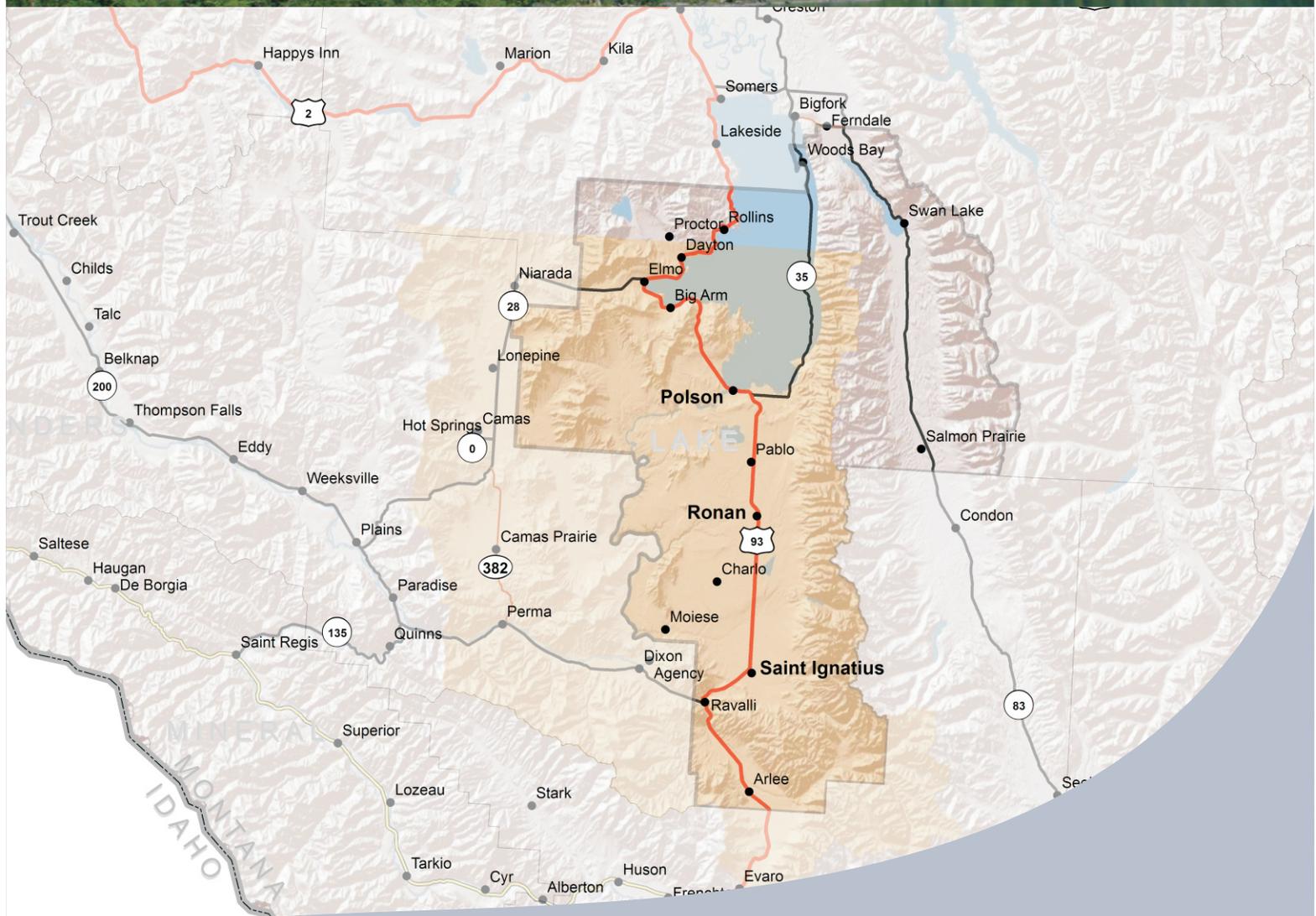


Pre-Disaster Mitigation Plan

Lake County, Montana



And the incorporated communities of Polson, Ronan and St. Ignatius.



TETRA TECH

AUGUST 2012

PRE-DISASTER MITIGATION PLAN

FOR

LAKE COUNTY MONTANA

AND

THE INCORPORATED CITIES OF POLSON & RONAN

AND

**THE INCORPORATED TOWN OF
ST. IGNATIUS**

Prepared for:

**Lake County Office of Emergency Management
25-C Regatta Road
Polson, Montana 59860**

Prepared by:

**Tetra Tech Inc.
303 Irene Street
Helena, Montana 59601
(406) 443-5210**

August 2012

TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	AUTHORITY	1-1
1.2	ACKNOWLEDGEMENTS	1-2
1.3	SCOPE AND PLAN ORGANIZATION	1-2
2.0	PLANNING PROCESS.....	2-1
2.1	PDM PLANNING TEAM	2-1
2.2	PROJECT STAKEHOLDERS.....	2-2
2.3	REVIEW OF EXISTING PLANS AND STUDIES.....	2-3
2.4	PROJECT WEBSITE	2-4
2.5	PROJECT MEETINGS.....	2-5
2.6	PLAN REVIEW	2-6
3.0	COMMUNITY PROFILE.....	3-1
3.1	PHYSICAL SETTING	3-1
3.2	CLIMATE	3-4
3.3	CRITICAL FACILITIES AND INFRASTRUCTURE.....	3-5
3.4	POPULATION AND CITY EXPANSION TRENDS.....	3-7
3.5	HOUSING STOCK.....	3-8
3.6	ECONOMY AND SOCIOECONOMICS	3-9
3.7	LAND USE AND FUTURE DEVELOPMENT.....	3-9
	3.7.1 <i>Land Use Implementation Tools</i>	3-10
	3.7.2 <i>Future Development</i>	3-13
4.0	RISK ASSESSMENT AND VULNERABILITY ANALYSIS.....	4-1
4.1	RISK ASSESSMENT METHODOLOGY	4-1
	4.1.1 <i>Critical Facilities and Building Stock</i>	4-1
	4.1.2 <i>Vulnerable Population</i>	4-2
	4.1.3 <i>Hazard Identification</i>	4-2
	4.1.4 <i>Hazard Profiles</i>	4-5
	4.1.5 <i>Hazard Ranking and Priorities</i>	4-7
	4.1.6 <i>Assessing Vulnerability - Estimating Potential Losses</i>	4-9
	4.1.7 <i>Data Limitations</i>	4-10
4.2	WILDFIRE	4-11
4.3	TRANSPORTATION ACCIDENTS/HAZARDOUS MATERIAL INCIDENTS	4-18

TABLE OF CONTENTS (continued)

4.4	LANDSLIDES	4-29
4.5	STRUCTURE FIRE.....	4-35
4.6	SEVERE WINTER WEATHER	4-38
4.7	FLOODING	4-43
4.8	COMMUNICABLE DISEASE.....	4-53
4.9	SEVERE SUMMER WEATHER	4-57
4.10	EARTHQUAKES.....	4-61
4.11	DAM FAILURE	4-67
4.12	RISK ASSESSMENT SUMMARY	4-74
5.0	MITIGATION STRATEGY.....	5-1
5.1	HAZARD MITIGATION GOALS	5-1
5.2	HAZARD MITIGATION OBJECTIVES AND PROJECTS.....	5-2
5.3	PROJECT RANKING AND PRIORITIZATION	5-2
5.4	PROJECT IMPLEMENTATION	5-3
6.0	CAPABILITY ASSESSMENT.....	6-1
6.1	LAKE COUNTY OFFICE OF EMERGENCY MANAGEMENT	6-1
6.2	LAKE COUNTY FUELS REDUCTION COORDINATOR	6-1
6.3	TERC/LEPC	6-2
6.4	LAKE COUNTY FIRE ASSOCIATION	6-2
6.5	LAKE COUNTY FUELS ADVISORY COMMITTEE.....	6-2
6.6	FUNDING OPPORTUNITIES	6-2
7.0	PLAN MAINTENANCE PROCEDURES.....	7-1
7.1	MONITORING, EVALUATING AND UPDATING THE PLAN	7-1
	7.1.1 2005 PDM Plan.....	7-1
	7.1.2 2012 PDM Plan.....	7-1
7.2	MONITORING PROGRESS OF MITIGATION ACTIONS	7-2
	7.2.1 2005 PDM Plan.....	7-2
	7.2.2 2012 PDM Plan.....	7-3
7.3	IMPLEMENTATION THROUGH EXISTING PROGRAMS.....	7-3
7.4	CONTINUED PUBLIC INVOLVEMENT	7-5
8.0	REFERENCES	8-1

TABLE OF CONTENTS (continued)**LIST OF TABLES**

Table 2.1-1	Agencies Represented on the PDM Planning Team	2-1
Table 2.1-2	Review and Analysis of 2005 PDM Plan.....	2-2
Table 3.2-1	Top Weather Events, Polson, Lake County	3-4
Table 3.4-1	County, State and National Population Trends	3-7
Table 3.4-2	Lake County Population Trends - Cities, Towns and Census Designated Places	3-7/8
Table 3.5-1	2000 U.S. Census Housing Data; Lake County	3-8
Table 3.6-1	Economic & Socioeconomic Data, Lake County	3-9
Table 4.1-1	Calculated Priority Risk Index	4-7
Table 4.1-2	Lake County Calculated Priority Ranking Index Summary	4-8
Table 4.2-1	CSKT Reported Wildfire Statistics: 1973 - 2011	4-11
Table 4.2-2	Montana DNRC Reported Wildfires Over 1 Acre in Lake County; 1980-2010.....	4-12
Table 4.2-3	Lake County Wildfire Events with Damages	4-14
Table 4.2-4	Lake County Vulnerability Analysis - Wildfire	4-16
Table 4.3-1	Lake County Highway Accident Statistics; 1/2001 to 12/2010.....	4-18
Table 4.3-2	Lake County Hazardous Material Incidents	4-19
Table 4.3-3	Lake County Vulnerability Analysis – Transportation Accidents/Hazardous Material Incidents.....	4-28
Table 4.4-1	Lake County Vulnerability Analysis – Landslides	4-33
Table 4.5-1	Lake County Structure Fire Statistics; 1/2001 to 12/2010.....	4-35
Table 4.6-1	Warning and Advisory Criteria for Winter Weather.....	4-38/39
Table 4.6-2	Lake County Severe Winter Weather Events with Damages (November - April)....	4-39/40
Table 4.7-1	National Flood Insurance Program Statistics.....	4-46
Table 4.7-2	Lake County Flood Events with Damages	4-46
Table 4.7-3	Lake County Vulnerability Analysis - Flooding	4-52
Table 4.8-1	Communicable Disease Summary for Lake County	4-55
Table 4.9-1	Lake County Severe Summer Weather Reports (May-October).....	4-58
Table 4.9-2	Lake County Severe Summer Storm Events with Damages (May-October).....	4-59
Table 4.10-1	Historic Earthquakes of Montana and Surround Regions with Magnitudes of 5.5 or Greater Since 1900.....	4-62
Table 4.10-2	Historic Earthquakes in Lake County in the Past 20 Years.....	4-62
Table 4.10-3	Lake County Vulnerability Analysis – Earthquake (40-50%g PGA).....	4-65
Table 4.11-1	High Hazard Dams in and with the Potential to Impact Lake County.....	4-68
Table 4.11-2	Lake County Vulnerability Analysis - Dam Failure.....	4-73

