamMap
Appendix H	Fuel Moisture File
Appendix I	Critical Facilities
Appendix J	Burn Permit Application

**LIST OF ACRONYMS**

ATGS	Air Tactical Group Supervisor
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BNSF	Burlington Northern Santa Fe
CWPP	Community Wildfire Protection 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
EOP	Emergency Operations Plan
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FD	Fire Department
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 Center
NIMS	National Incident Management System
NLCD	National Land Cover Dataset
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
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 Phillips County residents, the county's assets and surrounding natural resources. The purpose of the Phillips County Community Wildfire Protection Plan (CWPP) is to provide Phillips County residents, public and private organizations with assistance and recommendations to mitigate wildfire risk and vulnerability presented by wildfires within the county. Phillips 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 Phillips 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 Phillips 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 Protection plan provides a prioritized list of wildfire prevention and preparedness steps that will assist Phillips County in reducing risk and preventing loss from future wildfire events.

### I.2 AUTHORITY

The Phillips County CWPP is a county level planning document which will add to Montana's state wide 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 Phillips 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 Phillips 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.

Phillips County and the incorporated towns of Dodson, Malta and Saco 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 Dodson, Malta and Saco city councils and at the meeting of the Phillips County commissioners, all of which were open to the public and advertised through the communities' typical process for publicizing public meetings.

The Phillips County DES Coordinator will be responsible for acceptance and submission of the adopted Plan to the DNRC National Fire Plan Coordinator's Office in Missoula, Montana for review and incorporation into the state wide plan. This state level review will address the State of Montana criteria outlined in *Appendix C – Wildland / Urban Fire Assessment and Mitigation Planning*. 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 approval, Phillips 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 Phillips 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 Phillips County are committed to the preservation of the safety of residences and protection of natural resources and community assets within the management area. The Phillips 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 (WUI), 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 Phillips 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

Phillips County is located in northwest Montana and has a land area of about 3,289,600 acres or 5,140 square miles. Phillips County is bounded by Blaine County on the west, Valley County on the east, Saskatchewan, Canada on the north and Fergus, Petroleum, and Garfield counties on the south. Malta is the county seat and incorporated towns include Dodson, Malta and Saco. The Missouri and Milk Rivers flow through from west to east. The Missouri River forms the southern boundary of Phillips County. A portion of the Fort Belknap Indian Reservation is located in the western portion of Phillips County. **Map 2-1** represents a location map of the plan area.

Elevation in Phillips County ranges from about 2,100 feet above mean sea level where the Milk River flows eastward out of the county northeast of Saco to around 6,000 feet in the Little Rocky Mountains.

Agriculture is the primary land use in Phillips County. Approximately 1,968,857 acres are considered farmland. About 83 percent of the county is rangeland, 14 percent is dry cropland and 1 percent is irrigated cropland. Mining activity, although not extensive, occurs in the Little Rockies (PhilCo 2001).

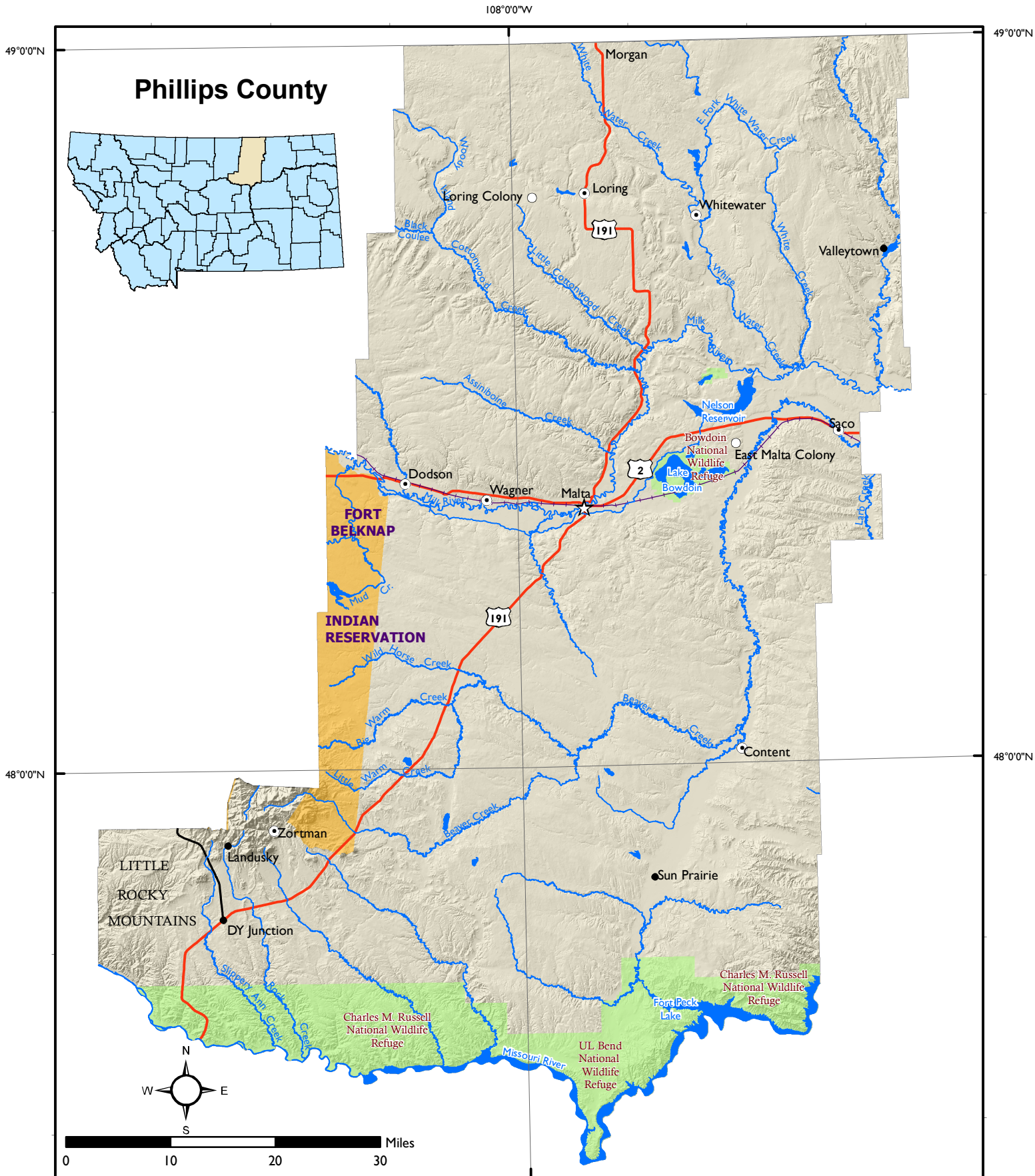
According to the 2000 Census, the population of Phillips County is 4,601. This represents a 10.9 percent decrease in population in the 10 years since the last census. The median age in Phillips County is 40.8 years old (U.S. Census 2005).

### 2.2 CLIMATE AND WEATHER

Phillips 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 18 to 31° F with average lows 2 below to 10° F above, with the coldest averages over the far northern part of the county and the mildest winter conditions in the Little Rocky Mountains in the far southwest corner. In winter in particular, temperatures often vary significantly from the averages. Temperatures near or below -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 most common in the southern portion of the county. Rapid warm-ups during the winter and early spring 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 70°s to mid 80°s F with average lows in the 50°s, with the warmest conditions along the Milk River valley. 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 Little Rocky Mountains where below freezing lows occur almost every summer.

Annual average precipitation is 10 to 13 inches, except up to 16 inches in the Little Rocky Mountains. Over 70 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 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 22 to 35 inches, except up to 50 inches in the Little Rocky Mountains. 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. 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 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.

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 Phillips County is the often windy conditions. Average wind speeds range from 10 to 15 miles per hour (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 southwestern 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 Malta, Montana.

TABLE 2-1 TOP WEATHER EVENTS IN MALTA, PHILLIPS COUNTY					
Hottest Days		Coldest Days		Wettest Days	
109°F	06/27/1936	-56°F	02/12/1916	3.25 Inches	06/24/1923
108°F	06/16/1931	-54°F	02/16/1936	3.22 Inches	06/07/1906
107°F	07/05/1936	-54°F	02/15/1936	2.93 Inches	06/12/1937
106°F	07/03/1936	-52°F	01/26/1950	2.75 Inches	08/22/1933
106°F	06/17/1931	-51°F	01/20/1954	2.75 Inches	07/18/1928
Wettest Years		Driest Years		Longest Dry Spells	
21.18 Inches	1962	7.28 Inches	1936	59 days	1928
18.67 Inches	1938	7.38 Inches	1956	58 days	1957
16.67 Inches	1933	7.43 Inches	1960	58 days	1943
16.59 Inches	1921	8.02 Inches	1971	55 days	1912
16.21 Inches	1940	8.33 Inches	1967	53 days	1930
Source: Data from National Weather Service 1906-2004					

## 2.3 REGIONAL ECONOMY

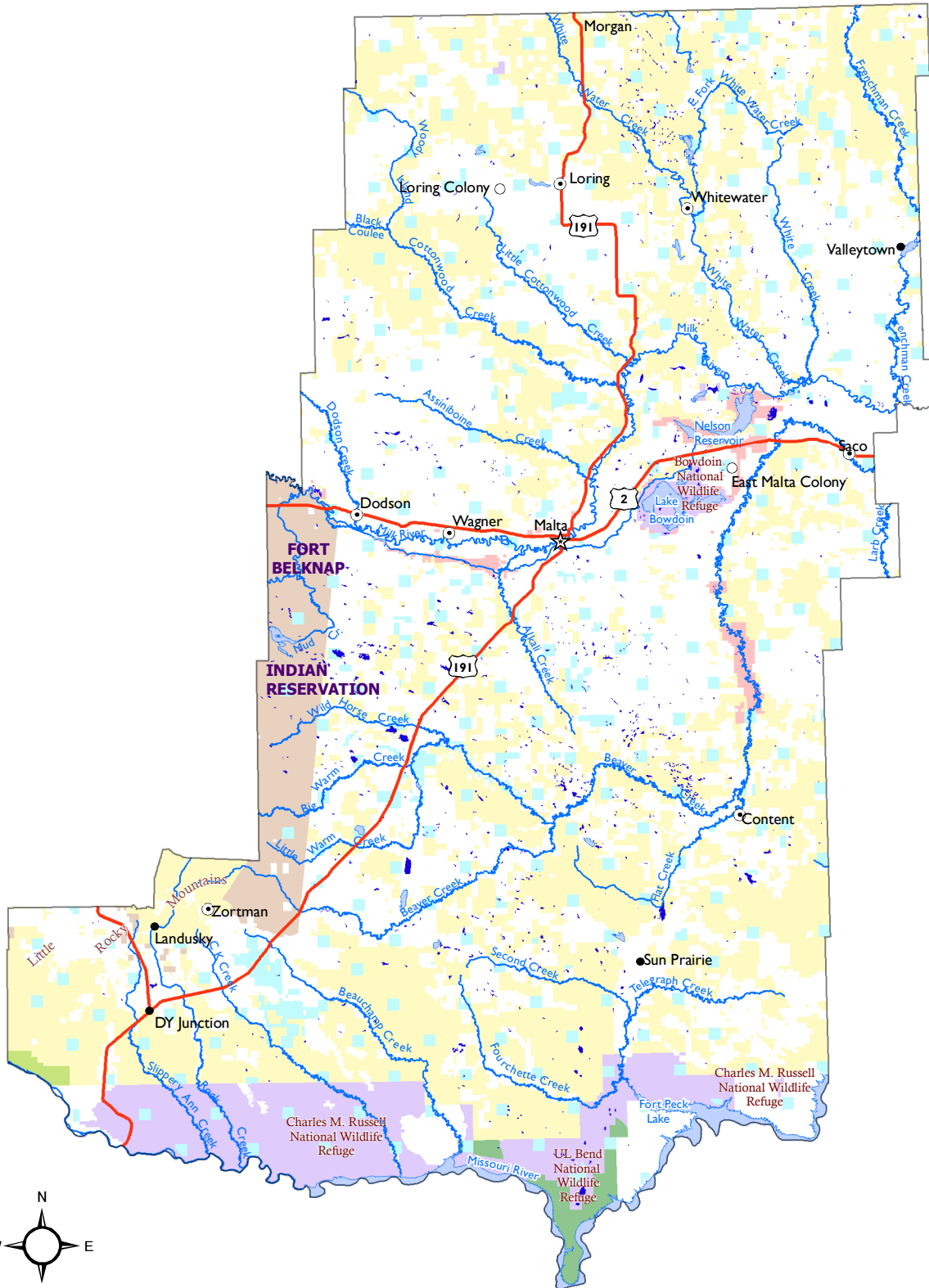
The major Industry in Phillips County is Agriculture. The four major sources of income in Phillips County are Government (\$13,787,000), Agriculture (\$5,216,000), Retail Trade (\$3,695,000) and Railroad (\$2,840,000) (U.S. Bureau of Economic Analysis 2002). The average annual unemployment rate in 2004 was 6.15%. (U.S. Bureau of Economic Analysis 2002, Montana Department of Labor and Industry, 2004). The estimated percent of people of all ages in poverty was 18.3% in 2000. The state was 14.6 percent in 1999 (U.S. Census).

## 2.4 LAND TENURE

Phillips County includes approximately 1.6 million acres of public (state & federal lands) and a little over 1.6 million acres of private lands. Private land ownership accounts for 51 percent of the county, whereas Federal is 43 percent and State of Montana is 6 percent (PhilCo 2001). Table 2-2 shows the amount of acres per owner in Phillips County. **Map 2-2** depicts land stewardship in the county.

TABLE 2-2 LAND STEWARDSHIP IN PHILLIPS COUNTY	
Owner	Acreage
Native American Lands (Indian Reservations)	119,493
Private	1,650,125
State of Montana	197,331
U.S. Bureau of Land Management	1,081,372
U.S. Bureau of Reclamation	27,973
U.S. Fish and Wildlife Service	176,427
U.S. Wild & Scenic Rivers	4,957
U.S. Wilderness, Primitive Area	18,749
Water	56,673
Source: BLM Land Status GIS Database	

# Phillips County



- |  |   |
|--|---|
| <span style="display: inline-block; width: 15px; height: 15px; border: 1px solid black; background-color: white;"></span> Private  | <span style="display: inline-block; width: 15px; height: 15px; background-color: #d8bfd8;"></span> US Fish & Wildlife Service |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #ffff00;"></span> US - BLM                        | <span style="display: inline-block; width: 15px; height: 15px; background-color: #d2b48c;"></span> Native American Lands      |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #90ee90;"></span> US - Wild & Scenic River        | <span style="display: inline-block; width: 15px; height: 15px; background-color: #e0ffff;"></span> State of Montana           |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #3cb371;"></span> US - Wilderness, Primitive Area | <span style="display: inline-block; width: 15px; height: 15px; background-color: #0000ff;"></span> Water                      |
| <span style="display: inline-block; width: 15px; height: 15px; background-color: #ff6347;"></span> US Bureau of Reclamation        |   |

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



The Charles M. Russell National Refuge and the Bowdoin Bird Refuge provide deer, antelope, elk and upland game birds viewing and hunting. Malta is host to the Phillips County Museum facility and Sleeping Buffalo Hot Springs (Bear Paw 2004). The Little Rocky Mountains offer a diverse mountain experience and recreationists find Nelson Reservoir, the two rivers and local ponds an opportunity for fishing, boating and other outdoor activities (PhilCo 2001).

### 3.0 SCOPE AND PLAN ORGANIZATION

The scope of the Phillips County Community Wildfire Protection 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 Phillips County CWPP is the result of a collaborative effort between Phillips 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 Phillips County DES Coordinator, mayors, and elected officials, and three public meetings were held to include the input of Phillips County residents.

#### 3.2 CONTACT LIST

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 (County Commissioners), the DES Coordinator, and Sheriff's Department. Councilpersons from the incorporated towns were listed (Dodson, Malta, Saco), as well as the mayors and fire chiefs of both incorporated and unincorporated town (Zortman). State agencies included Montana Department of Natural Resource and Conservation (DNRC) and Montana Department of Fish Wildlife and Parks (MFWP). Federal Agencies Included U.S. Fish and Wildlife Service (USFWS) and Bureau of Land Management (BLM). Other agencies represent were the Phillips Conservation District and the PhilCo Economic Growth Council. *Appendix B* presents the Phillips 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 Phillips County stakeholders is presented in *Appendix B*.

### 3.4 FORMAL PUBLIC MEETINGS

Public meetings were conducted in a tri-county area (Blaine, Hill and Phillips Counties) during initial plan development. The meetings were held in Harlem on January 18, 2005 & January 19, 2005, in Chinook on January 19, 2005, in Havre on January 20, 2005 in Hingham on January 20, 2005, in Malta on February 22, 2005, in Saco on February 22, 2005, in Dodson on February 23, 2005 and in Zortman on February 23, 2005. The purpose of the meetings was to gather information on historic wildfires, update the list of recent historical wildfire occurrences and ignition sources, and gather ideas from citizens about fire preparedness planning, and priorities for response steps that may aide the communities in reducing the risk of wildfire ignition or the spread of uncontained wildfires. The sign-in sheet from the Phillips County public meeting 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 Phillips County News. 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 Malta, Saco, Dodson, Zortman and Phillips 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 Malta, Dodson, Saco, and Phillips 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 Coordinator's Office in Missoula for review. The review period lasted 30-days. Upon receipt of Coordinator's comments, the Plan was finalized and taken to the County commissioners and jurisdictions for adoption.

Future comments on this Plan should be addressed to:

**Phillips County DES Coordinator  
Phillips County  
Box 1090  
Malta, MT 59538**

## 4.0 HAZARD EVALUATION AND RISK ASSESSMENT

The hazard evaluation for Phillips 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 (Geographic Information Systems) 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 Phillips 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 Phillips 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 Individual Incorporated Communities

##### 4.1.1.1 Dodson

Dodson is a small town located on Highway 2, west of Malta. The Burlington Northern Santa Fe (BNSF) railroad line runs through Dodson. Homes, schools, businesses, ranches, barns and other structures comprise Dodson. Agriculture lands that surround this community included grain and hay fields, pasture, and (Conservation Resource Program) CRP lands. Dodson is at moderate risk to wildfire and this risk will increase in the late summer and fall when vegetation is cured and dry wind events occur.

#### Community Assessment:

Topography around Dodson is defined by gentle slopes. Most homes in the community have fair defensible space. At risk are structures that have continuous grass or other fire prone fuels between and next to them.

Historic wildfire ignition sources for Dodson and the surrounding area have included railroad, debris/vegetation burning, machinery use, and other human causes.

Vegetation in Dodson includes low height cured grass, wheat stubble, and tall vegetation. In the surrounding area, vegetation consists of grain, hay fields, CRP lands, prairie grasses and patches of cottonwood trees.

Fire suppression in Dodson is provided by the Phillips County FD in Dodson and Malta. Response times are often inadequate due to distance and water availability for areas in and outside of Dodson. Wildfires are a threat to the town of Dodson's water supply as the well house that supplies the town of Dodson was not constructed of fire resistant materials.

**Mitigation Activities:**

Easily implemented wildfire risk reduction activities for Dodson include creating defensible space by mowing and removing cured vegetation between and adjacent to all structures. Improvement of water storage capabilities at Dodson would provide the (Volunteer Fire Department) VFD with increased suppression capabilities. Use of fire resistant construction material for the town's well pump house is a priority. CRP lands around Dodson should engage in double row perimeter plow/disking, mowing and/or the initiation of prescribed burning or a combination. Vegetation burning would be coordinated with the Phillips County FD and require compliance with an issued Phillips County burn permit.

**4.1.1.2 Malta**

According to the 2000 U.S. Census, Malta is the largest city in the county with a population of 2,120 and is the county seat of Phillips County. Malta is located on the crossroads of State Highway 2 and U.S. Highway 191 which is the access to the Port of Morgan at the U.S. Canadian Boarder. Amtrak and the BNSF railroad run through the town. Malta has numerous businesses and homes. Schools include grades kindergarten through 12. Malta has a small airport and services include the city and county fire department, a newly built hospital, law enforcement, and emergency services dispatching.

**Community Assessment:**

The structures, buildings and homes around the perimeter of Malta are at moderate risk to wildfire when vegetation cures. With the combination of cured fuels and wind, a wildfire ignition source would yield a high risk to these same areas of Malta.

Fuels around Malta include prairie grass, cottonwood stands, and tall cultivated grains, CRP vegetation and tall weed species. The topography in and surrounding Malta ranges from rolling hills to steep coulees and river bluffs. Weather has a heavy influence on containment and control of wildfire in and surrounding Malta. Winds and low humidity dry fuels quickly causing ignitions to exhibit high rates of spread, and at greater intensity. Malta area has experienced wildfire ignition sources including, power lines falling, debris burning, lightning and machinery use.

Streets and roads in and surrounding Malta are named and signed. Property ownership maps are kept up to date by Phillips County. Perimeter structures and homes and ranches on the outskirts of Malta are at the greatest risk to wildfire. Vulnerable structures include those with flammable vegetation accumulation in close proximity and those constructed upon hillsides.

The Malta FD and the Phillips County FD provide structure and wildfire protection to Malta and areas outside of Malta. An adequate water supply for Malta is provided by a municipal fire hydrant system. Wildfire protection is provided by the Phillips County FD for outlying areas. Water availability is not always adequate for outlying areas.

**Mitigation Activities:**

Implementation of defensible space for perimeter and outlying structures will reduce ignition potential in the event of a wildfire. Creating 40 feet of defensible space around structures can be accomplished by maintaining green grasses as long as possible into the fall and keeping grass mowed. 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 five feet above the ground fuels. Additional public awareness of wildfire potential could be accomplished through radio announcements, fire danger signs on roads/highways, and presentation of FIREWISE practices at schools in Malta. Continued implementation of and adherence to the Phillips County burning permit requirements is a necessity. A Malta wildfire prevention or awareness day in the late summer would educate residents with updated FIREWISE information and could be combined with Fire Department displays, demonstrations or fund raisers.

#### 4.1.1.3 Saco

Saco is the second largest town in Phillips County, located east of Malta on State Highway 2. BNSF railroad line runs through the south side of Saco. According the 2000 U.S. Census the population of Saco was 244. Saco contains businesses, grocery stores, fuel stations, restaurants and schools with grades kindergarten through 12. Saco also provides City Law Enforcement and the Saco Fire Department which is included in the Phillips County FD.

##### Community Assessment:

In the past fifteen years a few wildfires have been near Saco, but have never posed a direct threat. Potential for a wildfire to threaten parts of Saco and outlying homes is due to surrounding cured vegetation and frequent dry winds. Saco is rated at moderate risk to wildfires when vegetation cures. Risk increases to high based on historic fire behavior, rates of spread and ignition potential during late summer and fall when the vegetation is cured and dry wind events occur.

Historic wildfire ignitions near Saco include railroad, power lines falling, and debris burning. Favorable weather conditions have helped the fire departments contain most ignitions within the first initial attack operational period. Wildland fire fuels around Saco include cottonwood stands, grain fields, short prairie grasses, CRP vegetation, and various tall weeds species.

The roads, highways and streets in and around Saco are named, signed and a number system is applied. Structures and homes on the perimeter of and outside of Saco are at the greatest risk to wildfire. Some homes and structures on perimeter and outskirts of town have flammable vegetation in close proximity to structures.

The Saco VFD and the Phillips County VFD provide protection from wildfire in and surrounding Saco. An adequate water supply for wildfire suppression in Saco and perimeter structures is provided by Saco's municipal fire hydrant system. Water availability is a concern for the Phillips County FD when responding to wildfires outside of Saco.

##### Mitigation Activities:

Mitigation of risk can be accomplished through implementation of a number of precautions. Creation of defensible space by creating 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 Saco would result in hazard identification and mitigation action that homeowners could accomplish. Yearly mitigation projects could include removal, mowing or burning of vegetation along irrigation canals in and surrounding Saco. Ignition of harvested grain fields, CRP lands, or irrigation canals will provide an area that is not subject to wildfire. Projects would require compliance with the Phillips County burning permit requirements and coordinated with the Saco and Phillips County VFD's. The Phillips County burning permit should remain enforced and followed by all residents in the Saco community.

#### 4.1.2 Individual Unincorporated Communities

##### 4.1.2.1 Landusky

Landusky is a small community located in the Little Rocky Mountains approximately five miles north of Highway 66.

##### Community Assessment:

Topography around Landusky is pronounced and mountainous. Some structures in Landusky have defensible space. At risk are structures having combustible vegetation in close proximity. Landusky consists of a small numbers of homes, vacation cabins, campgrounds and a small VFD.

Landusky has experienced a number of wildland fires from various ignition sources both lightning and human caused. The Landusky area is at high risk to wildfires because of the limited ingress/egress, mountainous terrain, dry winds, light and timbered fuel types and canyon winds.

Fire suppression for the Landusky area is provided by the Landusky and Zortman Fire Departments the BLM and Phillips County FD. Although a suppression apparatus is located near Landusky, response times can be extensive to areas outside of Landusky.

##### Mitigation Activities:

Improvements in defensible space for homes and buildings in the Landusky area would be a simple priority project. Removal of cured vegetation near structures and retaining green vegetation as late in the fall as possible will decrease wildfire risk. Continued grazing, mowing, disking and introduction of prescribed fire on prairie and CRP lands would also mitigate risk in heavier fuel loadings. Continued enforcement and adherence to the Phillips County burn permits should also be employed. Vegetation fuel treatments on public lands in, around, and on the approach to Landusky is apparent and should continue including the burning or disposal of numerous hand piles. Additional wildfire danger signage on roads and campgrounds near Landusky would assist in educating the public on wildfire danger.

##### 4.1.2.2 Loring

Loring is a small community located on Highway 191 approximately 15 miles from the Canadian border. Loring includes a few businesses, a grade school, church, park and a number of homes.

The Phillips County FD has an engine in Loring. Parts of Loring's perimeter are protected by areas of plowed/disked agricultural ground, while other areas are unprotected.

##### Community Assessment:

The topography around Loring is gentle and rolling. Agricultural lands comprise the majority of the landscape. Most dwellings in Loring have good defensible space. At risk structures are those that have less than 30 feet defensible space. Areas of uncut cured vegetation 12 inches to 16 inches in height are interspersed through Loring.

Grasses, CRP and harvested grains provide a fuel bed for wildfires around parts of Loring. Asset protection in Loring is assisted by the community park located on the south side of the town.

Despite the generally light fuels in and surrounding Loring, the community is rated at moderate risk to wildfires. This risk can increase to high risk when vegetation cures and dry wind events occur. Generally, high risk is from August into November. Historic wildland fire ignitions around the Loring community

include machinery use, debris/vegetation burning and other human caused ignitions. At risk from wildfires in the Loring area are the homes on the perimeter and homes/ranches in areas outside of Loring.

County roads outside of Loring are signed, but short roads within Loring are not signed. Response time for fire suppression and water availability within Loring is adequate. Response times and water availability for wildfire suppression in outlying areas is a concern. Agriculture groundwater wells supplied by above ground electricity provide water for wildland fires suppression in northern Phillips County.

#### Mitigation Activities:

Mitigation activities for Loring include removal or mowing of cured vegetation within the community and the establishment a minimum of 40 feet defensible space for all dwellings and structures. Other mitigation activities include establishing a defined perimeter through plowing/disking of agriculture lands around Loring and maintaining green grass in the park and on properties within and on the perimeter of Loring as late in the fall as feasible. Outlying areas and homes within CRP lands and grain fields should establish defensible space. A water supply should be maintained for suppression of unplanned ignitions 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. Secure GPS coordinates of ground water wells that could supply water for suppression of wildfires in rural response area and make available the locations for wildfire mutual aid responders to Phillips County.

#### 4.1.2.3 Whitewater

Whitewater is a small agricultural community with a number of homes and ranches located east of Loring on County Road 208. It is located 16 miles from the Port of Morgan on the Canadian Boarder. The Phillips County FD has an engine stationed at Whitewater. Outlying areas have grain fields, CRP lands and prairie grasses.

#### Community Assessment:

The predominant agricultural lands around Whitewater occupy the rolling topography. Homes within the community have defensible space but cured grass to 14 inches in height occur on various areas throughout Whitewater. Grain fields in stubble or disked occur around the community. Most dwellings in Whitewater have defensible space between 30-100 feet, though cured lawn grasses will carry wildfire in the late summer and fall. Whitewater is at moderate risk to wildfire based on fuels within and in the surrounding areas, historic ignitions and water availability. When fuels cured in late summer and fall combine with frequent dry wind events, the risk to Whitewater increases to high.

Ignition sources of wildfires in the Whitewater area include debris/vegetation burning, machinery use, and other human cause. Vegetation that poses a risk to wildfire includes grain stubble, cured grain or CRP. County roads around Whitewater are signed and the few roads within Whitewater are not signed. Water availability in Whitewater and outlying areas is not always adequate. Wildfire suppression response times within and near Whitewater are good, but as distances increase response times are extended. Rural areas outside of Whitewater rely on ground water wells for suppression of wildfires. Electricity to power the pumps at these wells is above ground.

#### Mitigation Activities:

Mitigation of wildfire risk in Whitewater can be initiated with mowing or removal of tall vegetation on various properties in the community. Application of defensible space around homes and structures in and surrounding Whitewater by removing fuels and providing green, nonflammable vegetation for as long as is feasible in the fall. Double row plow/disk of grain fields and CRP land around Whitewater and

outlying farms/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 Whitewater area will decrease fuel heights or loading in the event of a wildland fire. Maintaining a water supply for unplanned ignitions at homes in the Whitewater area would be advisable due to possible electrical power loss due to winds. GPS coordinates of possible ground water wells for use in wildfire suppression should be obtained and coordinates provided to Phillips County resources and wildfire mutual aid to Phillips County.