TABLE OF CONTENTS (continued)**LIST OF TABLES (continued)**

Table 4.12-1	Hazard Vulnerability Summary; Lake County	4-75
Table 4.12-2	Hazard Vulnerability Summary; City of Polson	4-76
Table 4.12-3	Hazard Vulnerability Summary; City of Ronan.....	4-77
Table 4.12-4	Hazard Vulnerability Summary; Town of St. Ignatius	4-78
Table 4.12-5	Future Development Summary	4-83
Table 5.3-1	Cost-Benefit Scoring Matrix.....	5-3
Table 5.4-1	Lake County Mitigation Strategy	5-4/9
Table 7.3-1	Implementation of Mitigation into Existing Plans and Codes	7-3/4

LIST OF FIGURES

Figure 1	Location Map	3-2
Figure 2	Land Ownership and Population Density.....	3-3
Figure 3	Bridge Inventory	4-3
Figure 4	Commissioner Districts and Census Designations	4-4
Figure 5	Wildfire Risk	4-15
Figure 6A	Hazardous Material and Railroad Accident Buffer	4-23
Figure 6B	Polson - Hazardous Material Buffer.....	4-24
Figure 6C	Ronan - Hazardous Material Buffer	4-25
Figure 6D	St. Ignatius - Hazardous Material Buffer.....	4-26
Figure 6E	Pablo - Hazardous Material Buffer.....	4-27
Figure 7A	Landslide Prone Terrain	4-31
Figure 7B	Highway 35 - Landslide Prone Terrain	4-32
Figure 8A	Flood Prone Terrain	4-48
Figure 8B	Polson - Flood Prone Terrain	4-49
Figure 8C	Ronan - Flood Prone Terrain.....	4-50
Figure 8D	St. Ignatius - Flood Prone Terrain	4-51
Figure 9	Earthquake Risk – Intensity of Ground Shaking.....	4-64
Figure 10A	Dam Inundation Areas	4-69
Figure 10B	Polson - Dam Inundation Areas	4-70
Figure 10C	St. Ignatius - Dam Inundation Areas	4-71
Figure 11A	Hazard Composite with Future Development Projects	4-79
Figure 11B	Polson - Hazard Composite with Future Development Projects	4-80

TABLE OF CONTENTS (continued)

LIST OF FIGURES (continued)

Figure 11C Ronan - Hazard Composite with Future Development Projects..... 4-81
Figure 11D St. Ignatius - Hazard Composite with Future Development Projects 4-82

LIST OF APPENDICES

Appendix A Resolutions

Appendix B Planning Documentation

- Planning Team & Project Stakeholders
- Meeting Announcements
- Meeting Sign-In Sheets
- Meeting Summaries/Presentations
- Planning Team Conference Call Notes

Appendix C Risk Assessment Documentation

- CPRI Summary Table
- Critical Facilities
- Vulnerability Assessment Documentation

Appendix D Mitigation Documentation

- Example Mitigation Projects
- Mitigation Action Plan
- Status of 2005 Mitigation Projects

Appendix E Relevant Plans

LIST OF ACRONYMS

BIA	Bureau of Indian Affairs
CDBG	Community Development Block Grant
CDP	Census Designated Place
CPRI	Calculated Priority Risk Index
CRS	Community Rating System
CSKT	Confederated Salish and Kootenai Tribes
CWPP	Community Wildfire Protection Plan
DES	Disaster and Emergency Services
DFIRM	Digital Flood Insurance Rate Maps
DMA	Disaster Mitigation Act
DNRC	Montana Department of Natural Resources and Conservation
DPHHS	Montana Department of Public Health and Human Services
EAP	Emergency Action Plan
EOC	Emergency Operations Center
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
FEMA	Federal Emergency Management Agency
FIS	Flood Insurance Study
GIS	Geographic Information Systems
HAZUS-MH	Hazards of the United States – Multi-Hazard
HMGP	Hazard Mitigation Grants Program
IBC	International Building Code

LIST OF ACRONYMS (continued)

IFC	International Fire Code
IRC	International Residential Code
LEPC	Local Emergency Planning Committee
MBMG	Montana Bureau of Mines and Geology
MDOR	Montana Department of Revenue
MVP	Mission Valley Power
NCDC	National Climatic Data Center
NFIP	National Flood Insurance Program
NID	National Inventory of Dams
NOAA	National Oceanic and Atmospheric Administration
NRIS	Natural Resource Information System
NWS	National Weather Service
OEM	Office of Emergency Management
PDM	Pre-Disaster Mitigation
PDMC	Pre-Disaster Mitigation Competitive (grants program)
SHELDUS	Spatial Hazard Events and Losses Database for the United States
SHMO	State Hazard Mitigation Officer
TERC	Tribal Emergency Response Commission
TRI	Toxic Release Inventory
USFS	United States Forest Service
USGS	United State Geological Survey
VFD	Volunteer Fire District
WUI	Wildland Urban Interface

1.0 INTRODUCTION

The effects from several natural and man-made hazards may directly impact the safety and wellbeing of residents of Lake County. Historically, Lake County residents have dealt with floods, wildfire, harsh winter storms with extreme cold and blizzards, severe summer storms with damaging thunderstorms, and hazardous material incidents. While most hazards cannot be eliminated, the effects from them can be mitigated.

Lake County completed and adopted a Pre-Disaster Mitigation (PDM) Plan in 2005 to help guide and focus hazard mitigation activities. The County, working together with Tetra Tech Inc., has prepared this update to their PDM Plan update to satisfy the requirement that PDM Plans be updated every five years. The updated Lake County PDM Plan profiles significant hazards to the community and identifies mitigation projects that can reduce those impacts. The purpose of the updated PDM Plan is to promote sound public policy designed to protect residents, critical facilities, infrastructure, private property, and the environment from natural and man-made hazards. The updated Lake County PDM Plan includes resources and information to assist residents, organizations, local government, and others interested in participating in planning for natural and man-made hazards. This 2012 updated PDM Plan supersedes the 2005 PDM Plan.

1.1 AUTHORITY

The Disaster Mitigation Act of 2000 (DMA 2000) (P.L. 106-390) provides an opportunity for States and local governments to take a new and revitalized approach to mitigation planning. DMA 2000 amended the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Act) by repealing the previous Mitigation Planning section (409) and replacing it with a new Mitigation Planning section (322). This new section emphasizes the need for State and local entities to closely coordinate mitigation planning and implementation efforts. To implement the DMA 2000 planning requirements, the Federal Emergency Management Agency (FEMA) published an Interim Final Rule in the Federal Register on February 26, 2002. This rule (44 CFR Part 201) established the mitigation planning requirements for States and local communities.

The Lake County PDM Plan update has been developed pursuant to the requirements in the Interim Final Rule for hazard mitigation planning and the guidance in the State and Local Plan Interim Criteria under DMA 2000. The Plan also meets guidance developed by FEMA in June of 2008 for Multi-Jurisdictional Mitigation Planning.

The Lake County Board of County Commissioners has adopted this PDM Plan. Also adopting the Plan are the incorporated communities of Polson, Ronan, and St. Ignatius. These governing bodies have the authority to promote sound public policy regarding natural and man-made hazards in their jurisdictions. Copies of the signed resolutions are included as **Appendix A** to this plan. The PDM Plan was adopted at

the regularly scheduled County Commission and City/Town Council meetings, which were open to the public and advertised through the typical process the jurisdictions use for publicizing meetings.

Lake County will be responsible for submitting the adopted PDM Plan to FEMA for review. Upon acceptance by FEMA, Lake County and the incorporated communities of Polson, Ronan, and St. Ignatius will remain eligible for mitigation project grants and post-disaster hazard mitigation grant projects.

1.2 ACKNOWLEDGEMENTS

Many groups and individuals have contributed to development of the Lake County PDM Plan. The Lake County Office of Emergency Management (OEM) provided support for all aspects of plan development including providing digital locations and insurance values for the critical facilities and infrastructure used in the PDM analysis. The PDM Planning Team met on a regular basis to guide the project, identify the hazards most threatening to the County, develop and prioritize mitigation projects, review draft deliverables and attend the public meetings. The local communities participated in the planning process by attending public meetings and contributed to plan development by reviewing and commenting on the draft plan.

1.3 SCOPE AND PLAN ORGANIZATION

The process followed to prepare the Lake County PDM Plan update included the following:

- Review and prioritize disaster events that are most probable and destructive,
- Update and identify new critical facilities,
- Review and update areas within the community that are most vulnerable,
- Update and identify new goals for reducing the effects of a disaster event,
- Review and identify new projects to be implemented for each goal,
- Review and identify new procedures for monitoring progress and updating the PDM Plan,
- Review the draft PDM Plan, and
- Adopt the updated PDM Plan.

The PDM Plan is organized into sections that describe the planning process (Section 2), community profile (Section 3), risk assessment (Section 4), mitigation strategies (Section 5), a capability assessment (Section 6), and plan maintenance (Section 7). Appendices containing supporting information are included at the end of the plan.

2.0 PLANNING PROCESS

The updated Lake County PDM Plan is the result of a collaborative effort between Lake County, the incorporated communities of Polson, Ronan, and St. Ignatius, utilities, local agencies, non-profit organizations, businesses, and regional, state and federal agencies. The planning effort was facilitated by the contractor, Tetra Tech. Public participation played a key role in development of goals and mitigation projects, as outlined below. For the purposes of this planning effort, the public is defined as residents of Lake County, local departments, state and federal agencies that support activities in the County, and neighboring communities and local partners.

2.1 MITIGATION PLANNING TEAM

The Lake County OEM Director requested a committee of local government leaders and interested members of the public to assist with development of the PDM Plan. These individuals are listed in **Appendix B**. Participants involved with the PDM Planning Team are presented in **Table 2.1-1**.

Organization	Type of Organization
Century Link	Utility
Confederated Salish & Kootenai Disaster & Emergency Services	Tribal Government
Lake County Commission	County Government
Lake County Office of Emergency Management	County Government
Lake County Planning Dept. & Floodplain Administrator	County Government
Lake County Public Health	County Government
Montana Disaster & Emergency Services, District 1 Rep.	State Government
Polson Street Department	City Government
Ronan Water Dept. and Fire	City Government

Responsibilities of the Planning Team included attending conference calls to discuss plan development, providing data for analysis in the risk assessment, attending public meetings, providing input and feedback on mitigation strategies, review of the draft plan document, and supporting the plan throughout the adoption process. The PDM Planning Team will assist the Lake County OEM Director in updating the plan in the future.

Conference calls were held with the Planning Team while the plan was being drafted. In advance of each meeting, an agenda and/or materials to be discussed (i.e. example mitigation strategies, examples of project eligible for FEMA funding, etc.) were sent to meeting participants. Conference call minutes are presented in **Appendix B**.

During the kick-off meeting and subsequent conference calls, the Planning Team reviewed and analyzed each section of the 2005 PDM plan, as described in **Table 2.1-2**.

2005 PDM Sections	How Reviewed and Analyzed
Section 1 - Introduction	Reviewed existing section through discussion at kick-off meeting. No analysis needed.
Section 2 - Planning Process	Reviewed and analyzed existing section through discussion at kick-off meeting. Planning process expanded by utilizing project website and scoring hazards using Calculated Priority Risk Index.
Section 3 – Hazard Evaluation and Risk Assessment	Reviewed and analyzed existing section through discussion during kick-off meeting and Planning Team conference calls. Reviewed and updated hazards, critical facilities and vulnerable populations. Updated section with recent hazard data.
Section 4 - Mitigation Strategy	Reviewed by Planning Team during the course of kick-off meeting and subsequent conference calls. New projects developed, existing projects re-worded and/or deleted, completed projects documented.
Section 5 - Plan Maintenance Procedures	Reviewed and analyzed existing section through discussion during kick-off meeting and Planning Team conference calls. Determined that plan maintenance procedures outlined in previous plan had not been implemented.

2.2 PROJECT STAKEHOLDERS

The planning process was initiated by preparing a stakeholders list of individuals whose input was needed to help prepare the PDM Plan. Planning partners on the stakeholders list received a variety of information during the project including meeting notices, documents for review, and the draft mitigation strategy. **Appendix B** presents the stakeholders list for this project.

On the County level, project stakeholders included representatives from: the County Commission, OEM, Planning Department, Planning Board, Public Health Department, Road Dept., Sheriff's office, Environmental Health, the Floodplain Administrator, Geographic Information System (GIS) Coordinator, and Ambulance. These entities participated in the planning process by either providing data, attending public meetings, and/or reviewing the draft PDM Plan.

Stakeholders from the Cities of Polson and Ronan, and the Town of St. Ignatius included: the Mayors, City/Town Council member, Clerks, Planning Departments, Volunteer Fire Departments, Police Departments, Building Departments, Water and Sewer Departments, and Street (Public Works) Departments. These entities participated in the planning process by either providing data, attending public meetings, and/or reviewing the draft PDM Plan.

Stakeholders from federal agencies included representatives from: the National Weather Service (NWS), and the Bureau of Indian Affairs (BIA) Safety of Dams and Fire Management. These entities participated in the planning process by either providing data, and/or reviewing the draft PDM Plan.

Stakeholders from state agencies included representatives from: the Montana Department of Transportation, Montana Department of Natural Resources and Conservation (DNRC) and the Montana Disaster and Emergency Services (DES) District 1 Representative. These entities participated in the planning process by attending the public meetings and/or reviewing the draft PDM Plan.

Utilities invited to participate in the planning process included: Century Link, Mission Valley Power, and PPL Montana. These entities participated in the planning process by either providing data, attending the public meetings, and/or reviewing the draft PDM Plan.

Non-governmental stakeholders including non-profits and businesses consisted of representatives from the American Red Cross and local media. These entities attended the public meetings.

Planning partners from adjoining towns and counties included: the Flathead County Office of Emergency Services, Sanders County OEM, and the Confederated Salish and Kootenai Tribes Disaster and Emergency Services (DES). On the County level, these entities did not offer input on the PDM Plan update. The CSKT provided data for analysis and attended the public meetings.

2.3 REVIEW OF EXISTING PLANS AND STUDIES

At the initiation of the PDM updating project, planning documents and studies completed for the project area were provided to the contractor to review in order to determine how mitigation could be integrated into this planning process and future local planning mechanisms and programs. Contributing plans/ordinances provided to the contractor included:

DAMS

- Emergency Action Plan, Black Lake Dam
- Emergency Action Plan, Jocko Dam
- Emergency Action Plan, Kerr Dam
- Emergency Action Plan, Kicking Horse Dam
- Emergency Action Plan, Lower Crow Dam
- Emergency Action Plan, McDonald Dam
- Emergency Action Plan, Mission Dam
- Emergency Action Plan, Ninepipe Dam
- Emergency Action Plan, Pablo Dam
- Emergency Action Plan, Tabor Dam
- Emergency Action Plan, Upper Dry Fork Dam (Sanders County)
- Emergency Action Plan, Lower Dry Fork Dam (Sanders County)
- Emergency Action Plan, Hungry Horse Dam (Flathead County)

EMERGENCY OPERATIONS

- Lake County Emergency Operations Plan, Hazard Specific Annexes

FLOODPLAIN STUDIES

- Flood Insurance Study, Lake County, 1987

GROWTH POLICIES, ORDINANCES & REGULATIONS

- Lake County Growth Policy, 2003
- Lake County Floodplain Regulations, 1991
- Lake County Subdivision Regulations, 2010
- Lakeshore Protection Regulations
- City of Polson Growth Policy, 2006
- City of Polson Subdivision Regulations, 2005
- City of Polson Development Code, 2010
- City of Polson Zoning Ordinance
- City of Ronan Growth Policy, 2008
- City of Ronan, Zoning Ordinance, 2008
- Town of St. Ignatius Growth Policy, 2001

HAZARD MITIGATION

- Lake County Pre-Disaster Mitigation Plan, 2005
- Lake County Community Wildfire Protection Plan, 2005

The data obtained from the plan and regulation review was incorporated into various sections of the PDM Plan. *Section 4.0* contains reference to the plans and ordinances affecting management of the hazard. *Section 7.3* includes a discussion on how mitigation can be implemented through existing programs.

2.4 PROJECT WEBSITE

A website was setup at the start of the project to provide information to project stakeholders and the citizens of Lake County. The project website can be viewed at: www.lake-sanders-cskt-pdm.com. The website remained active during the course of the project through adoption of the plan.

The website contained a Home page and pages for: Contacts, Planning Team, Meetings and Presentations, Plan Document, References, and Stakeholders. The Home page contained a letter inviting participation in development of the plan. The Contacts page contained information on Tetra Tech and County personnel involved in management of the project. The Planning Team page contained maps for the Planning Team and other materials for review prior to the conference calls. The Meetings and Presentations page contained the conference call and public meeting schedule, notes, and PowerPoint presentations from the meetings. The Plan page contained sections from the draft plan for stakeholder review. The References page contained the 2005 Lake County PDM Plan, FEMA guidance on preparing multi-jurisdictional hazard mitigation plans, the FEMA Region 8 Crosswalk, and weblinks to the State of Montana Hazard Mitigation Plan and Statewide Hazard Assessment, Montana DES and FEMA websites. The Stakeholders page contained contact information for the Planning Team and a list of the project stakeholders. Each page of the website had a comment field where viewers could log in their issues or

concerns. The project website will be available through adoption of the PDM Plan at which time it may be linked to the Lake County website.

2.5 PROJECT MEETINGS

Four public meetings were conducted during initial plan development: a project kick-off meeting where hazards were identified and three meetings to present the draft results of the risk assessment. Sign-in sheets, presentation materials and meeting notes are contained in **Appendix B** and posted on the project website.

A project kick-off meeting was held on December 14, 2011 in Polson at the Fairgrounds Station Meeting Room. The meeting was advertised in the November 30th edition of the Valley Journal and on the project website. A meeting notice was also sent via e-mail to all project stakeholders. Tetra Tech made a presentation at the meetings which reviewed each section of the 2005 mitigation plan, outlined the background and rationale for updating the PDM Plan, the process and methodology for the plan update, and the project schedule. The meeting presentation was placed on the project website for stakeholders who could not attend the meeting (**Appendix B**). The Planning Team was established at the kick-off meeting from local agency and department representatives at the meeting. Approximately 18 individuals participated in the meeting including representatives from: Lake County OEM, the County Public Health Dept., County Planning Dept., Sheriff's Office, and County Commission; the Polson Fire Dept., Polson Police Dept. and Polson City Manager; the State DES District 1 Representative; utilities including Century Link, PPL Montana, and Mission Valley Power; the American Red Cross; and, two members of the public.