#### 4.1.2.4 Zortman

Zortman is a small mining community located in southern Phillips County in the Little Rocky Mountains approximately seven miles northeast of State Highway 191. A number of homes, school, churches, businesses, outbuildings and a BLM Station comprise Zortman.

##### Community Assessment:

Mountainous topography surrounds Zortman. Most structures have good defensible space, but on the perimeter of Zortman some structures have combustible vegetation next to and adjacent to them. Structures in Zortman are primarily constructed of combustible siding and deck.

The Zortman area has experienced a number of wildland fires from various ignition sources including lightning, debris/vegetation burning, and lightning.

The potential for wildfire risk in and around Zortman should not be underestimated because of the mountainous terrain, light and moderate fuels in and around it. The terrain, fuels, limited ingress/egress, dry and canyon winds define the wildfire hazard around Zortman as high when light fuels cure and if mitigation measures are not taken to remove or modify the fuels in and around Zortman.

Suppression of wildfires in the Zortman area is provided by the Zortman VFD and the BLM. Both Malta and Saco fire engines can respond to fires near Zortman. Water availability for wildfire suppression within Zortman is good, but not always available for outlying areas.

##### Mitigation Activities:

An expedient activity to reduce risk in Zortman is the removal or mowing of tall cured vegetation on the perimeter and within the community. Continuation of fuel reduction projects on public lands in and around Zortman should be supported. Defensible space for homes in and around the perimeter of Zortman could be improved. Additional street signage would assist emergency response crews. Grain fields adjacent to Zortman could implement a double row plow/disk of fields that abut the community thus removing fuels. Prairie grasses should continue to be grazed. The community should investigate possible water availability options for summer and fall ignitions and compile GPS coordinates of sources for future use and have them available for mutual aid wildfire incidents. Zortman would benefit from becoming a FIREWISE Community.

#### 4.1.3 Phillips 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 and the Phillips 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.

<b>TABLE 4-1</b> <b>WILDFIRE SUPPRESSION RESOURCES</b> <b>PHILLIPS COUNTY MONTANA</b>								
Fire Suppression Resource	Volunteer Staff		Equipment Details					
	Total	Active	Brush Trucks	Tender Trucks	Pump Trucks	Tanker Trucks	Other Trucks	SCBA's
Zortman VFD	12	12		1	1		Structure	10
Landusky VFD	8-10				1	1		0
Phillips County VFD		102	18	3	3			55
Saco VFD	14	14	1		2	2	Structure	16

#### 4.1.3.1 Federal Wildfire Suppression 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 and Zortman. 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 w/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 Wildfire Suppression Resources

Lewistown Northeastern Land Office provides the following fire suppression resources:

##### 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 of 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 (IC for County Assistance Team (CAT))
- ½ ton 4x4 pickup - radio equipped (IOFR for CAT team)

#### 4.1.3.3 Phillips County VFD

The Phillips County Rural Volunteer Fire Department Serves the entire County. The Phillips County Fire Department has written mutual aid agreements with the counties of Blaine, Choteau, Hill, Liberty, and Valley, the cities of Chinook and Harlem, and the entities of the (Bureau of Indian Affairs) BIA and the Fort Belknap Reservation. Phillips County has no Statewide Mutual Aid Agreements. The Phillips County FD also provides wildfire protection and suppression actions for Bureau of Land Management Lands in north Phillips County. Phillips County has a memorandum of understanding with the Bureau of Land Management (BLM) for exchange of initial attack responsibilities for wildland fires. The response area the Phillips County VFD is responsible for is approximately 5,200 square miles and a population of 4,800. The annual operating budget is around \$15,000 yearly. In-House training for the VFD varies from four hours to 20 hours per month. A list of resources is as follows:

- 18 Grassland Trucks (Brush Trucks) with 150 to 200 gallon water tanks
- 3 Attack and Rescue Trucks with 200 to 300 gallon water tanks
- 3 Water Tenders with 1300 to 1500 gallon water tanks
- 55 Working SCBA's
- 102 Active Volunteer Members

Phillips County between 2001 and 2003 received \$26,111 dollars in Volunteer and Rural Fire Assistance (section 6.4) from the DNRC to purchase the following equipment for the Phillips County Rural Volunteer Fire Council which serves the entire county:

- Foam Systems for Three Pumpers
- Six Pagers
- 1986 Ford Truck
- Two Portable Radios
- Slip-In Unit
- 1 Flotopump
- Miscellaneous tools and equipment

#### 4.1.3.4 Malta VFD

The Phillips County Fire Department Does not include the city of Malta's two structure trucks. Malta's VFD cannot remove the structure trucks from the city limits to fight fires in the county but county resources can fight fires within the city.

- 2 Structure Trucks
- Equipment for Vehicle Accidents



#### 4.1.3.5 Saco VFD

The Saco Volunteer Fire Department has 14 active Volunteer Members. Wildfires have the greatest impact on the VFD followed by structural fires, vehicle fires and Haz-Mat incidents. Funding is a major issue facing the fire department followed by acquiring equipment, recruiting and retaining members, training volunteers and the availability of firefighters. The VFD is not a member of any local associations. Although the VFD has a mutual aid agreement with the Phillips County FD, mutual aid agreements do not exist with neighboring FD's. No taxing authority or contracts with a tax district exist to fund the VFD. Sources of funding include donations, fund raisers with limited assistance from the City of Saco. VFD does not participate in a firefighter certification program and does not participate in the NWCG Wildland Firefighters "Red Card" Certification program, but would be willing to participate if given the opportunity. In-house training is approximately three hours a month. Three to five firefighters attend fire training yearly. The VFD's library does not contain the International Fire Service Training Association (IFSTA) manuals. Communication equipment is not narrow band compatible. Dispatching is provided by the County 911 Dispatch Center. Firefighters are alerted to incidents by an emergency telephone system that is set up to ring into nine homes and one business.

- Structure Truck
- Equipment for Vehicle Accidents
- 16 Working SCBA's
- 14 Volunteers
- 1968 Pumper Truck, 2 Ton, 300 gallons, 500 gpm (Saco City Limits Only)
- 1989 Pumper Truck, 1 Ton, 300 gallons, 400 gpm
- 1985 Brush Truck, 1 Ton, 300 gallons
- 1968 Tanker Truck, 2 Ton, 1600 gallons
- 1950's 2 ½ Ton (old military vehicle), 1000 gallons

#### 4.1.3.6 Landusky VFD

Landusky Volunteer Wildland Fire Department is a sub-department of the Phillips County Fire Department. Mutual aid agreements are in place with the BIA and BLM. The VFD works closely with the BLM's Lewistown Dispatch. The VFD is very small and can only provide wildland fire suppression capabilities and depending on the fire's size it is usually turned over to the BLM and/or BIA. The response area of the VFD is generally Southwest Phillips County south of Highway 2. Zortman VFD's tanker truck is used for a water supply alongside Landusky VFD when assistance is required. Local ranchers are usually on hand to provide water and support to the VFD. Yearly training is provided to the Landusky VFD by the senior staff of the Phillips County VFD in Malta. Approximately one half of the eight to ten volunteers have received wildland fire training. Suppression resources are as follows:

- 4 wheel drive one ton pickup with fast pump 250 gallon (only truck with radio)
- Mid 70's ¾ ton two wheel drive pick up 300 gallon water tank with low pressure pump
- 8 to 10 Volunteers

#### 4.1.3.7 Zortman VFD

Zortman Volunteer Fire Department is a sub-department of the Phillips County Fire Department. The response area of the VFD is between Malta and Zortman ranging east to the Larb Hills and south to the

Missouri River. Mutual aid agreements exist with the BLM and the CMR Wildlife Refuge fire fighting Units. The Phillips County Fire Department furnishes and maintains the equipment provided to Zortman. Local donations provide upkeep and utilities for the Zortman Fire Station. Zortman VFD responds to an estimated eight to ten calls per year that are mostly grassland, structure or car fires. A list of resources is as follows:

- DNRC attack Pumper
- 1500 gallon Water Tender
- Structure Truck
- 10 SCBA's
- 12 Active Volunteers

#### 4.1.3.8 NorthWest Energy

NorthWest Energy provides 24 hour incident hotlines specific for First Responders for Electric and Natural Gas emergencies. Northwest Energy Personnel are on call 24 hours a day and are trained to respond to the command center (if one is set up) and work closely with fire and law enforcement personnel. Northwest Energy personnel are also available to provide guidance and assist firefighters in pole fires and fires at Substations.

Compressor stations are above ground and provide pressure for underground natural gas pipelines to push the gas on to the next station. Northwest Energy employees are available to give tours of compressor stations and explain what to do in the event of emergencies. Most of the compressor stations are located in rural areas.

## 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)
- 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**

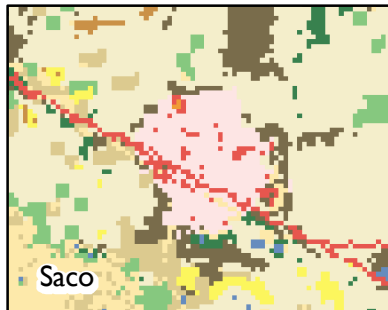
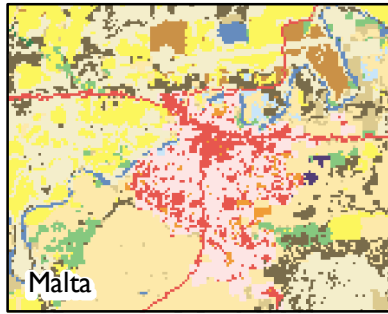
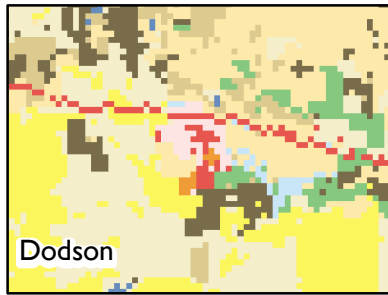
11 Light Logging Slash

12 Medium Logging Slash

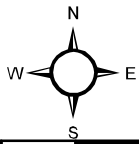
13 Heavy Logging Slash

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.

# Phillips County



0 0.2 0.4 0.8 Miles



0 5 10 15 20 Miles

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

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

**TABLE 4-2  
PHILLIPS COUNTY NLCD ACREAGE TOTALS**

<b>NLCD Code</b>	<b>NLCD Description</b>	<b>Acres</b>
11	Open Water	45,878.50
21	Low Intensity Residential	664.96
23	Commercial/Industrial/Transportation	2,897.58
31	Bare Rock/Sand/Clay	30,644.01
32	Quarries/Strip Mines/Gravel Pits	1,817.63
33	Transitional	10.01
41	Deciduous Forest	15,039.90
42	Evergreen Forest	124,329.17
43	Mixed Forest	280.00
51	Shrubland	238,598.75
71	Grasslands/Herbaceous	2,190,314.55
81	Pasture/Hay	12,501.48
82	Row Crops	3,242.96
83	Small Grains	277,649.51
84	Fallow	361,573.09
85	Urban/Recreational Grasses	48.26
91	Woody Wetlands	12,468.79
92	Emergent Herbaceous Wetlands	15,398.84

As can be seen in *Table 4-2* Phillips 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) Conservation Reserve Program (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 Phillips County was 169,580 acres or 5.09 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*.

**TABLE 4-3  
NLCD TO FLAMMAP CODE CONVERSIONS**

<b>NLCD Code</b>	<b>NLCD Description</b>	<b>FlamMap/Anderson Code</b>	<b>FlamMap/Anderson Description</b>	<b>Canopy Coverage</b>
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%

**TABLE 4-3  
NLCD TO FLAMMAP CODE CONVERSIONS**

NLCD Code	NLCD Description	FlamMap/Anderson Code	FlamMap/Anderson Description	Canopy Coverage
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 Phillips 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 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.

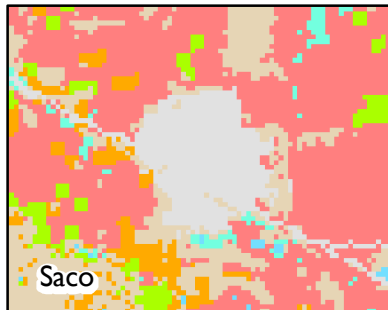
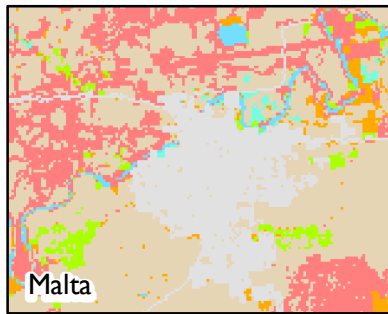
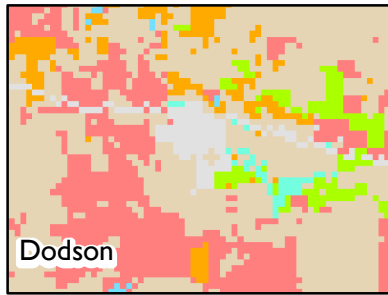
The other primary fuel type in Phillips County is Closed Timber Litter (Fuel Model 8). Fuel Model 8 supports slow burning ground fires with low flame lengths.