A public meeting was held on May 15, 2012 to review the draft PDM Plan in Polson at the Fairgrounds Station Meeting Room. Notice of the meeting was sent to the project stakeholders list, advertised in the May 2nd edition of the Valley Journal, and listed on the project website. Tetra Tech presented preliminary results of the risk assessment at the meeting as well as the draft mitigation strategy. The public was asked what specific mitigation measures that could reduce property loss and human suffering in the county. Nine individuals attended the public meeting including a County Commissioner, the County OEM Director, CSKT DES Coordinator, individuals from the County Planning Dept., County Health Dept., County Road Department, City of Polson Police Dept., and a FEMA representative. Most public meeting attendees networked before and after the meeting, listened to the presentation, asked questions, and recommended mitigation projects be added to the strategy.

Two additional meetings were held in the Town of St. Ignatius to review the draft PDM Plan. PDM presentations were held on September 26, 2012 at a meeting of the St. Ignatius Joint Rural and City Fire Department and on October 2, 2012 at a regularly scheduled meeting of the St. Ignatius Town Council which was advertised to the public. OEM Director Steve Stanley chaired both meetings and in attendance were a total of 21 individuals from the Town of St. Ignatius. The PDM Plan was discussed

with those present at the meetings; specifically, why it is in place, what it does, and the reason for the review. Meeting participants were encouraged to contact Mr. Stanley with any suggestions or questions regarding the plan.

2.6 PLAN REVIEW

The planning process for the PDM Plan began on October 1, 2011 and lasted approximately 12 months. The public was provided at least two opportunities for comment prior to adoption of the plan. The first opportunity was during the drafting process. An advertisement was run in the local newspaper notifying the public of the availability of the draft PDM Plan and that review copies were available in hard copy, electronically on compact disk (CD) upon request, or accessible via the project website. A hard copy of the PDM Plan was available for review at the Lake County OEM office. An e-mail announcement was sent to the project stakeholders list announcing the availability of the draft PDM Plan for review with instructions on how to comment.

The draft document was produced with line numbers to aid in the review process. Reviewers were asked to submit their comments on the draft plan to the Lake County OEM office or via the project website after a 30-day review period. The Lake County OEM Director reviewed the comments and in consultation with the Planning Team submitted a consolidated list of comments to the contractor. Comments were incorporated into a final draft document and the PDM Plan was submitted to the State Hazard Mitigation Officer (SHMO) and FEMA for compliance with the Region 8 Crosswalk.

Comments received from the SHMO and the FEMA were addressed and the final plan was produced and posted to the project website. At this point a second opportunity was provided to the public to comment on the PDM Plan. The final plan was posted on the project website and stakeholders were notified of its availability via an e-mail message and press release in the local newspaper. Final comments were addressed in a second plan revision and the final plan was posted on the project website and provided to the Lake County Commissioners and the incorporated communities of Polson, Ronan, and St. Ignatius for adoption. After adoption, final copies of the plan were submitted to the SHMO and FEMA.

Future comments on the PDM Plan should be addressed to:

Lake County Office of Emergency Management
25-C Regatta Road
Polson, MT 59860
(406) 883-7253

3.0 COMMUNITY PROFILE

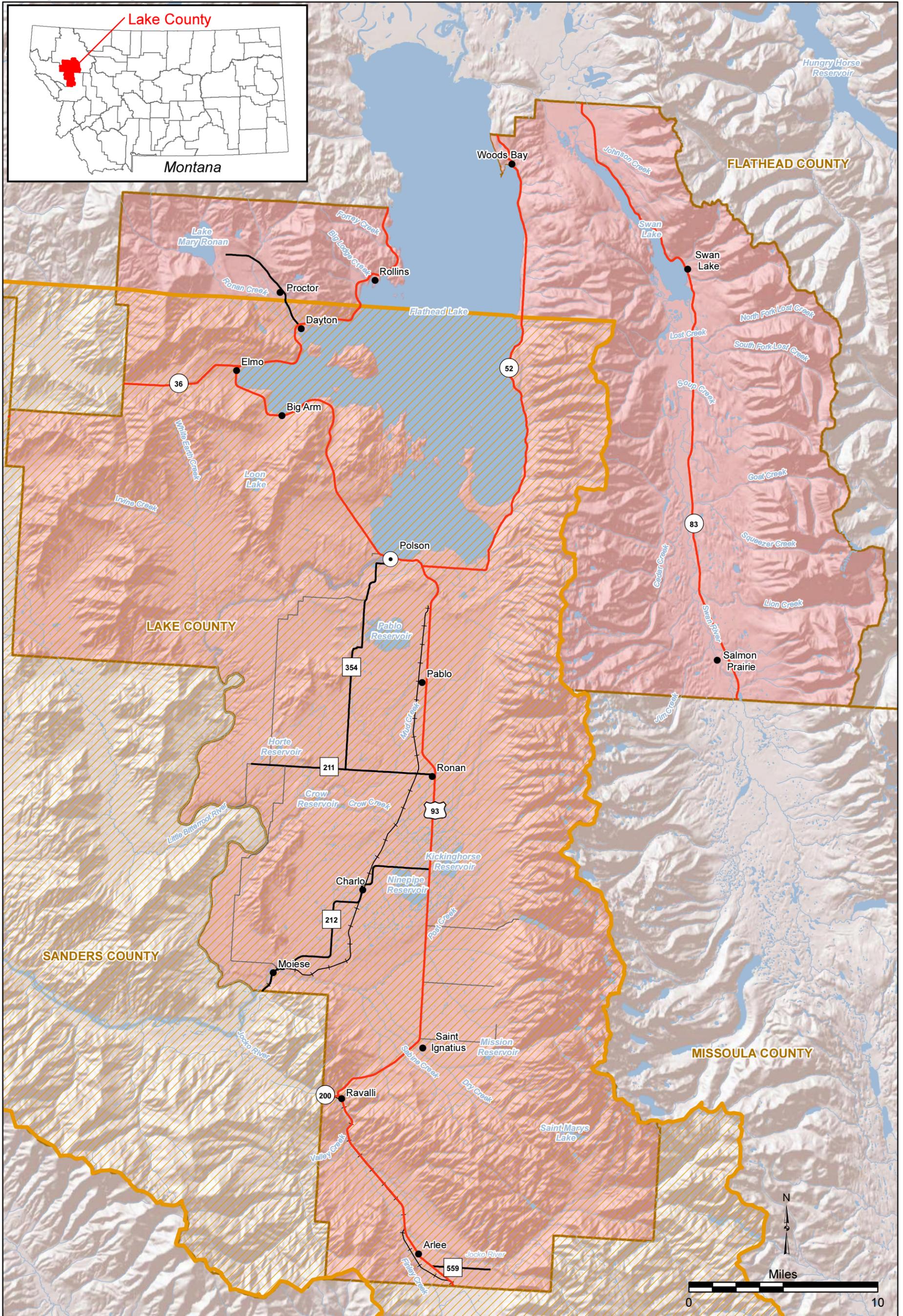
3.1 PHYSICAL SETTING

Located in northwestern Montana, Lake County has a land area of 1,494 square miles and is bounded by Sanders County to the west, Flathead County to the north, and Missoula County to the east and south. Lake County is home to the Confederated Salish and Kootenai Tribes (CSKT) of the Flathead Nation. Polson is the county seat and incorporated communities include Ronan and St. Ignatius. Flathead Lake, the largest fresh water lake west of the Mississippi, is located within Lake County. Kerr Dam is located on the southwestern tip of Flathead Lake on the Flathead River. The Flathead River flows into the Clark Fork River downstream from the dam. **Figure 1** presents a location map of Lake County.

The eastern part of Lake County is characterized by the steeply sloping west face of the Swan Range and the Mission Mountains. The western reaches of Lake County contain the Salish Range, which is lower in elevation, and also has steep slopes. The central portion of Lake County is characterized by broad glaciated valleys with alluvial fans, stream terraces, rough badlands along the Flathead River and the west face of the Mission Mountains. Elevations in the county range from approximately 2,900 feet to 9,800 feet above sea level. The city of Polson is located on the valley floor at about 2,900 feet above sea level. McDonald Peak, located approximately 10 miles straight-line distance northeast of St. Ignatius, is the tallest peak in the county at approximately 9, 800 feet.

Lake County is situated at the southern end of the Flathead Basin, a watershed that drains approximately six million acres of northwestern Montana and southeastern British Columbia. Waters from this basin flow into the Clark Fork River and eventually into the Columbia River. The most prominent surface water features in Lake County are the southern two-thirds of Flathead Lake, the Flathead River, Swan Lake, the Swan River, Mission Creek, Post Creek, the Jocko River and Lake Mary Ronan. Other sizeable lakes include McDonald, Loon and St. Mary's Lakes. Lake County also contains several large reservoirs, including Pablo, Kicking Horse, Lower Crow, Mission and Ninepipe, and numerous small reservoirs which are important for wildlife and agriculture.