**TABLE 4-4  
ANDERSON FUEL TYPE BY TOTAL ACREAGE FOR PHILLIPS COUNTY**

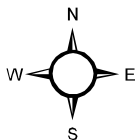
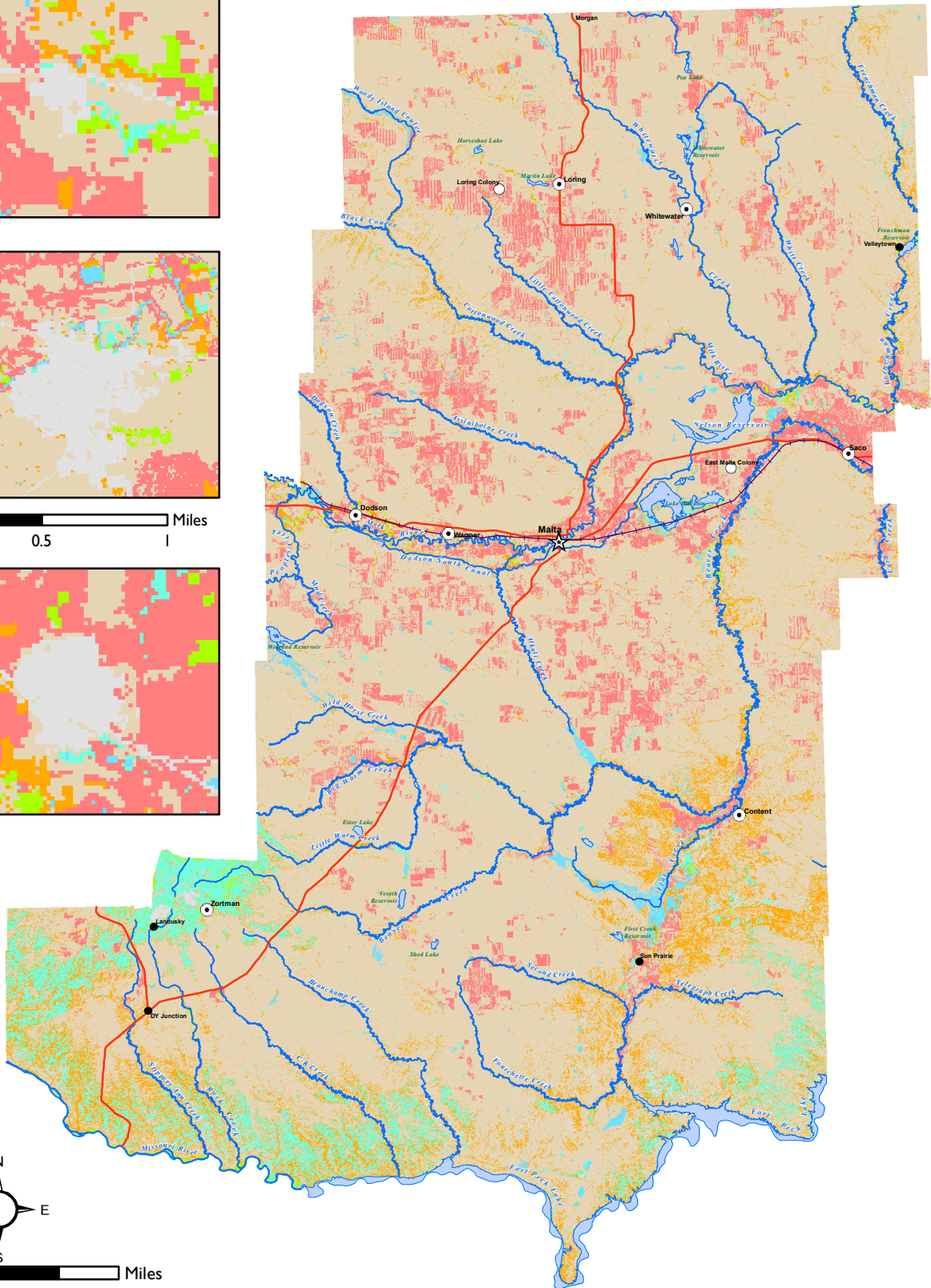
FlamMap/Anderson Code	FlamMap/Anderson Description	Acres
1	Short Grass (1 Ft.)	2567680
2	Timber (Grass And Understory)	238598.8
3	Tall Grass (2.5 Ft.)	277649.5
8	Closed Timber Litter	137078
9	Hardwood Litter	15039.9
98	Water	61277.34
99	Barren	36034.19



# Phillips County



0 0.25 0.5 1 Miles



0 5 10 15 20 Miles

## Anderson Fuel Types

- |                                   |                     |
|-----------------------------------|---------------------|
| 1 - Short Grass (1 Ft.)           | 9 - Hardwood Litter |
| 2 - Timber (Grass And Understory) | 98 - Water          |
| 3 - Tall Grass (2.5 Ft.)          | 99 - Barren         |
| 8 - Closed Timber Litter          |                     |

Fuel Types  
Phillips County  
Northeast Montana  
Community Wildfire Preparedness Plan  
Map 4-2

### 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 Phillips County related to fire risk are precipitation (lack of), humidity, thunder storms and wind.

Annual average precipitation in Phillips County is 10 to 13 inches with a higher average of up to 16 inches in the higher elevations of the Little Rocky Mountains. Over 70 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 Phillips County.

<b>TABLE 4-5 PHILLIPS COUNTY AVERAGE HUMIDITY PER MONTH</b>		
<b>Month</b>	<b>Average Morning Humidity (%)</b>	<b>Average Afternoon Humidity (%)</b>
January	77	73
February	79	70
March	80	58
April	75	42
May	74	40
June	77	41
July	74	35
August	69	32
September	72	37
October	75	47
November	80	65
December	79	73
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 fire behavior. Winds supply fires with additional oxygen, further dry potential fuel, can unexpectedly change the direction of fire spread and can increase the rate of fire spread.

Average wind speeds in Phillips 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 month of year.

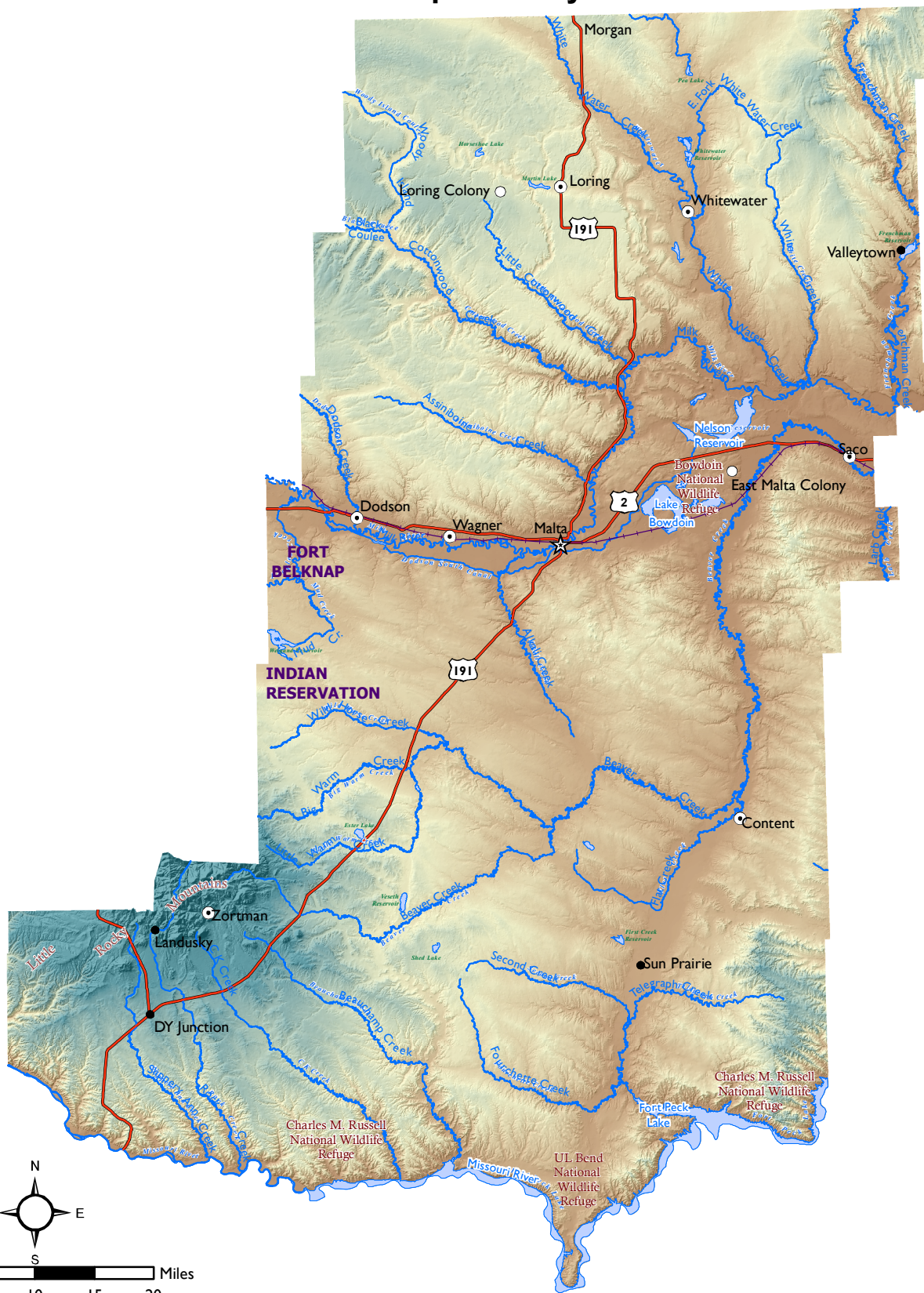
TABLE 4-6 PERCENTAGE OF FIRES OCCURRING PER MONTH IN PHILLIPS COUNTY	
Month	Percent
January	0.35%
February	1.39%
March	2.09%
April	7.32%
May	7.32%
June	9.41%
July	24.39%
August	34.84%
September	9.06%
October	2.44%
November	1.05%
December	0.35%
Source: BLM 2005	

#### 4.4 TOPOGRAPHY

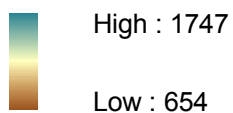
Topography plays an influential role in the context of wildfire behavior. Wooded or brush covered slopes generally promote the spread of the flame front up gradient. The speed at which the fire progresses is directly proportional to the slope of the hillside and the nature of the fuel available. Generally 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.

Gently rolling prairie comprises the majority of Phillips County. Elevation ranges from about 2,100 feet above mean sea level where the Milk River flows eastward out of the county northeast of Saco to around 6,000 feet in the Little Rocky Mountains. The General Topography is represented in **Map 4-3**.

# Phillips County



Elevation (ft)



Topography  
Phillips County  
Northeast Montana  
Community Wildfire Preparedness Plan  
Map 4-3

## 4.5 WILDLAND / URBAN INTERFACE

Wildland/urban interface 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 Phillips County, the wildland/urban interface typically is where the edge of local communities adjoins agricultural fields, many of which are in the Conservation Resource Program (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 - 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 2000 U.S. Census block level data. Densities were compiled as the number of housing units per square kilometer.

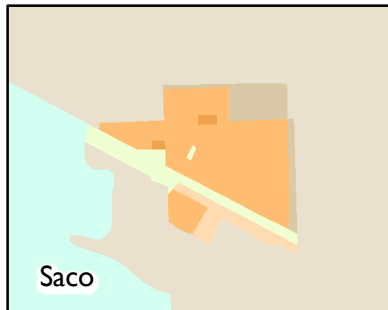
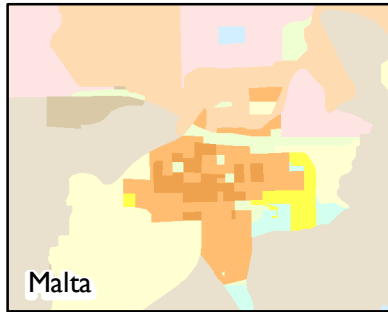
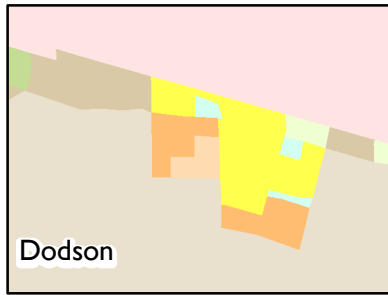
*Landcover* - The National Land Cover Dataset (NLCD) produced by the USGS was used to define wildland vegetation. NLCD is based on 30m resolution satellite imagery from 1992/1993. The SILVIS definition of wildland vegetation included forests, native grasslands, shrubs, wetlands, and transitional lands. 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 Phillips County. For Phillips 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 Phillips 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 mi of an area over 1,325 acres (500 ha) that is more than 75 percent vegetated.

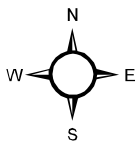
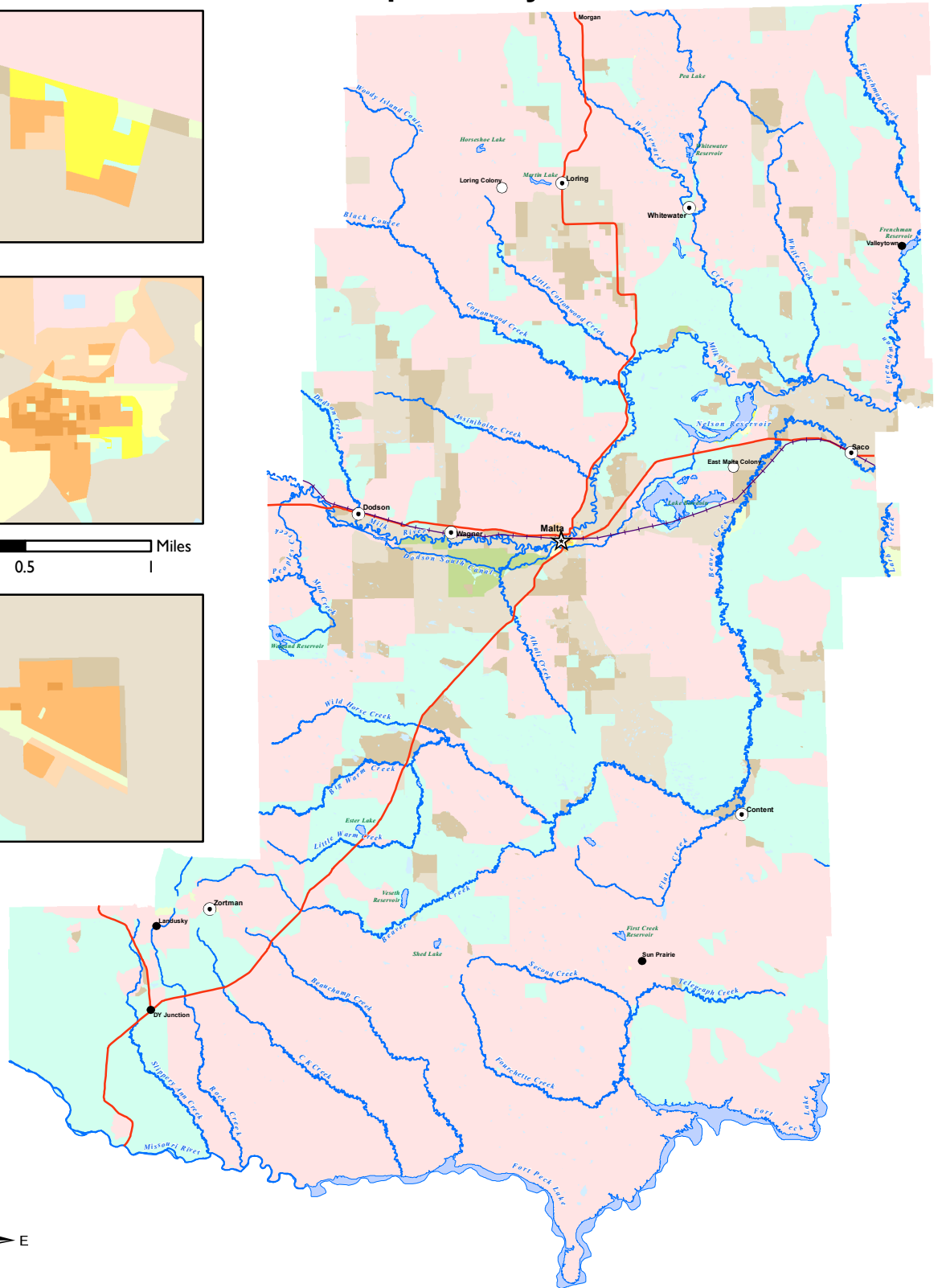
Two classes were added in addition to the SILVIS classes - Uninhabited Agricultural and Sparsely Inhabited Agricultural. Uninhabited Agricultural includes areas with no housing units and agricultural vegetation greater than 50%. Sparsely Inhabited Agricultural includes areas with a housing density greater 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 Phillips 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**.