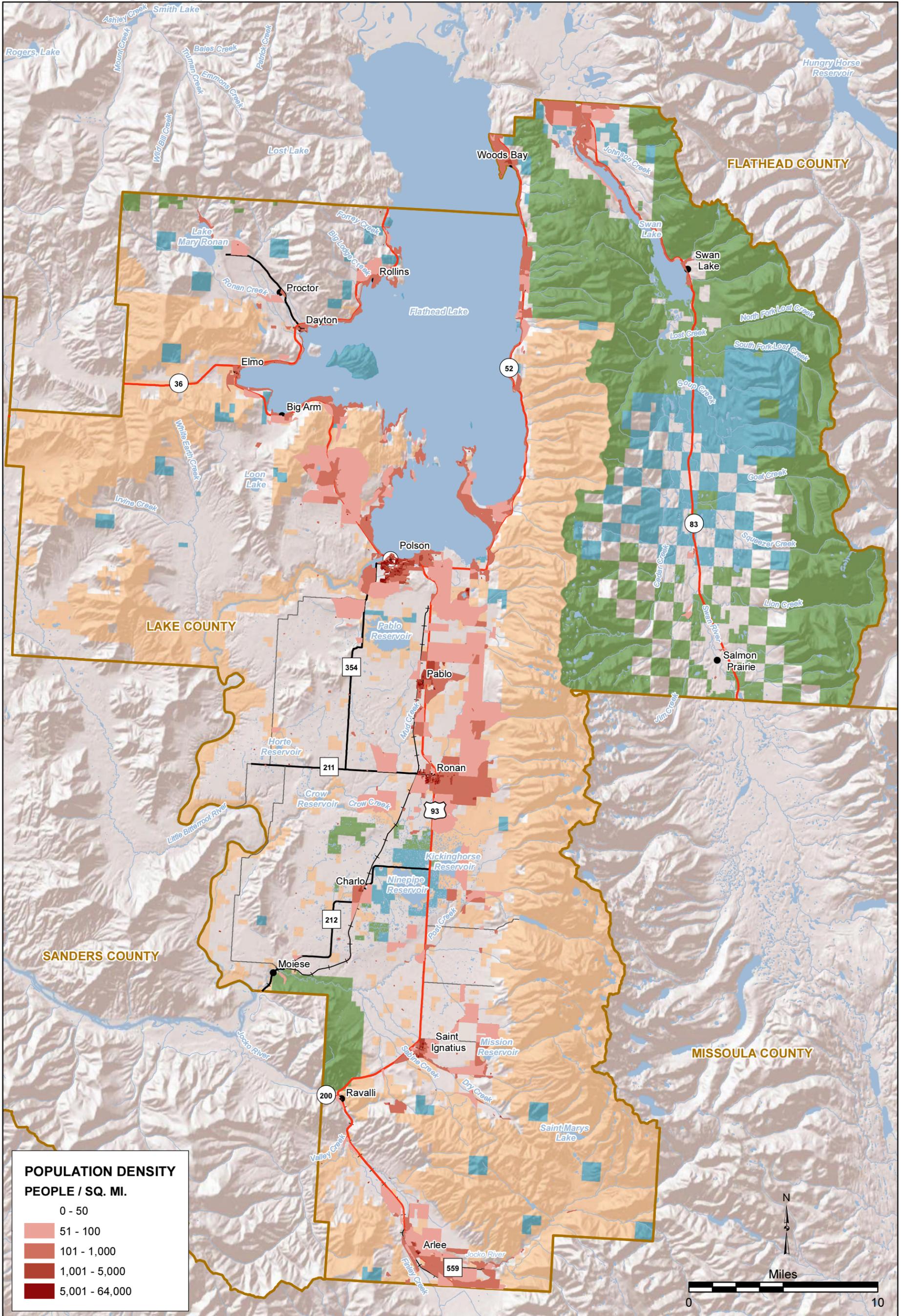
There are a number of large landowners within the Lake County boundaries. The Tribes are the largest single landowner (30.4 percent), followed by the federal government (17.8 percent), the State of Montana (6.2 percent) and Plum Creek Timber (6 percent). The Forest Service owns large blocks of timberland along the west front of the Swan Range and the eastern side of the Missions off of the reservation. Lakes and streams cover approximately 100,000 acres of Lake County, or 9.4 percent of the total area. According to the 2010 census, Lake County has 19.3 persons per square mile compared to 6.8 for the State of Montana. **Figure 2** presents ownership and population density in Lake County.



- County Seat
- Place Names
- ▭ County
- ▨ Flathead Indian Reservation
- ~ Rivers
- ☪ Lake/Reservoir
- Primary Route
- Secondary Route
- Other Route
- +— Railroad

May 2012
Figure 1
Location Map
Lake County
Pre-Disaster Mitigation Plan





3.2 CLIMATE

Western Montana, like the remainder of the northwest U.S., is heavily influenced by the predominant mid-latitude westerly flow aloft. Storm systems embedded in this flow are most frequent and potent in the winter and spring months, and with convection increasing during the warm spring. May and June are typically the wettest months.

The complex terrain also plays a big role in amount and distribution of precipitation. Uplift over the terrain causes increased amounts in the mountains, while down slope drying can greatly reduce amounts in the valleys depending on the flow direction. Therefore, the mountains in western Montana generally receive in excess of 50 inches of water equivalent precipitation annually, while the major valleys get less than 20 inches a year. The Mission Mountains in Lake County are particularly good orographic precipitation producers with annual amounts exceeding 80 inches.

Temperatures are relatively mild in western Montana compared to locations east of the Continental Divide. Arctic intrusions do occur from the north and east generally a few times every winter, but the cold air rarely lasts long due to the usually active flow from the west. During these arctic events, however, temperatures can drop well below zero. Summers can be hot in the valleys. While average highs are in the 80s in July and August, individual days often rise into the 90s and even low 100s. Flathead Lake does tend to moderate temperatures somewhat in Lake County (a little warmer at night and cooler during the day) but the influence generally extends only a few miles from shore. **Table 3.2-1** presents a summary of top weather events in Polson.

Hottest Days		Coldest Days		Wettest Days	
104° F	7/19/1960	-30° F	1/31/1950	2.00 inches	5/30/1985
104° F	7/28/1934	-27° F	2/17/1936	2.50 inches	6/8/1964
104° F	7/16/1919	-27° F	2/16/1936	2.43 inches	6/20/1916
102° F	7/6/2007	-26° F	1/27/1957	2.30 inches	7/3/2000
		-26° F	1/26/1957		
Wettest Years		Driest Years		Longest Dry Spells	
21.61 inches	2010	10.17 inches	1931	50 days	1910
21.39 inches	1947	10.38 inches	1952	46 days	1926
20.94 inches	1916	10.55 inches	1939	44 days	1955
20.68 inches	1951	10.77 inches	1928	43 days	1922
20.31 inches	1915	11.01 inches	1960	42 days	1914

Source: National Weather Service, 2012

3.3 CRITICAL FACILITIES AND INFRASTRUCTURE

Critical facilities are of particular concern because they 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 include: 911 emergency call centers, emergency operations centers, police and fire stations, public works facilities, sewer and water facilities, hospitals and shelters; and facilities that, if damaged, could cause serious secondary impacts (i.e., hazardous material facilities). 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 the jail, law enforcement center, public services buildings, senior centers, community corrections center, the courthouse, and juvenile services building and other public facilities such as hospitals, nursing homes and schools.

Critical facilities in Lake County are identified in **Appendix C**. Replacement value were collected where readily available; however, time and resource constraints prohibited the collection of values for all structures. A GIS layer of the critical facilities was used in the hazard risk assessment. This GIS layer should be updated on a regular basis for use in future analysis. It should be noted that many of the municipal water sources are missing from the critical facility layer with the exception of the City of Ronan and Tribal facilities. This data should be collected for future updates of this Plan. Further details on Lake County's critical facilities and infrastructure are presented below.

Water and Wastewater Services

According to the Lake County Growth Policy (2003), the municipalities of Polson, Ronan, and St. Ignatius have municipal water systems. Citizens of Charlo and Pablo have formed water districts to operate the existing water systems. The community of Arlee and residents of the Sheaver's Creek area (Woods Bay) have formed water districts to finance water system improvements. Most of the rural residences in Lake County have individual wells, but some residents use surface water from Flathead Lake or local creeks as their water source. The CSKT Housing Authority operates 14 water systems in reservation communities that serve both Tribal and non-Tribal members.

According to the Lake County Growth Policy (2003), Most of the rural residents in Lake County use individual sewage disposal systems (septic tanks and drainfields) for sewage disposal. A number of municipal and public wastewater treatment systems exist in Lake County and more are in the planning stages. The City of Polson's topography requires that all sewage generated in Polson be pumped to the treatment system. The treatment plant consists of three aerated lagoons, a polishing pond, and a surface discharge of treated effluent to the Flathead River. The City of Ronan sewage treatment includes a three-cell aerated lagoon that is discharged into Crow Creek.

The Town of St. Ignatius has a single-cell aerated lagoon with a settling pond that is discharged into Matt Creek. The area north of Mission Creek is served by the town sewer system while the area south of Mission Creek is on a Tribal sewer system. The citizens of Arlee have formed a sewer district to construct facilities in that community. The Charlo Sewer District operates a three acre, single-cell aerated lagoon that discharges into Mission Creek. A number of tribal wastewater treatment systems are also present in Lake County (Lake County Growth Policy, 2003).

Utilities

Mission Valley Power (MVP), located in Pablo, is a federally-owned utility that is operated under contract by the CSKT. MVP provides electricity to all of Lake County within the reservation borders. The utility owns the power distribution network and relies on hydroelectric power sources including Kerr Dam, located on the Flathead River and operated by PPL Montana and the Boulder Creek Hydroelectric Project, built by the Tribes.

There is no natural gas service in Lake County. Two electric cooperatives provide service in the county to areas that are located outside of reservation boundaries. Missoula Electric Cooperative serves the area in south Swan Valley while north Swan Valley and the area north of Dayton and the Rollins area are served by Flathead Electric Cooperative.

Public Safety

The Lake County Sheriff's Department is the primary public safety agency for Lake County. The department is divided into patrol, investigative, and administrative units, in addition to a reserve force of 15-20 volunteers. The Sheriff's Department runs a 911 call center with ten dispatch officers. The center fields calls from the entire county and routes them to appropriate state, city, and Tribal law enforcement agencies. The Polson Police Department and CSKT Law and Order Department also provide law enforcement services.

Twelve (12) volunteer fire protection districts (VFDs) provide fire protection throughout Lake County. The incorporated cities of Polson, Ronan and St. Ignatius provide fire protection within the corporate limits, as well as the surrounding rural districts. The Polson Fire District has a substation in Big Arm. The smallest district is Swan Lake with 12 volunteers. Most of the districts have between 20 to 30 volunteers. The Polson Fire Chief/Marshall holds a full-time paid position. All of the fire districts and the wildland fire protection agencies belong to the Lake County Rural Fire Association.

The Polson Fire Department provides fire protection, public education, fire prevention, and code management to the citizens of Polson and the surrounding 129 square miles. The department operates out of two fire stations. St. Ignatius is served by three full time police officers, as well as county police, tribal police and state highway patrol officers when the need arises.

3.4 POPULATION AND CITY EXPANSION TRENDS

According to the 2010 U.S. Census, Lake County is the 9th most populous county in Montana with a population of 28,746. Lake County is more densely populated than Montana as a whole. The average population density of Lake County is 19.3 people per square mile, while the average population density of Montana is 6.8 people per square mile. **Table 3.4-1** illustrates the change in population in Lake County compared to the State of Montana and United States.

Year	Lake County Population	% change from previous census	State of Montana Population	% change from previous census	United States Population	% change from previous census
2010	28,746	8%	989,415	9%	308,745,538	9%
2000	26,507	21%	902,190	11%	281,424,602	12%
1990	21,041	9%	799,065	2%	248,709,873	9%
1980	19,056	24%	786,690	12%	226,542,199	10%
1970	14,445	9%	694,409	3%	203,302,031	12%

Source: Montana Census and Economic Information Center, 2011

Approximately 25 percent of Lake County's population lives within the incorporated communities of Polson, Ronan and St. Ignatius and 75 percent lives in the unincorporated areas of Arlee, Charlo, Pablo, Woods Bay, Elmo, Big Arm, Dayton, Rollins, Swan Lake, Finley Point and Ravalli. According to the 2010 U.S. Census, Polson is the State's 18th largest city, with a population of 4,488. **Table 3.4-2** presents population statistics for the incorporated communities within Lake County and the Census Designated Places (CDP).

City/Town or CDP	1970	1980	% Change Since Last Census	1990	% Change Since Last Census	2000	% Change Since Last Census	2010	% Change Since Last Census
Arlee CDP	-	-	-	489	-	602	18.8%	636	5.3%
Bear Dance CDP	-	-	-	-	-	-	-	275	
Big Arm CDP	-	-	-	-	-	131	-	177	26.0%
Charlo CDP	-	-	-	358	-	439	18.5%	379	-15.8%
Dayton CDP	-	-	-	-	-	95	-	84	-13.1%
Elmo CDP	-	-	-	-	-	143	-	180	20.6%
Finley Point CDP	-	-	-	395	-	493	19.9%	480	-2.7%
Jette CDP	-	-	-	-	-	267	-	253	-5.5%
Kerr CDP	-	-	-	-	-	17	-	251	93.2%
Kicking Horse CDP	-	-	-	281	-	80	-251.3%	286	72.0%
King's Point CDP	-	-	-	-	-	169	-	151	-11.9%
Lake Mary Ronan CDP	-	-	-	-	-	-	-	65	
Lindisfarne CDP	-	-	-	-	-	-	-	284	
Pablo CDP	-	-	-	1,298	-	1,814	28.4%	2,254	19.5%
Polson	2,464	2,798	11.9%	3,291	15.0%	4,041	18.6%	4,488	10.0%
Ravalli CDP	-	-	-	-	-	119	-	76	-56.6%

City/Town or CDP	1970	1980	% Change Since Last Census	1990	% Change Since Last Census	2000	% Change Since Last Census	2010	% Change Since Last Census
Rocky Point CDP	-	-	-	-	-	107	-	97	-10.3%
Rollins CDP	-	-	-	-	-	183	-	209	12.4%
Ronan	1,347	1,530	12.0%	1,547	1.1%	1,812	14.6%	1,871	3.2%
St. Ignatius	925	877	-5.5%	778	-12.7%	788	1.3%	778	-1.3%
Swan Lake CDP	-	-	-	-	-	-	-	113	
Turtle Lake CDP	-	-	-	-	-	194	-	209	7.2%
Woods Bay CDP	-	-	-	-	-	748	-	661	-13.2%

Notes: CDP = Census Designated Place; -- = data not available; Changes in Place population between years may be due to population growth or decline, due to significant boundary changes, or a combination of factors.

Source: U.S. Census Bureau, 2011

In 1979, the Polson city boundaries encompassed 838 acres. By 1990, the city had expanded to cover 1,152 acres, a 37 percent increase over the previous ten-year period. Between 1990 and 2000, the city grew by 50 percent to encompass 1,733 acres. Between 1990 and 2000, the city extended its boundaries to the northeast along the lakeshore and along Highway 35. The city also expanded to the east, the southeast, and the west along the Flathead River (Polson Growth Policy, 2006).

3.5 HOUSING STOCK

The U.S. Census estimates that in 2000, Lake County had 13,605 housing units. The median value of the occupied housing units was \$17,200. A further breakdown of the housing units from the census is presented in **Table 3.5-1**. Housing data from the 2010 census was not yet available at the time of this writing and should be included in the 2017 update of the Lake County PDM Plan.

	Lake County	Polson	Ronan	St. Ignatius
Total Number of Housing Units	13,605	1,938	762	331
Median Value of Housing Units	\$17,200	\$88,100	\$83,100	\$75,600
Year Structure Built				
1999 to March 2000	426	43	5	7
1995 to 1998	1,315	164	53	4
1990 to 1994	1,408	223	50	13
1980 to 1989	2,408	308	119	61
1970 to 1979	3,156	390	163	54
1960 to 1969	1,642	255	77	64
1940 to 1959	1,579	279	158	73
1939 or earlier	1,671	276	137	55

3.6 ECONOMY AND SOCIOECONOMICS

According to the Lake County Growth Policy (2003), farming and ranching, forestry, local and tribal governments and tourism all figure significantly in the economy of Lake County. The three largest commerce centers are Polson, Ronan and St. Ignatius, all of which are bisected by Highway 93. **Table 3.6.1** presents the top private employers in Lake County in 2009 as well as other economic indicators.

Indicator	State of Montana (2009 data)	Lake County (2009 data)	Polson (2000 data)	Ronan (2000 data)	St. Ignatius (2000 data)
Per capita income	\$22,881	\$19,357	\$13,777	\$11,678	\$12,336
Median household income	\$42,222	\$35,888	\$21,870	\$22,422	\$25,682
Persons living below poverty level	15.0%	20.9%	19.8%	24.8%	19.5%
Number of private non-farm establishments (2008)	36,326	825	--	--	--
Top private employers in Lake County (including railroad and government) (2009 data)	St. Luke Community Hospital, Jore Corp., Mission Mountain Enterprises, St. Joseph Hospital, Super 1 Foods, Wal-Mart, Community Bank, Drs Technical Svc, McDonald's of Polson & Ronan, Mission Valley Power, S&K Electronics, Safeway				

Source: MT Dept. Labor, Research & Analysis Bureau & MT Dept. Commerce, Census and Economic Information Center

Major Polson employers currently include the area school districts, the CSKT, various construction contractors, Mission Valley Power, the hospital, and city, county, and Tribal governments. Some Polson residents work primarily out of their homes and travel only periodically to their place of business. However, the current local job market tends to be cyclical and seasonal in nature (City of Polson Growth Policy, 2006).

According to the Montana Department of Labor, the unemployment rate in Lake County was 8.4 percent in 2009. The State labor numbers show that out of Lake County's civilian workforce of 11,354, there were 10,395 individuals with jobs and 959 individuals were unemployed. The U.S. Census Bureau estimated that in 2009, 20.9 percent of the County population was living below the poverty level.

3.7 LAND USE AND FUTURE DEVELOPMENT

The majority of land in Lake County has historically been, and continues to be, used for agricultural (crop and livestock production) and timber production. Croplands primarily produce small grains and hay. Native rangeland and planted pastures provide forage for livestock. Livestock obtain water from dugout impoundments, wells, and surface water. According to the Lake County Growth Policy, if commodity prices do not rise and stabilize in the coming years, Lake County is likely to see far fewer viable agricultural operations and more subdivisions and ranchettes. Additionally, the U.S. Forest Service, which manages a large portion of the land in the Swan Valley, has reduced the timber yields on its lands in recent years.

While much of the commercial/industrial development is located within the limits of Polson and Ronan, development has crept north and south of both due to exposure along the highway. In general, retail businesses are located in the centers of the communities, while light manufacturing, mini storage, some services and retail sales such as auto dealers are located at and beyond the edges of the communities. Due to the volume of recreational traffic using and passing through Lake County there are many gas and convenience-type stores located along U.S. Highway 93, particularly around Polson.

According to the Lake County Growth Policy (2003), recent development has been concentrated along the Highway 93 corridor from Arlee to Polson, on the east and west shores of Flathead Lake and in the northern Swan Valley. From 1993-2002, more than 1,600 new lots were recorded in Lake County. Approximately 400 of these were created outside of the subdivision process.

3.7.1 Land Use Implementation Tools

Lake County currently employs a number of regulations and policies to provide for safe and sound development. Industrial, commercial and residential land use is managed with floodplain, subdivision, lakeshore protection, sanitation and zoning regulations in accordance with guidelines set forth in the county and city growth policies. Building codes also play an important role to ensure structures are constructed to safety standards.

Lake County does not review development proposals on Tribal lands (land held in individual or tribal trust status). The Tribes have a planner who coordinates review with the tribal environmental and cultural programs and the Tribal Council.

Growth Policies

Lake County adopted a Growth Policy in 2003 to help address growth pressures. Growth policies were also completed to guide land use decisions in the Cities of Polson (2006) and Ronan (2008), and Town of St. Ignatius (2001). Details from these growth policies as they apply to hazard mitigation are summarized in the section below.

The **Lake County Growth Policy** has a goal and objective consistent with mitigation of the wildfire hazard:

Natural Resources Goal 8: Protect lives and property from damage caused by wildfire.

- Work with fire district personnel, land managers and the public to strengthen standards for residential development in the urban-wildland interface including requiring mitigation measures when appropriate.
- Compile and distribute best management practices to landowners.

The **City of Polson Growth Policy** identifies two goals and objectives consistent with mitigation of the landslide and transportation accident/hazardous material incident hazards.

Goal 2: Identify appropriate areas for outward expansion.

- Require engineered designs in areas with steep slope or erodible soil.

Goal 17: Address the community's need for a U.S. 93 bypass.

- Engage in community discussions to determine level of support for a U.S. 93 bypass.
- Consider appropriate development restrictions to preserve a potential U.S. 93 bypass corridor.