# Phillips County



0 0.25 0.5 1 Miles



0 5 10 15 20 Miles

- |                    |                     |                 |
|--------------------|---------------------|-----------------|
| 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   |                 |

Wildland/Urban Interface Areas  
Phillips County  
Northeast Montana  
Community Wildfire Preparedness Plan  
Map 4-4

<b>TABLE 4-7</b> <b>DISTRIBUTION OF WILDLAND / URBAN INTERFACE TYPES</b> <b>PHILLIPS COUNTY</b>		
Wildland / Urban Interface Type	WUI Attributes	
	Acres	Percent of Total
Low Density Intermix	7,122	0.3%
Medium Density Intermix	504	0.0%
High Density Intermix	126	0.0%
Wildland Intermix	1,256,527	46.6%
<b>Total Intermix Acres</b>	<b>1,264,279</b>	<b>46.9</b>
Low Density Interface	1,022	0.0%
Medium Density Interface	350	0.0%
High Density Interface	61	0.0%
<b>Total Interface Acres</b>	<b>1,433</b>	<b>0.1%</b>
Sparsely Inhabited Agricultural	324,133	12.0%
Wildland with No Vegetation	9,234	0.3%
<b>Total Sparsely Inhabited Acres</b>	<b>333,367</b>	<b>12.4%</b>
Uninhabited Agricultural	156,448	5.8%
Uninhabited with Vegetation	940,483	34.9%
Uninhabited with No Vegetation	1,578	0.1%
<b>Total Uninhabited Acres</b>	<b>1,098,509</b>	<b>40.7%</b>
<b>Total Acres</b>	<b>2,697,588</b>	<b>100.0%</b>

Fifty nine percent of the area in Phillips 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 Center (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 below.

<b>TABLE 4-8</b> <b>DISTRIBUTION OF 2004 WILDFIRE LAND OWNERSHIP / MANAGEMENT</b> <b>FOR MONTANA</b>						
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 (FWWS)	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
<b>State of Montana 2004 Totals</b>	<b>1,455</b>	<b>18,446</b>	<b>787</b>	<b>44,634</b>	<b>25</b>	<b>1,294</b>
Source: NIFC 2005						

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

<b>TABLE 4-9 SUMMARY OF HISTORICAL WILDFIRE CAUSES HUMAN VS. NATURAL PHILLIPS COUNTY</b>				
Year of Record	Statistical Fire Details			
	Total Wildfires	Human Cause	Natural Cause	Not Specified
1980	22	4	9	9
1981	9	3	5	1
1982	6	1	3	2
1983	15	3	8	4
1984	10	1	6	3
1985	8	0	7	1
1986	8	3	4	1
1987	5	1	3	1
1988	23	0	16	6
1989	5	1	3	1
1990	15	1	8	6
1991	10	0	8	2
1992	5	0	5	0
1993	4	0	3	1
1994	6	1	1	4
1995	5	1	2	2
1996	8	2	4	2
1997	4	0	1	3
1998	7	0	3	4
1999	7	0	6	1
2000	7	0	3	4
2001	5	0	2	3
2002	6	2	1	3
2003	25	0	19	6
2004	3	0	1	2
Totals	222	18	127	72
Source: BLM				

The Charles M. Russell National Wildlife Refuge has maintained a record of fires. *Table 4-10* shows a ten year history of fires on the refuge.

**TABLE 4-10**  
**TEN YEAR SUMMARY OF WILDFIRES IN THE CHARLES M. RUSSELL NATIONAL WILDLIFE REFUGE**

<b>Year</b>	<b>No. of Fires</b>	<b>Acres Burned</b>	<b>Range of Acres Burned</b>
2002	8	819.0	5.0 - 446.0
2001	9	1219.6	0.10 - 964.0
2000	10	1744.0	1.00 - 6
1999	7	111.0	1.00 - 50
1998	19	8148.0	0.10 - 3880.0
1997	12	1139.0	0.10 - 692
1996	15	11147.0	0.10 - 10031.0
1995	8	432.0	0.10 - 200
1994	20	12812.0	0.50 - 11067
1993	3	23	0.50 - 12
1992	10	1345.0	0.10 - 705
<b>TOTALS</b>	<b>136</b>	<b>38,989.0</b>	<b>0.10 - 11067</b>
10 year Avg	13	3942.1	286.6ac (Avg Fire Size)
Source: FWS 2002			

Historically from 1981-1991, 158 fires burned a total of 27,438 acres on the Charles M. Russell Wildlife Refuge. In 1988, a historically bad fire year for the State of Montana, a total of 44 fires burned 12,953.8 acres. The size of fires in 1988 ranged from one acre to 5,775 acres (FWS 2002).

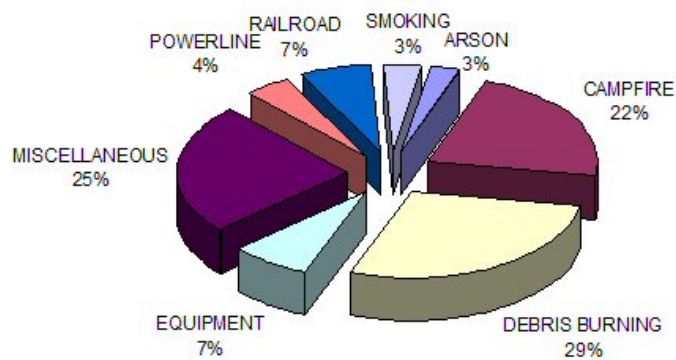
#### 4.7 IGNITION RISKS

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.

Human Caused 1995 - 2004



(Source: DNRC 2004)

Historical wildfire ignition sources recorded over the last ten years for Phillips County are varied. A history of ignition sources for past fires is presented in Table 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**.

**TABLE 4-11**  
**SUMMARY OF HISTORICAL WILDFIRE CAUSES**  
**PHILLIPS COUNTY**

Year of Record	Total Number of Fires	Debris Burning	Railroad	Incendiary	Equipment Use	Lighting	Smoking	Campfire	Misc.	No Description
1980	22					5	2		4	5
1981	9			1	1	5	1		1	
1982	6				1	3				2
1983	15	1			1	8		1		4
1984	10	1				6			1	2
1985	8					7				1
1986	8				3	4				1
1987	5					3		1		1
1988	23	1				16			1	5
1989	5				1	3				1
1990	15				1	8			1	5
1991	10					8				2
1992	5					5				
1993	4					3				1
1994	6				1	1				4
1995	5				1	2				2



**TABLE 4-11  
SUMMARY OF HISTORICAL WILDFIRE CAUSES  
PHILLIPS COUNTY**

Year of Record	Total Number of Fires	Debris Burning	Railroad	Incendiary	Equipment Use	Lighting	Smoking	Campfire	Misc.	No Description
1996	8			1	1	4				2
1997	4					1				3
1998	7					3				4
1999	7					6			1	
2000	7					3				4
2001	5					2				3
2002	6	2				1			3	
2003	25					19			6	
2004	3					1			2	

Source: BLM

#### Location and Extent of Previous Wildfire Events

A description of some wildland fires that have occurred in north-central Montana is presented below.

The following are BLM assisted fires from the BLM Lewiston Office Fire Reporting Database:

**May 22, 2000 – Grand Island Fire.** Approximately 407 acres of FWS owned land was burned west of Landusky. The vegetation burned was non-forest in a watershed.

**July 2, 2000 –** A fire was reported on the Charles M. Russell Refuge. Two engines from the BLM responded from the Zortman Station and the Refuge responded with two engines. Heavy rain kept the fire fighters from reaching the fire. The next day, the fire was reached and contained. Five acres burned.

**August 2, 2000 – Crooked Creek Fire.** The Crooked Creek fire burned approximately 25 acres on FWS owned land. Two engines were sent out to the fire.

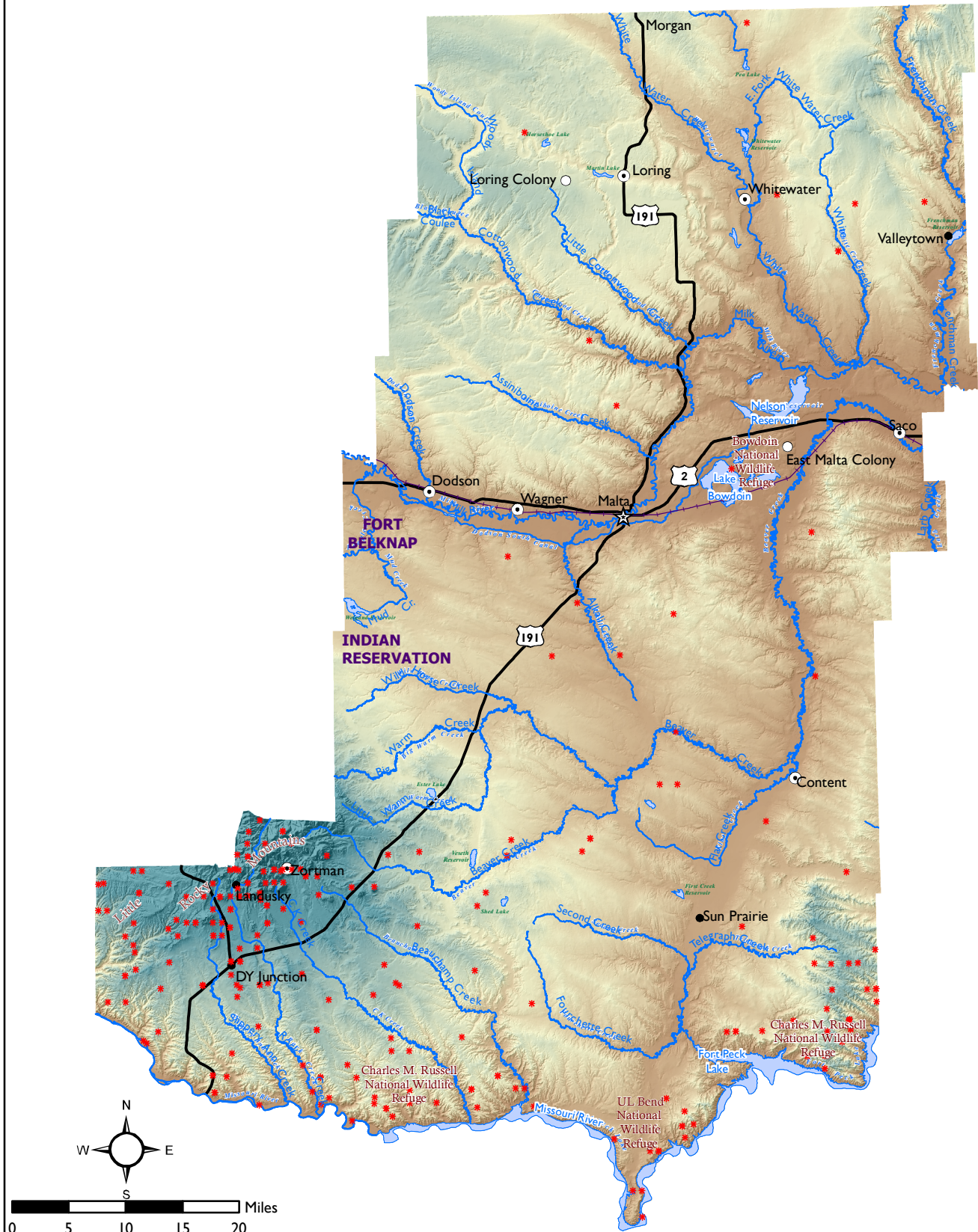
**August 11, 2000 –** A natural caused fire spread onto BLM from private land. Private non-forest watershed land burned and 40 acres of BLM Forest burned. The burn occurred west of DY Junction.

**August 28, 2000 –** Less than an acre of BLM forest land was burned when a human caused fire started. Four Helitack Crew, two light engines (holding 200 gallons or less) and a reconnaissance aircraft responded to the fire.

**September 5, 2000 – Camp Creek Fire.** Two acres of BLM land located two miles north of Zortman, burned from a naturally caused fire. The fire was extinguished by rain and hail (BLM 2005).

**May 13, 2001 –** On private property, 50 acres non-forest watershed land burned. Crews from Zortman responded. A resource advisor from Malta responded to the incident to determine the best access for resources.

# Phillips County



Elevation (ft)



High : 1747

Low : 654



Fire Occurrence

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

**August 4, 2001** – A fire on CK Ridge (20 Miles east of DY Junction) burned one quarter acre in juniper, grass and ponderosa.

**October 9, 2001** – A human caused fire on USFWS land started at Siparann Campground. The fire was quickly under control.

**May 4, 2002** – A human caused fire burned 239 acres on FWS land. The fire started in a Boat Ramp area near Rock Creek. The Zortman VFD responded and were later joined by Blackcrow Fire Department.

**November 16, 2002** – A grass fire was reported south of Zortman and north of the Missouri. The human caused fire was contained and less than an acre was burned.

**July 1, 2003** – A small fire was reported on cut across road to Landusky approximately six to seven miles from DY Junction. The fire was contained on July 4, 2003. The three acres was on private land, but action was taken by the BLM to prevent the spread of the fire onto BLM land. After an investigation, it was discovered that a firework was the cause of the fire.

**August 13, 2003** – A fire was reported near Zortman on private land. Two fire engines from the Phillips County VFD responded to the grass fire. A total of eight acres were burned. The fire was started by natural causes.

**August 25, 2003** – A fire was reported on The Charles M. Russell Wildlife Refuge. The fire was not declared out until September 1, 2003. Five Light engines (that holds 200 gallons or less of water) and an light airtanker (that holds 1000 gallons or less) responded to the fire. Three firefighting units from the Refuge and two from the BLM were dispatched to the site. Over 225 acres of open pine and grass were burned. The cause of the fire was recorded as natural.

**October 25, 2003** – A human caused fire burned 150 acres of private land.

**August 6, 2003 – Beaver Fire.** Less than one acre burned on BLM land burned approximately three miles north of Zortman. The fire was controlled by one Light Engine (BLM 2005).

**August 6, 2003** – A natural caused fire burned 300 acres of private land. Crews from Zortman and BLM crews from Lewistown responded to the fire (BLM 2005).

**October 19, 2003 – The Plunge Fire.** Local Rural VFD and BLM E-65 responded to the fire on private land to prevent the spread of the wildfire onto BLM Land. The human caused fire started approximately 3.5 miles north of DY Junction along side Highway 66 and burned 150 acres.

**July 12-20, 2005 – The Brandon Coulee Fire.** On the south side of Fourchete Bay in the Charles M. Russell Wildlife Refuge, a fire burned a total of 1890 acres (Sand Creek Station CMR NWR).

#### 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 Phillips 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 Phillips 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, Montana. 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 FlamMap2 -

##### 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 30<sup>th</sup>). 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. Fuel moistures were set in the fuel moisture file. Winds were set to a wind speed of 15 miles per hour 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 7/1/2005 at 12:01 AM to 7/31/2005 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 areas over a ten year record. This period was modeled to represent a worst case scenario for planning purposes.

#### 4.8.3 Fire Modeling Results

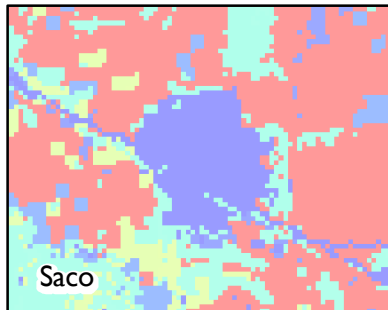
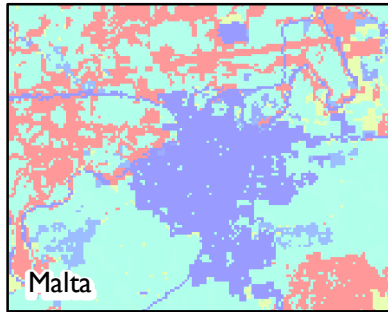
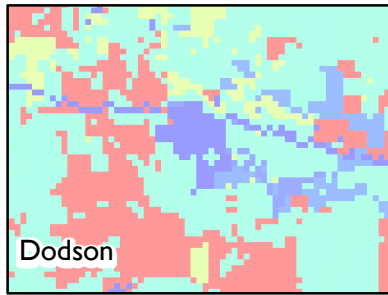
Flame length was used to model fire hazard for Phillips County and is displayed in **Map 4-6**. Flame length is a direct output from FlamMap2 and combines Fire Rate of Spread and Heat Per Unit Area. Flame length is used in the wildfire haul charts to quickly determine what strategies are required to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

##### Wildfire Haul Categories

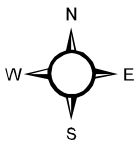
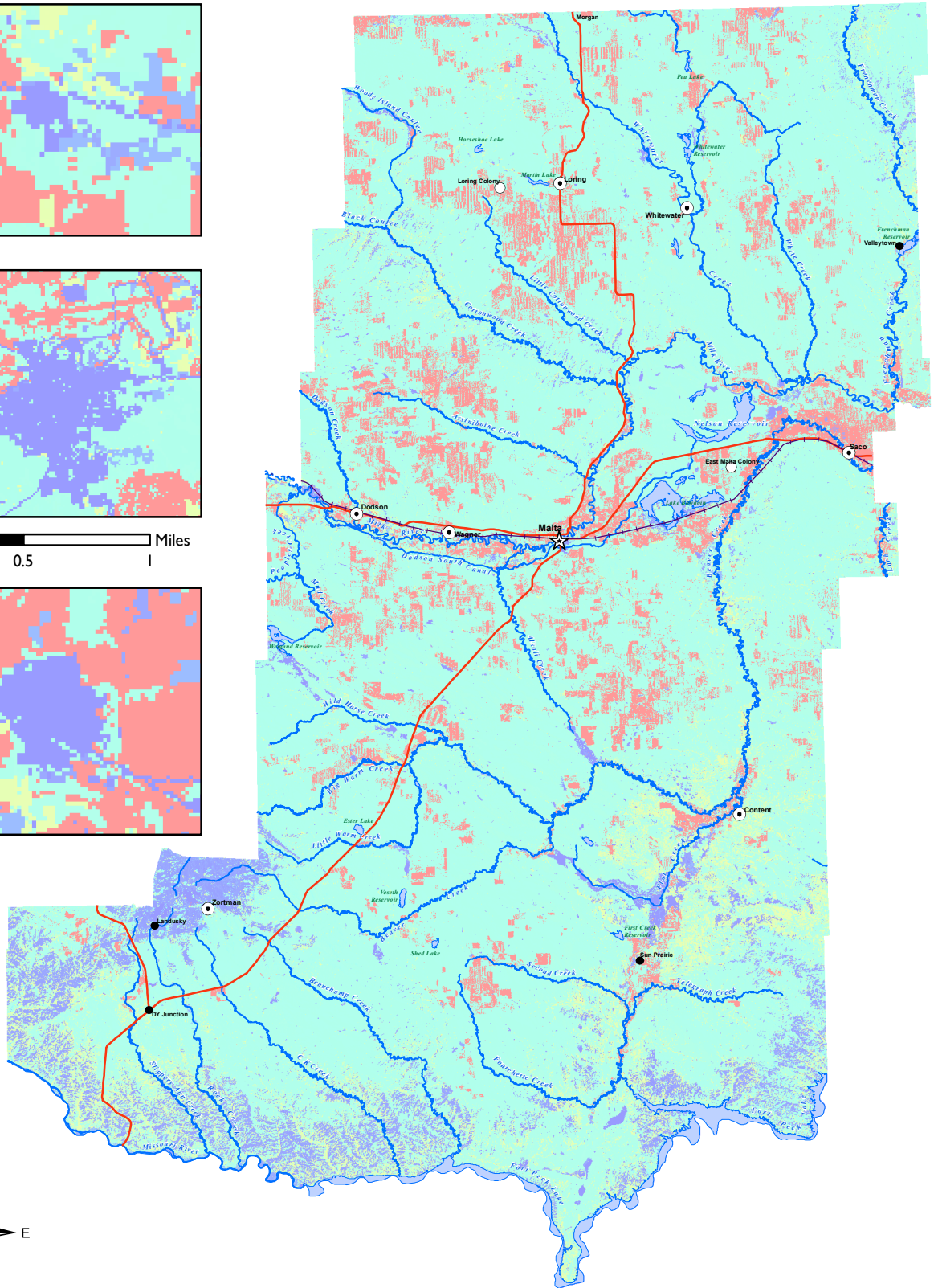
- Category 1 - Wildfires with flame lengths of less than 4 feet. These fires have relatively low heat and are slower moving. They can be fought by hand crews digging fireline and directly attacking the fire front. These are the least dangerous fires and have the lowest risk to life and property.
- Category 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.



# Phillips County

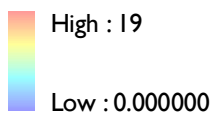


0 0.25 0.5 1 Miles



0 5 10 15 20 Miles

Flame Length



Flame Length  
Phillips County  
Northeast Montana  
Community Wildfire Preparedness Plan  
Map 4-6

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 Phillips 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.

## 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 Phillips 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 Phillips County was prepared using data available from a variety of sources including the US Census Bureau census block building stock data, the 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 by location. Table 5-2 shows the total building values by fire hazard by WUI Type.

TABLE 5-1 BUILDING STOCK VALUES (THOUSAND DOLLARS) BY FIRE HAZARD BY LOCATION				
	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low- medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
County	175,129,000	185,010,000	162,000	53,588,000
Saco	3,136,000	8,848,000	0	851,000
Dodson	111,860,000	14,204,000	0	30,000
Malta	23,902,000	909,000	0	539,000



TABLE 5-2 BUILDING STOCK VALUES (THOUSAND DOLLARS 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)
Low Density Intermix	1,844,000	12,120,000	0	274,000
Medium Density Intermix	7,372,000	18,964,000	0	219,000
High Density Intermix	0	0	0	0
Wildland Intermix	6,892,000	64,565,000	143,000	7,432,000
<b>Total Intermix Values</b>	<b>16,108,000</b>	<b>95,649,000</b>	<b>143,000</b>	<b>7,924,000</b>
Low Density Interface	1,407,000	2,011,000	0	1,523,000
Medium Density Interface	87,280,000	12,080,000	0	1,634,000
High Density Interface	50,408,000	1,373,000	0	0
<b>Total Interface Values</b>	<b>139,095,000</b>	<b>15,465,000</b>	<b>0</b>	<b>3,157,000</b>
Sparsely Inhabited Agricultural	18,796,000	62,920,000	3,000	37,707,000
Wildland with No Vegetation	429,000	3,639,000	0	4,492,000
<b>Total Sparsely Inhabited Values</b>	<b>19,224,000</b>	<b>66,558,000</b>	<b>3,000</b>	<b>42,199,000</b>
Uninhabited Agricultural	0	0	0	0
Uninhabited with Vegetation	625,000	146,000	0	7,000
Uninhabited with No Vegetation	76,000	7,191,000	15,000	301,000
<b>Total Uninhabited Values</b>	<b>701,000</b>	<b>7,337,000</b>	<b>15,000</b>	<b>308,000</b>

### 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 Phillips County for 2002 was \$37,808,000 (USDA 2002).

Agricultural lands were derived from the USGS National Land Cover Database (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 Phillips 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 – \$37,808,000/538,333Acres = \$70.23 per acre. *Table 5-3* lists total agricultural areas by fire risk category. *Table 5-4* lists total agricultural areas by fire hazard by WUI category.

TABLE 5-3 AGRICULTURAL VALUES (THOUSAND DOLLARS BY FIRE HAZARD)				
	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low- medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
Phillips County	37,808,000	2,945,000	655,000	\$60.00

TABLE 5-4 AGRICULTURAL VALUES (THOUSAND DOLLARS 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)
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
<b>Total Intermix Values</b>	<b>0</b>	<b>9,992,225</b>	<b>0</b>	<b>6,954,749</b>
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
<b>Total Interface Values</b>	<b>0</b>	<b>26,934</b>	<b>0</b>	<b>25,290</b>
Sparsely Inhabited Agricultural	0	4,777,312	0	4,349,032
Wildland with No Vegetation	0	255,048	0	209,692
<b>Total Sparsely Inhabited Values</b>	<b>0</b>	<b>5,032,360</b>	<b>0</b>	<b>4,558,724</b>
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
<b>Total Uninhabited Values</b>	<b>0</b>	<b>6,679,957</b>	<b>0</b>	<b>4,436,239</b>

### 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, 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, compressor stations, substations). 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 Blaine 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 number of critical facilities by fire hazard by WUI.

**TABLE 5-5  
NUMBER OF CRITICAL FACILITIES BY FIRE HAZARD BY LOCATION**

	Category 1 Fire Intensity (low)	Category 2 Fire Intensity (low- medium)	Category 3 Fire Intensity (medium-high)	Category 4 Fire Intensity (high)
County	33	12	0	1
Saco	6	0	0	0
Dodson	0	1	0	0
Malta	19	1	0	0
(Dodson , Malta, Saco Included in Total)				

**TABLE 5-6  
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)
Low Density Intermix	0	1	0	0
Medium Density Intermix	0	1	0	0
High Density Intermix	0	0	0	0
Wildland Intermix	1	6	0	0
<b>Total Intermix Values</b>	<b>1</b>	<b>8</b>	<b>0</b>	<b>0</b>
Low Density Interface	0	0	0	0
Medium Density Interface	18	2	0	0
High Density Interface	2	0	0	0
<b>Total Interface Values</b>	<b>20</b>	<b>2</b>	<b>0</b>	<b>0</b>
Sparsely Inhabited Agricultural	1	1	0	1
Wildland with No Vegetation	0	0	0	0
<b>Total Sparsely Inhabited Values</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>
Uninhabited Agricultural	0	0	0	0
Uninhabited with Vegetation	2	0	0	0
Uninhabited with No Vegetation	7	1	0	0
<b>Total Uninhabited Values</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>0</b>

## 5.2 ASSESSMENT OF ECOLOGICAL VALUES

An assessment of ecological values within Phillips 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 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.

<b>TABLE 5-7 ACRES OF WILDLIFE HABITAT BY SPECIES FOR PHILLIPS COUNTY</b>				
	<b>Category 1 Fire Intensity (low)</b>	<b>Category 2 Fire Intensity (low- medium)</b>	<b>Category 3 Fire Intensity (medium- high)</b>	<b>Category 4 Fire Intensity (high)</b>
Antelope-general	74,702	2,028,262	2,431	2,289
Antelope-winter	33,294	542,878	1,392	1,392
Bighorn Sheep-general	23,099	31,653	1,474	48
Elk-summer	154,711	660,066	9,624	10,838
Elk-winter	120,287	328,844	8,787	1,557
Mule Deer-year round	215,193	2,687,513	11,678	272,821
Mule Deer-year round/winter	9,101	1,132	4	2
Whitetail Deer-general	73,008	1,018,578	1,273	150,561
Blue Grouse	36,995	74,629	493	1,164
Hungarian Partridge	172,347	2,620,255	6,044	277,355
Pheasant-good	14,800	77,832	42	42
Pheasant-fair	7,809	80,825	90	90
Sage Grouse-year round	37,821	1,053,636	1,021	162,135
Sage Grouse-year round/nesting and brooding	81,712	1,549,124	4,020	113,182
Sharp-tailed Grouse	224,549	2,497,068	11,605	228,585
Wild Turkey	1,456	1,021	2	604
Source: MFWP 2005				

### 5.2.2 Watersheds and Streams

Table 5-8 documents watershed for Phillips County and fire risk zone. Table 5-9 documents the miles of streams in the county and fire risk zone.

<b>TABLE 5-8 ACRES OF FOURTH CODE WATERSHED FOR PHILLIPS COUNTY</b>				
	<b>Category 1 Fire Intensity (low)</b>	<b>Category 2 Fire Intensity (low- medium)</b>	<b>Category 3 Fire Intensity (medium- high)</b>	<b>Category 4 Fire Intensity (high)</b>
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
Source: NRIS 2005				

<b>TABLE 5-9 MILES OF STREAM FOR PHILLIPS COUNTY</b>				
	<b>Category 1 Fire Intensity (low)</b>	<b>Category 2 Fire Intensity (low- medium)</b>	<b>Category 3 Fire Intensity (medium- high)</b>	<b>Category 4 Fire Intensity (high)</b>
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

**TABLE 5-9  
MILES OF STREAM FOR PHILLIPS COUNTY**

	<b>Category 1 Fire Intensity (low)</b>	<b>Category 2 Fire Intensity (low- medium)</b>	<b>Category 3 Fire Intensity (medium- high)</b>	<b>Category 4 Fire Intensity (high)</b>
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
Wild Horse Creek	1.82	25.27	0.00	0.86
Woody Island Coulee	6.63	14.28	0.00	0.95
Source: NRIS 2005				

Areas of ecological note include the Wild and Scenic Missouri River and the C.M. Russell National Wildlife Refuge. The Wild and Scenic Rivers Act protects free-flowing rivers with outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural or other similar values. The Upper Missouri River along the southern border of Phillips County is included in the Act. The Upper Missouri River is managed by the BLM. Forty-nine different species of fish reside in the Missouri River including a few 140 pound paddlefish. More common fish species include goldeye, carp and northern pike. Residing along the shoreline are soft-shelled turtles, beavers and a variety of waterfowl. Riparian zones of the river include 60 species of mammals and 233 species of birds (NLCS 2004). Upper Missouri River Breaks National Monument was established by Presidential Proclamation in January of 2001.