The **City of Ronan Growth Policy** identifies one goal and objective consistent with mitigation of the flood hazard.

Goal 20: Restore segments of Spring Creek as resources allow and map the 100-year floodplain.

- Seek to have the 100-year floodplain delineated to protect life and property as a part of the Highway 93 upgrade and/or through other measures.
- Ensure that proposed development along Spring Creek does not increase flood levels or result in loss of life and property.

Town of **St. Ignatius Growth Policy**

Goals & Objectives

- Protect and maintain the natural character and function of the Mission Creek floodplain by prohibiting development in established floodplain areas.
- Develop policies to protect life and property from hazards associated with characteristics of geology, soils, topography and groundwater based on current measureable technical parameters; maintain the natural characteristics of these areas to the avoidance of known hazards.

Policies - Surface Water

- To reduce risk of flood damage and to protect our streams and wetlands, new development shall be situated away from surface water and floodplains and shall incorporate measures to protect them.

Zoning Ordinances

Zoning is a tool used by local government to control and direct land use in communities, in order to protect the public health, safety and welfare. Development within areas of Lake County and the

incorporated communities of Polson, Ronan, and St. Ignatius are subject to municipal zoning regulations. Generally, the zoning regulations outline specific areas for residential, commercial, and industrial development. Details from these regulations, as appropriate, are presented in the hazard profiles in *Section 4*.

The Lake County Planning Department maintains 10 zoned areas in addition to the incorporated areas; seven of these areas are located on Flathead Lake, two on Swan Lake and one on Lake Mary Ronan. Other areas of the county are not zoned, except as outlined in the Polson Development Code. The City of Ronan's Growth Policy (2008) states that existing zoning codes lacks flexibility and is outdated. Zoning is referenced in the St. Ignatius Growth Policy as the tool used to prevent development in the floodplain and on steep slopes.

Subdivision Regulations

Landowners wishing to subdivide tracts of land in or out of incorporated cities must follow the subdivision regulation process outlined by the respective communities (Polson or Ronan) and the Lake County Subdivision Regulations. Details from these regulations are presented in the hazard profiles in *Section 4*. Lake County's regulations do not provide oversight on nontribal land in the unincorporated areas. Polson subdivision regulations are addressed in the City's Development Code. Up until recently, the Town of St. Ignatius has followed the Lake County Subdivision Regulations.

Building Codes

Building codes are also a tool to control future development. The main purpose of building codes are to protect public health, safety and general welfare as they relate to the construction and occupancy of buildings and structures. They comprise a set of rules that specify the minimum acceptable level of safety for buildings and often contain requirements for snow and wind loads, roof construction, and seismic risk. Building codes are generally intended to be applied by architects and engineers, but are also used by building inspectors. Building codes have not been adopted by Lake County or the communities of Polson, Ronan, or St. Ignatius. The State of Montana's Building Codes are used in lieu of local codes.

Development Codes

The City of Polson adopted a Development Code in 2010 to promote the health, safety, and general welfare of the people of Polson and the County by implementing the applicable goals, objectives and policies of the Polson and Lake County Growth Policies. The Development Code establishes zoning districts in the city and surrounding county jurisdictional area; adopts an official zoning map; provides for permitted and special permit land uses; and includes specification and performance standards for each district. It also establishes the requirement for a permit for all land development and building

activity in the city and surrounding jurisdictional area; and establishes procedures for the administration of the zoning regulations. In addition, the Building Code establishes the rules, procedures and requirements for the subdivision of land. Subdivision regulations in the Polson Development Code are consistent with those in the Lake County Subdivision Regulations.

Floodplain Regulations

The Lake County Floodplain Regulations were adopted in 1991 in order to comply with the Montana Floodplain and Floodway Management Act. The regulations apply only to nontribal land held in fee status within the 100-year floodplain of any river or stream in the county that was recognized during the FEMA's 1987 flood insurance study. The regulations require a permit for development work within the floodplain and prohibit residential, commercial or industrial structures and development that is likely to increase a flood's velocity and volume. Details from these regulations are presented in the flooding profile in *Section 4*.

Lakeshore Protection Regulations

Lake County's Lakeshore Protection Regulations were designed to help protect the water quality of Swan Lake, Flathead Lake and Lake Mary Ronan by establishing a permit process that governs the type and extent of work that can take place in their immediate vicinity. On the Flathead Reservation, the regulations apply to the area from the high water mark of Flathead Lake to 20 feet landward. (The Tribes are responsible for the bed of the lake to the high water mark.) Off the Reservation, the Lakeshore Protection Regulations include the bed of lakes and cover the area 20 feet inland from the high water mark.

3.7.2 Future Development

As Lake County and the incorporated communities choose appropriate areas for future growth, factors to consider include the location and relative vulnerability of natural resources and current agricultural land uses. In addition to resource concerns, future growth may be shaped by the area's suitability for development in terms of slope and flood risk. Because Polson is bounded on the north by Flathead Lake, residential development will likely continue to spread to the west, southwest, south, southeast, and east of the city. Development could also expand to the northwest and northeast along the shoreline of Flathead Lake.

With continued revitalization efforts, the central Polson business district could strengthen and expand. The two commercial/industrial districts located in the city center and along the east bank of the Flathead River are logical areas for future development. Sites along U.S. 93 will likely continue to host future developments, especially tourism-related businesses. The City of Polson is working in partnership

with the CSKT to develop recreational opportunities at Salish Point featuring lake-based activities, picnic grounds, open space, and trail components.

According to the Lake County Environmental Health Department, the entire west shore of Flathead lake, the area from Polson to Ronan, the Finley Point area, and especially the Woods Bay and Ferndale areas are receiving the most dramatic growth pressures outside of the incorporated areas. Infill development within the cities and towns on land already served by sewer and water along will likely occur in addition to outward expansion where no environmental constraints exist. Large agricultural or vacant parcels along U.S. Highway 93 and Montana Highway 35 may be suitable for future commercial and industrial development but land use conflicts could exist.

Plum Creek Timber owns and manages approximately 64,000 acres of timberlands in Lake County. Plum Creek's largest local holding is in the Swan Valley, which totals 40,000 acres of checkerboard lands. In the Lake Mary Ronan area, Plum Creek also has 24,000 acres. Plum Creek typically manages its holdings for long term timber production and permits the public to use them for recreation. It also assesses lands to determine the "highest and best use." In some cases, this assessment has shown that recreation and residential development are higher than the values for timber production. When this occurs, the company may sell land, as it recently did in the Swan Valley.

4.0 RISK ASSESSMENT AND VULNERABILITY ANALYSIS

Lake County is exposed to many hazards both natural and man-made. A risk assessment and vulnerability analysis was completed to help identify where mitigation measures could reduce loss of life or damage to property in the County.

This section includes a description of the risk assessment methodology and a hazard profile for 10 hazards organized from high to low by county priority: wildfire, transportation accidents (including hazardous material incidents), landslides, structure fire, severe winter weather, flooding, communicable disease, severe summer weather, earthquakes, and dam failure. The section is concluded with a risk assessment summary and discussion on the location of future development projects. Supporting documentation is presented in **Appendix C**.

4.1 RISK ASSESSMENT METHODOLOGY

A risk assessment was conducted to address requirements of the DMA 2000 for evaluating the risk to Lake County from natural and man-made hazards. DMA 2000 requires measuring potential losses to critical facilities and property resulting from natural hazards by assessing the vulnerability of these facilities to natural hazards. In addition to the requirements of DMA 2000, the risk assessment approach taken in this study evaluated risks to vulnerable populations and also examined the risk presented by several man-made hazards. The goal of the risk assessment process is to determine which hazards present the greatest risk and what areas are the most vulnerable to hazards.

The risk assessment approach used for this plan entailed using geographic information system (GIS) software and data to develop vulnerability models for people, structures, critical facilities, and evaluating those vulnerabilities in relation to hazard profiles that model where hazards exist. This type of approach to risk assessment is dependent on the detail and accuracy of the data used during the analysis. Additionally, some types of hazards are extremely difficult to model. Data limitations are described in *Section 4.1.7*.

4.1.1 Critical Facilities and Building Stock

Critical facilities were mapped using coordinates provided by Lake County. Mapping of these facilities allowed for the comparison of their location to the hazard areas where such hazards are spatially recognized. Construction type of critical facilities (e.g. steel, wood, masonry, etc.) has not been compiled and was therefore, not considered in the analysis. This data should be collected for future updates of this plan.

Infrastructure, including bridges, water and wastewater facilities, and communication sites had digital mapping available and were therefore included in the analysis. Bridge data was obtained from the

Montana Natural Resource Information System (NRIS) transportation GIS layer while other data was obtained from the County. Replacement values of critical facilities were used in the risk assessment as this information was readily available from the county, cities, towns and school districts. Bridge replacement values were extrapolated using unit costs (developed by Lewis and Clark County) for span length and width. **Figure 3** presents the bridge locations in Lake County.

Building stock data was obtained from the Montana Department of Revenue's (MDOR) cadastral mapping program. This system spatially recognizes land parcels within the county with a distinction between residential and other properties. Appraised building values are available on the parcel level and were used to determine exposure. The "other" building type includes all properties not designated as residential and in this study and consists of commercial, agricultural and industrial properties. Data used for this analysis was from 2012. The analysis for this project only included "fee" land and therefore, did not include developments on the Flathead Reservation that are in trust to the CSKT.