The Fort Peck Reservoir is located in the south east corner of Phillips County. The reservoir is home to more than 50 different kinds of fish. Fish species in the Reservoir include walleye, northern pike, paddlefish, sauger, lake trout, small mouth bass and Chinook salmon.

The CMR National Wildlife Refuge is the second largest wildlife refuge in the continental United States. These grasslands preserve the now-dwindling prairie habitat that once covered a quarter of the nation. It is a prime location for wildlife viewing. Pronghorn antelope, deer, and prairie dogs share the landscape with one of the largest remaining prairie herds of elk. Raptors and other birds are readily seen, including eagles, hawks, grouse and quail.

The refuge is also home to one of the world's last free-roaming black-footed ferret populations. Diseases and massive hunts to eliminate prairie dogs from the prairies and plains reduced the black-footed ferret's main food supply. The ferrets dwindled in number and when the last of nine captive animals died in 1978, they were thought to be extinct. Despite such attempts at population increase, the ferret remains the rarest mammal in North America (MFWP 2002).

The Bowdoin Bird Refuge offers opportunities for deer, antelope, elk and upland game birds viewing and hunting. Nelson Reservoir, the two rivers and local ponds provide for walleye, historic paddlefish, trout and many more varieties.

### 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:

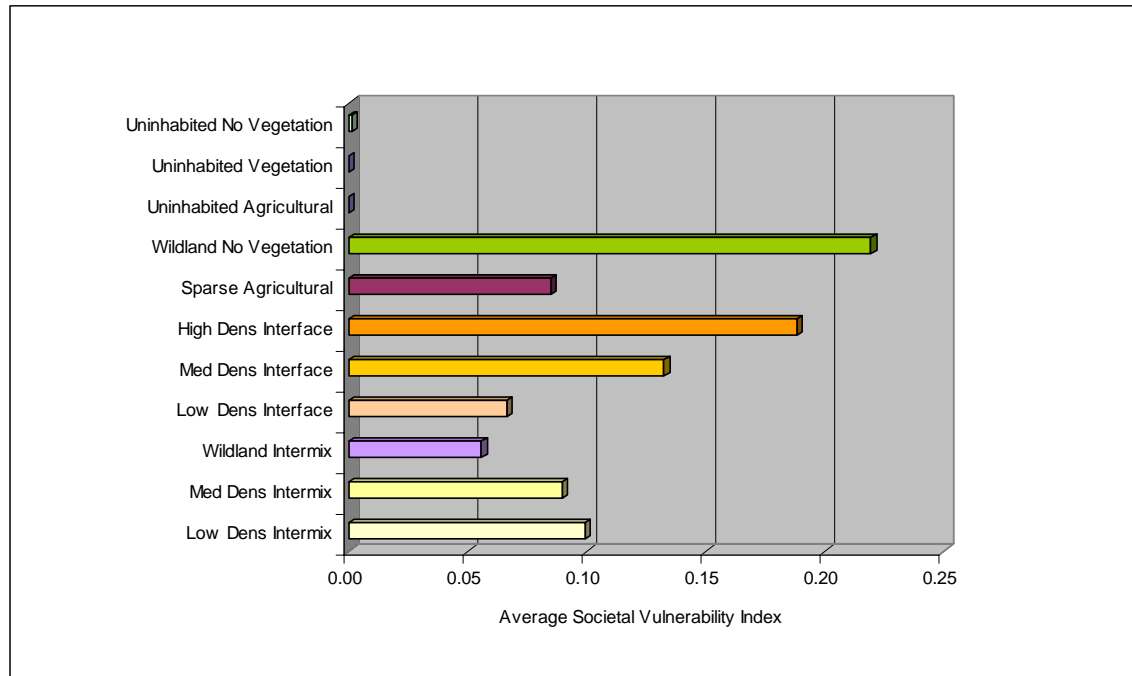
- Vulnerability Score = (societal variable for the census block / total societal variable in jurisdiction) / maximum societal variable for any census block in the jurisdiction)

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

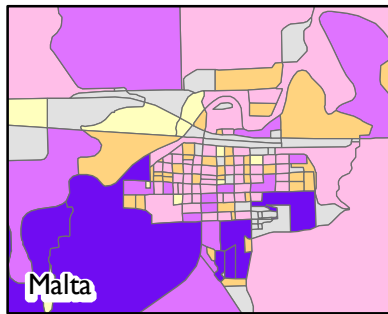
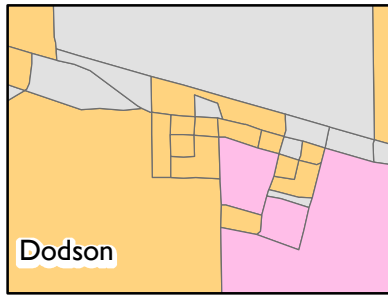
Each block was assigned a score for each societal vulnerability and an overall societal vulnerability by adding the individual societal vulnerability scores and dividing by seven, which is the total number of variables evaluated. **Map 5-1** depicts total societal vulnerability by census block.

Average Societal Vulnerability by Wildland/Urban Interface

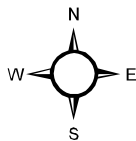
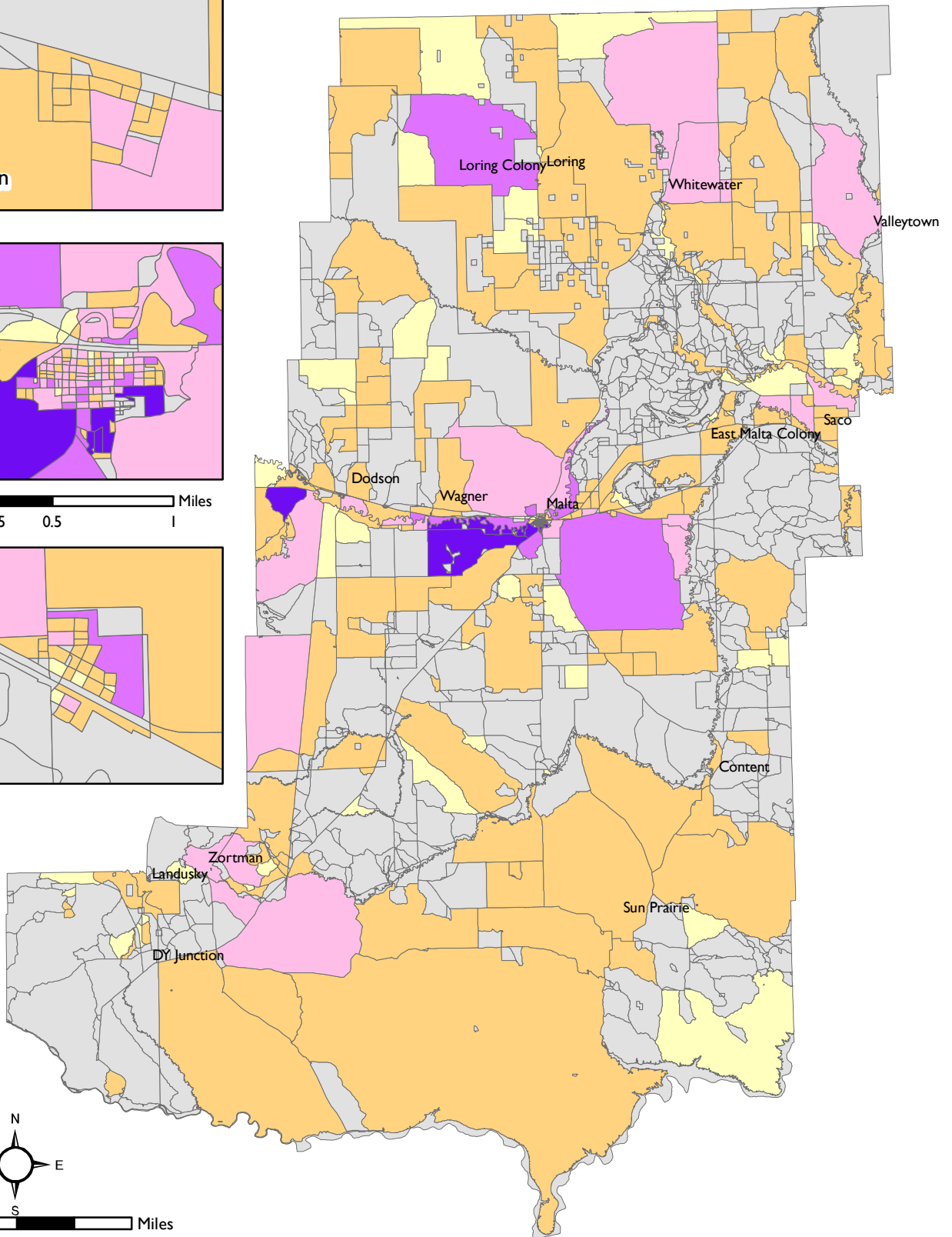
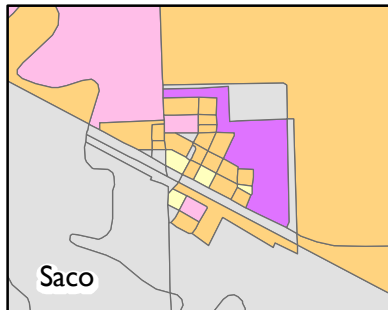




# Phillips County



0 0.25 0.5 Miles



0 5 10 15 20 Miles

## Total Societal Vulnerability Score



Total Societal Vulnerability by Census Block  
Phillips County  
Northeast Montana  
Community Wildfire Preparedness Plan  
Map 5-1

## 6.0 MITIGATION STRATEGY

Specific mitigation goals and projects were developed for Phillips 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 1980 and 2004 over 222 wildfire events were documented in Phillips County. Further information on these wildfire events is presented in subsequent sections of this Plan.

Three public meetings were held in the communities of Dodson, Malta, Saco and Zortman. Additionally, meetings and interviews were held with public officials numerous times during development of the plan. Generally, Phillips 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 Phillips County residents in the future. Based on review of the historical record and local knowledge, Phillips County identified four major wildfire ignition hazards that consistently affect this geographic area – debris burning, lightning, railroad and equipment use. Mitigation Objectives and Actions

### 6.2 MITIGATION OBJECTIVES AND ACTIONS

#### 6.2.1 Hazard Mitigation Goals

The Plan goals describe the overall direction that Phillips 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 Dodson, Malta, Saco and Zortman. 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 NFP, FEMA or HFRA 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**

- Obtain NOAA weather radios for critical facilities
- Obtain/upgrade sirens for all communities and include a public awareness campaign, along with installation of new sirens

#### **Enhance Communication Systems**

- Improve radio communication systems (Zortman)
- Obtain digital radios for fire fighters
- Provide radios to farmers and ranchers who respond to rural grass fires

**Enhance Emergency Shelter Facilities**

- Install pig-tails at shelters to accommodate mobile generators (Zortman)
- Obtain mobile generators to use around County as needed
- Obtain emergency generator for Dodson School (Dodson)

**Maintain Integrity of Water Supply**

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

**Improve Fire Fighting Capabilities**

- Provide training to farmers and ranchers on fire fighting techniques
- Provide heated building for the County fire trucks stored in Dodson
- Provide fire resistant building for Dodson town well. Until that is completed, remove or cover wildfire fuels next to the well house
- Obtain back-up generator for Dodson town well (Dodson)
- Develop Global Positioning System (GPS) database of water sources for fighting fires (Zortman)
- Identify appropriate locations for the installation of dry hydrants in the County
- 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 (DES).
- 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(s), Safety, Information and Liaison Officers, and Operations, Planning, Logistics, Finance Section Chiefs. All Risk and Wildland Fire Type III teams may require separate specialists in operations, plans and logistics (DES)
- Coordinate with cooperators to employ fuel reduction treatments on or around CRP lands such as double row plow/disk perimeters, mow vegetation, introduce prescribed fire or combination.
- With cooperators, provide classroom or video fire suppression training for rural area citizens and County employees who will respond to wildland fires (DNRC).
- 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 of Life and Property from Wildfire (2002). Participate in the National FIREWISE Communities program.
- Coordinate with cooperators and employ fuel reduction treatments on CRP and other lands. Fuel treatments would include mechanical treatments such as mowing or plow/disk perimeters, hand piles and burning and prescribed fire or a combination of treatment (BLM, USFS, DNRC).

- Continue grazing in sustainable areas by wild and domestic ungulates to reduce fuel loadings and lower potential wildfire intensity

### Enhance Emergency Response Systems

- Develop map of ranch roads to enhance response efforts
- Develop alternate escape route for community of Zortman
- Have County snow removal equipment available in Zortman

### Enhance Haz-Mat Response Capabilities

- Obtain Self Contained Breathing Apparatuses (SCBA's) for fire departments

## 6.2.2 Prescribed Fires

Prescribed fire treatments for fuels reductions are generally ecologically and economically sound methods for fuels reductions. 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 an effort to enhance 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 of the treatment process. *Table 6-1* illustrates BLM prescribed fire statistics over a three year period.

<b>TABLE 6-1</b> <b>BLM PRESCRIBED FIRE STATISTICS</b> <b>STATE OF MONTANA</b>										
Year	Number of Projects	Acreage by Benefiting Program								
		Forestry	Range	Wildlife	Hazard Reduction	Watershed	Ecosystem Health	Other	Not Specified	Total
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

Proposed Prescribed Fire Treatments in Phillips County are as follows:

- The Sugarloaf Jackpot Burning, scheduled for winter of 2005 or 2006, will burn approximately 200 acres of prescribed slash around the community of Landusky
- BLM Fire Crew Thinning is scheduled to be completed in the Fall of 2005. Approximately 171 acres of thinning, lopping, and scattering in the WUI around Zortman.
- Mechanical Slash Grinding Contract is scheduled for Winter 2005 and Spring of 2006. The project was proposed to grind slash created from thinning activities around the community of Landusky. Approximately 50-150 acres of slash on low to moderate slopes will be cleared where excessive accumulation occurs and/or it is in a visually sensitive area. The project location is 47.9006 Longitude and -108.52 Latitude.
- The Zortman Stewardship Pile Burning is scheduled for Winters of 2005 and Winters of 2006. Approximately 300 acres make up the Zortman Stewardship Project treatment area. The project location is 47.9201 Longitude, -108.5243 Latitude.

- Bowdoin National Wildlife Refuge Fuel Treatments. For 2006 the proposed burns are one large burn of approximately 1,500 acres on the southwest corner of the refuge for hazardous fuels reduction (could be considered a WUI burn), two small burns of approximately 250 acres each on the northeast side for hazardous fuels and habitat improvement and two burns in the Wetland Management District totaling approximately 1,150 acres. On average the Bowdoin National Wildlife Refuge burns between 200 and 300 acres a year in regards to fuel treatments.

### 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 for 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, 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 DOI agencies (BLM, FWS & BLM) contributed their budgeted Rural Fire Assistance Program dollars to be combined with the Volunteer Fire Assistance 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. Phillips County received \$26,111 dollars in VFA/RFA 2001 and 2003.

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 (DNRC 2005).

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:

TABLE 6-2 COST-BENEFIT SCORING MATRIX			
	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 CWPP Mitigation Project Cost-Benefit Matrix for Phillips County.

Projects identified by Phillips County as top priorities and their cost/benefit ranking are presented in Table 6-4.

**TABLE 6-3**  
**CWPP MITIGATION PROJECT COST/BENEFIT MATRIX FOR PHILLIPS COUNTY**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	JURISDICTION	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Enhance Communication Systems	Obtain digital radios for fire fighters.	Fire	Phillips County	High	High	Low	High
Enhance Communication Systems	Provide radios to farmers and ranchers who respond to rural grass fires.	Fire	Phillips County	High	High	Low	High
Enhance Early Warning Capabilities	Obtain NOAA weather radios for critical facilities.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Phillips County	High	High	Low	High
Enhance Early Warning Capabilities	Obtain/upgrade sirens for all communities and include a public awareness campaign, along with installation of new sirens.	Fire, Flooding, Technological, Tornadoes	Phillips County	High	High	Low	High
Enhance Emergency Response Systems	Develop map of ranch roads to enhance response efforts.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Phillips County	High	High	Low	High
Improve Fire Fighting Capabilities	Develop GPS database of water sources for fighting fires.	Fire	Zortman	High	High	Low	High
Improve Fire Fighting Capabilities	Identify appropriate locations for the installation of dry hydrants in the County.	Fire	Phillips County	High	High	Medium	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 requirement.	Fire	Phillips County/DES	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(s), Safety, Information and Liaison Officers, and Operations, Planning, Logistics.	Fire	Phillips County/DES	High	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 response to wildland fires.	Fire	Phillips County	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	Phillips County	High	High	Low	High
Maintain Integrity of Water Supply	Assist with reconstruction of St. Mary's water pipeline that supplies Milk River.	Technological	Phillips County	High	High	High	High
Reduce Wildfire Hazard	Continue grazing in sustainable areas by wild and domestic ungulates to reduce fuel loadings and lower potential wildfire intensity.	Fire	Phillips County	High	High	Low	High

**TABLE 6-3**  
**CWPP MITIGATION PROJECT COST/BENEFIT MATRIX FOR PHILLIPS COUNTY**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	JURISDICTION	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Reduce Wildfire Hazard	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 of Life and Property from Wildfire (2002). Participate in the National Firewise Communities program.	Fire	Phillips County	High	High	Low	High
Reduce Wildfire Hazard	Coordinate with cooperators and employ fuel reduction treatments on CRP and other lands. Fuel treatments would include mechanical treatments such as mowing or plow/disk perimeters, hand piles and burning and prescribed fire or a combination of treatments.	Fire	Phillips County/BLM/USFWS/DNRC	High	High	Low	High
Enhance Emergency Shelter Facilities	Obtain mobile generators to use around County as needed.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Phillips County	High	Low	Low	Medium
Improve Fire Fighting Capabilities	Provide training to farmers and ranchers on fire fighting techniques.	Fire	Phillips County	Medium	Medium	Low	Medium
Enhance Communication Systems	Expand NOAA Weather Radio Reception to WhiteWater	Fire, Flooding, Tornadoes	WhiteWater	Low	Low	Low	Low
Enhance Communication Systems	Improve radio communication systems.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Zortman	Low	Low	Low	Low
Enhance Emergency Response Systems	Develop alternate escape route for community of Zortman.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Zortman	Low	Low	Low	Low
Enhance Emergency Response Systems	Have County snow removal equipment available in Zortman.	Winter Storms	Zortman	Low	Low	Medium	Low
Enhance Emergency Shelter Facilities	Install pig-tails at shelters to accommodate mobile generators.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Zortman	Low	Low	Low	Low
Enhance Emergency Shelter Facilities	Obtain emergency generator for Dodson school.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Dodson	Low	Low	Low	Low
Enhance Haz-Mat Response Capabilities	Obtain SCBAs for fire departments.	Fire	Phillips County	Low	Low	Low	Low
Improve Fire Fighting Capabilities	Provide heated building for the County fire trucks stored in Dodson.	Fire	Dodson	Low	Low	Low	Low
Improve Fire Fighting Capabilities	Provide fire resistant building for Dodson town well. Until that is completed, remove or cover wildfire fuels next to the well house.	Fire	Dodson	Low	Low	Low	Low
Improve Fire Fighting Capabilities	Obtain back-up generator for Dodson town well.	Fire	Dodson	Low	Low	Low	Low



**TABLE 6-3**  
**CWPP MITIGATION PROJECT COST/BENEFIT MATRIX FOR PHILLIPS COUNTY**

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	JURISDICTION	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
------	----------------------------	-------------------	--------------	---------------------	-------------------	------	----------------------

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

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

GOAL	HAZARD MITIGATION PROJECTS	HAZARDS MITIGATED	JURISDICTION	POPULATION IMPACTED	PROPERTY IMPACTED	COST	COST/BENEFIT RANKING
Enhance Communication Systems	Obtain digital radios for fire fighters.	Fire	Phillips County	High	High	Low	High
Enhance Communication Systems	Provide radios to farmers and ranchers who respond to rural grass fires.	Fire	Phillips County	High	High	Low	High
Enhance Early Warning Capabilities	Obtain NOAA weather radios for critical facilities.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Phillips County	High	High	Low	High
Enhance Early Warning Capabilities	Obtain/upgrade sirens for all communities and include a public awareness campaign, along with installation of new sirens.	Fire, Flooding, Technological, Tornadoes	Phillips County	High	High	Low	High
Enhance Emergency Response Systems	Develop map of ranch roads to enhance response efforts.	Fire, Flooding, Technological, Tornadoes, Winter Storms	Phillips County	High	High	Low	High
Improve Fire Fighting Capabilities	Develop GPS database of water sources for fighting fires.	Fire	Zortman	High	High	Low	High
Improve Fire Fighting Capabilities	Identify appropriate locations for the installation of dry hydrants in the County.	Fire	Phillips County	High	High	Medium	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 requirement.	Fire	Phillips County/DES	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(s), Safety, Information and Liaison Officers, and Operations, Planning, Logistics, Finance Section Chiefs. All Risk and Wildland Fire Type III teams may require separate specialists in operations, plans and logistics.	Fire	Phillips County/DES	High	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 response to wildland fires.	Fire	Phillips County	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	Phillips County	High	High	Low	High
Maintain Integrity of Water Supply	Assist with reconstruction of St. Mary's water pipeline that supplies Milk River.	Technological	Phillips County	High	High	High	High
Reduce Wildfire Hazard	Continue grazing in sustainable areas by wild and domestic ungulates to reduce fuel loadings and lower potential wildfire intensity.	Fire	Phillips County	High	High	Low	High

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

<b>GOAL</b>	<b>HAZARD MITIGATION PROJECTS</b>	<b>HAZARDS MITIGATED</b>	<b>JURISDICTION</b>	<b>POPULATION IMPACTED</b>	<b>PROPERTY IMPACTED</b>	<b>COST</b>	<b>COST/BENEFIT RANKING</b>
Reduce Wildfire Hazard	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 of Life and Property from Wildfire (2002). Participate in the National Firewise Communities program.	Fire	Phillips County	High	High	Low	High
Reduce Wildfire Hazard	Coordinate with cooperators and employ fuel reduction treatments on CRP and other lands. Fuel treatments would include mechanical treatments such as mowing or plow/disk perimeters, hand piles and burning and prescribed fire or a combination of treatments.	Fire	Phillips County/BLM/USFWS/DNRC	High	High	Low	High

**POPULATION IMPACTED**

High = > 50% of County residents

Medium = 20 to 50% of County residents

Low = < 20% County residents

**PROPERTY IMPACTED & PROJECT COST**

High = > \$500,000

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

Low = < \$100,000

**COST BENEFIT FORMULA**

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

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

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

**COST/BENEFIT**

High = 11 to 15

Medium = 6 to 10

Low = 0 to 5

## 6.4 PROJECT IMPLEMENTATION AND LEGAL FRAMEWORK

Once the Phillips 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 Phillips 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

- City of Malta Zoning Ordinances
- City of Malta Fire Insurance Codes
- Phillips County Emergency Operations Plan (EOP)
- Phillips County Zoning Ordinances
- Phillips County Fire Insurance Codes
- Phillips County Burn Permit Regulations

A summary of how the CWPP 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 USFS, FWS, NPS, BLM, BIA, National Association of State Foresters (NASF), NWS, Office of Aircraft Services and the U.S. Fire Administration and 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. Phillips 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 Central Montana Fire Zone in Lewistown.

#### 6.5.2 Federal

The BLM Fire 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 DNRC

The Montana Cooperative Fire Agreement of 2005 and the Phillips County Cooperative Management Plan of 2004 prepared by the DNRC, clearly define the rolls and responsibilities of the DNRC, local 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 (or) 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

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 (Emergency Operation Centers) 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.

#### 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 Association. FIREWISE promotes fire wise practices with the following objectives:

- Educating the public and local organization by providing public outreach 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 Phillips County Community Wildfire Protection 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 Phillips 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 Phillips County Community Wildfire Protection 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 Phillips 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 National Fire Plan Coordinator's Office in Missoula, Montana for acceptance. The DES Coordinator will notify all holders of the CWPP when changes have been made.

### 7.2 IMPLEMENTATION THROUGH EXISTING PROGRAMS

Phillips 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. Phillips 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 programs 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**

Phillips County is dedicated to involving the public directly in review and updates of the Community Wildfire Protection 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.

## 8.0 REFERENCES

**Anderson 1982.** Anderson, H.E. 1982. NWCG Technical Report. Aids to Determining Fuel Models For Estimating Fire Behavior.

**Bear Paw 2004.** Bear Paw Development Corporation of Northern Montana. Comprehensive Economic Development Strategy 2004 Update.

**Cheney 1996.** Names on the Faces of Montana. The story of Montana's Place Names. Mountain West Publishing Co. Missoula, MT. January, 1996.

**DES 2001.** State of Montana Natural Hazards Mitigation Plan. Prepared by Division of Disaster and Emergency Services and Montana's Hazard Mitigation Team, October, 2001.

**DNRC 2004.** Department of Natural Resources and Conservation. 2004 Fire Statistics. URL: (<http://www.dnrc.state.mt.us/forestry/fire/business/statistics.asp#cause>).

**DNRC 2005.** Department of Natural Resources and Conservation. Grants. URL: <http://dnrc.mt.gov/forestry/fire/grants/>.

**FEMA, 1997.** Multi Hazard Identification and Risk Assessment. A corner stone of the National Mitigation Strategy. Federal Emergency Management Agency.

**Finney, Mark, Stewart Brittain, and Rob Seli, 2004.** FlamMap 2. Joint Fire Sciences Program, Rocky Mountain Research Station.

**FIREWISE 2005.** URL: <http://www.FIREWISE.org/>

**Homeland Security 2005.** Assistance to Wildfires Grant Program. Department of Homeland Security. URL: <http://www.firegrantsupport.com/>. 2005

**Jellum 2004. Fire in the Wind: An Account of the 1991 Blaine County Fire.** Jellum, Baird, Davies, Milk River Genealogical Society. Chinook, Montana. 1994.

**Montana Department of Labor and Industry 2001.** Annual Average Labor Force Summary Report. URL: <http://www.ourfactsyourfuture.org/>.

**MFWS 2002.** Charles M. Russell, Fire Management, 2002 Fire Statistics. Fish and Wildlife Service. URL: <http://cmr.fws.gov/Annual%20Narratives/2002%20Annual%20Narrative/Habitat%20Management.htm>

**MFWP 2005.** Montana Department of Fish Wildlife and Parks. URL: <http://fwp.state.mt.us/default.html>

**National Academy of Public Administration.** Containing Wildland Fire Costs: Utilizing Local Firefighting Forces. 2003.

**National Academy of Public Administration.** Wildfire Suppression: Strategies For Containing Costs 2002.

**NICC 2005.** National Interagency Coordination Center. Fire Statistics. 2005.

URL: [http://www.nifc.gov/news/2004\\_statssumm/fires\\_acres.pdf](http://www.nifc.gov/news/2004_statssumm/fires_acres.pdf)

**NLCS 2004.** National Landscape Conservation System. Wild and Scenic rivers of the National Landscape Conservation System. 2004.

URL: <http://www.discovernlcs.org/TheNLSC/Rivers/index.cfm>.

**NLCS 2004.** National Landscape Conservation System. Wild and Scenic rivers of the National Landscape Conservation System. 2004.

URL: <http://www.discovernlcs.org/TheNLSC/Rivers/index.cfm>.

**NRIS 2005.** Natural Resource Information Services. URL: <http://nr.is.state.mt.us/>

**NWCG 2005.** Glossary of Wildland Fire Terminology. National Wildfire Coordinating Group. January, 2005.

**NWS 2004.** National Weather Service & National Climatic Data Center. URL:

<http://www.ncdc.noaa.gov/oa/climate/research.html>

**NWS 2005.** National Weather Service, Missoula Weather Forecast Office. April, 2005.

**PhilCo 2001.** PhilCo Economic Growth Council, Inc. 2001. Phillips County and Malta, Montana, 2001

**Sousa 1984.** Sousa, W. P. 1984. The role of disturbance in natural communities. Annual Review of Ecology and Systematics 15:353-391.

**Teie, William.** Fire Officers Handbook on Wildland Firefighting.

**U.S. Dept of Agriculture, National Agricultural Statistics Service.** 2002 Census of Agriculture.

URL: [http://151.121.3.33:8080/Census/Create\\_Census\\_US\\_CNTY.jsp](http://151.121.3.33:8080/Census/Create_Census_US_CNTY.jsp)

**U.S. Bureau of Economic Analysis.** Regional Economic Accounts. Personal income by major source and earnings by industry, 2002.

URL: <http://www.bea.doc.gov/bea/regional/reis/action.cfm?catable=CA05N&areatype=30000&years=2002,2001&fips=30005&format=htm>

**U.S. Census 2005.** U.S. Bureau of the Census. American Fact Finder, Census 2000.

URL: [http://factfinder.census.gov/home/saff/main.html?\\_lang=en](http://factfinder.census.gov/home/saff/main.html?_lang=en)

**Western Fire Ecology Center.** American Lands Proposal for Fuels Reduction and Restoration. Timothy Ingalsbee. 2005.

**White House 2005.** The White House -- President George W. Bush. Healthy Forests an Initiative for Wildfire Prevention and Stronger Communities. URL:

<http://www.whitehouse.gov/infocus/healthyforests/>