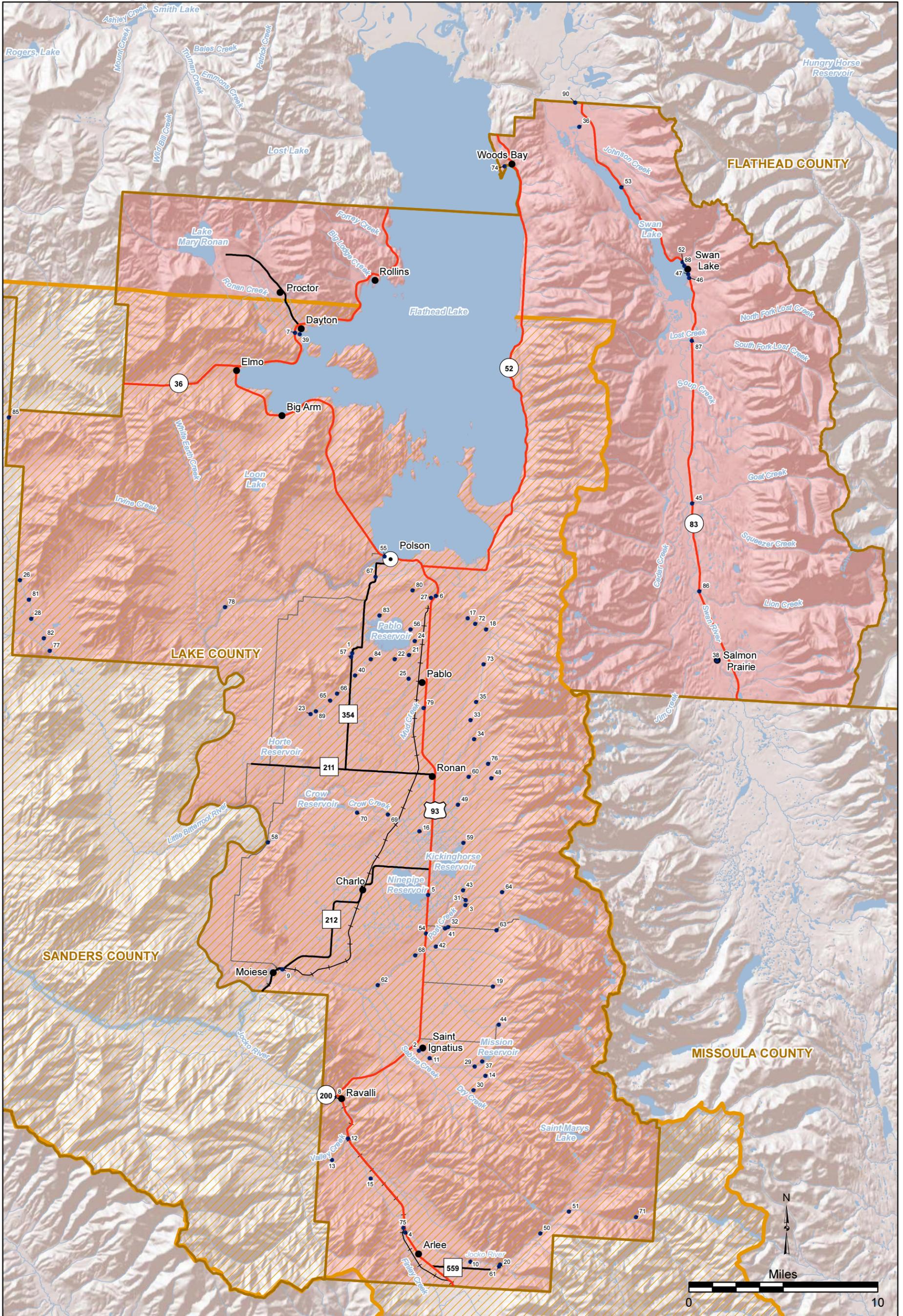
Building exposure in the risk assessment is presented in accordance with the three County Commissioner districts. The county also has 20 census designated places (see **Table 3.5-2**) in addition to the three incorporated towns. A census-designated place is a concentration of population identified by the U.S. Census Bureau for statistical purposes. CDPs are populated areas that lack separate municipal government, but which otherwise physically resemble incorporated places. **Figure 4** presents the reporting areas used for the PDM risk assessment.

4.1.2 Vulnerable Population

Data from the 2010 census was used in the analysis to determine vulnerable populations at risk in the hazard areas, as available. Census data was downloaded from the U. S. Census Bureau's website. Downloaded data included total population (by census block) and number of individuals under the age of 18 for the incorporated communities, the county, CDPs, and Commissioner Districts. Data for populations over the age of 65 and for individuals living below the poverty level were not yet available for Census 2010; therefore, this information should be included in the 2017 PDM Plan update.

4.1.3 Hazard Identification

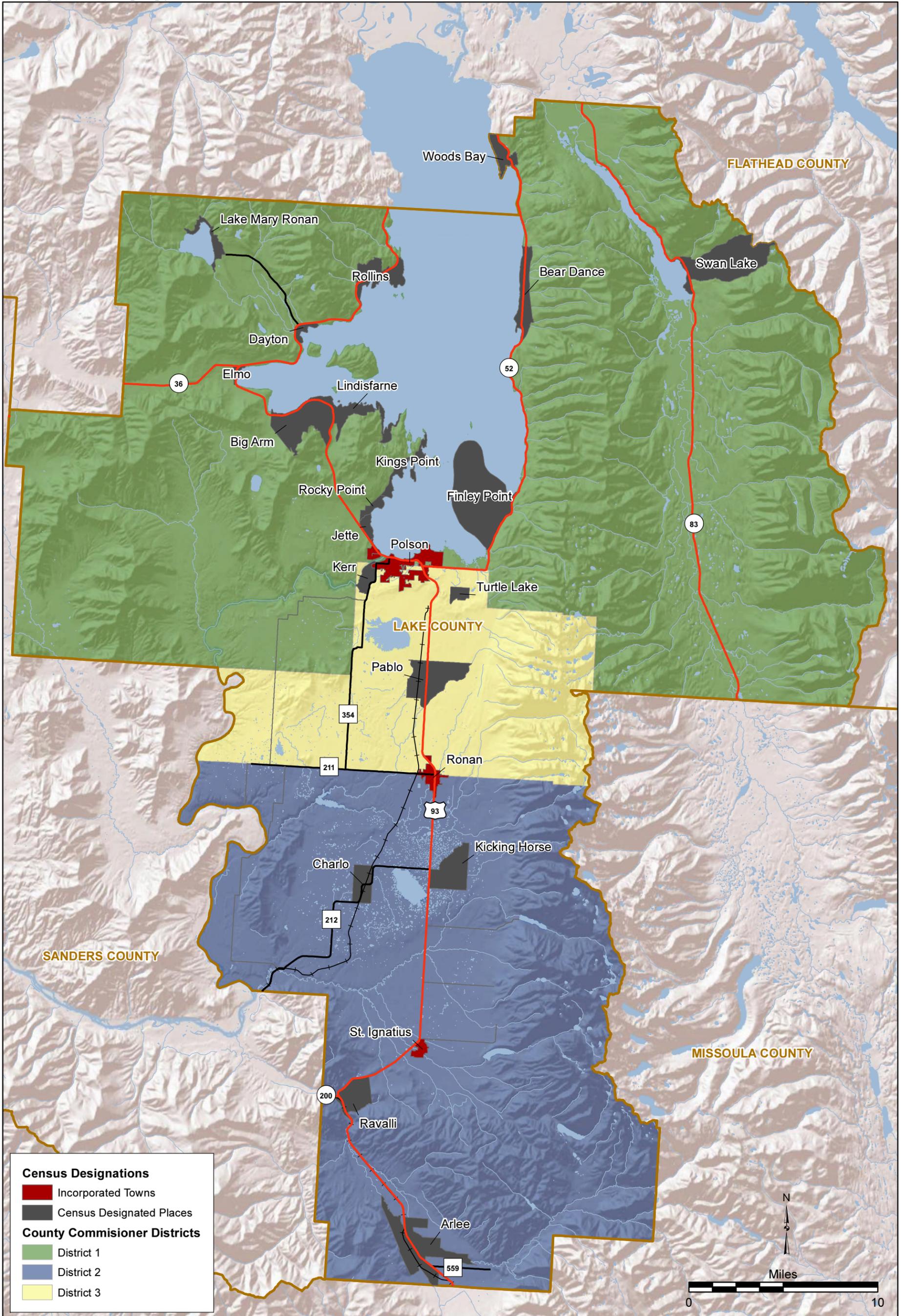
The 2005 PDM Plan identified 11 hazards affecting Lake County (floods, winter storms, wildfire, rain-hail-wind, human-caused technological hazards (terrorism, hazardous material incidents), dam failure, drought, vector-borne diseases, food-borne diseases, earthquake, and civil unrest. Hazards for the 2012 PDM update were identified by the Planning Team who reviewed a history of past events in the County that were compiled from: internet research, available GIS data, public meeting input, past disaster declarations, the 2005 PDM Plan and the State of Montana Multi-Hazard Mitigation Plan.



- Bridges (ID #)
- County Seat
- Place Names
- County
- ▨ Flathead Indian Reservation
- Rivers
- Lake/Reservoir
- Primary Route
- Secondary Route
- Other Route
- Railroad



May 2012
Figure 3
Bridge Inventory
Lake County
Pre-Disaster Mitigation Plan



May 2012
 Figure 4
Census Designations
Lake County
 Pre-Disaster Mitigation Plan

Hazards included in the 2012 update generally included those profiled in the 2005 PDM Plan with the consolidation of vector-borne and food-borne diseases under the communicable disease hazard, hazardous material incidents under the transportation accident hazard, and the rain-hail-wind hazard under severe summer weather. It was determined that the drought and civil unrest hazards should not be carried forward in the 2012 PDM Plan because these hazards do not frequently impact Lake County residents and/or are managed at the State and Federal levels. Several additional hazards are profiled in the 2012 Lake County Plan including structure fire, transportation accidents, and landslides. Hazards in the 2012 update were re-ranked using the Calculated Priority Ranking Index (CPRI) presented in Table 4.1.1 (see *Section 4.1.5*).

4.1.4 Hazard Profiles

Hazard profiles were prepared for each of the identified hazards and are presented within this section according to their prioritized rank (see *Section 4.1.6*). The level of detail for each hazard is generally limited by the amount of data available.

Each hazard profile contains a description of the hazard and the history of occurrence, the vulnerability and area of impact, the probability and magnitude of future events, and an evaluation of how future development is being managed to reduce risk. The methodology used to analyze each of these topics is further described below.

Description and History

A number of databases were used to describe and compile the history of hazard events profiled in this plan. This data was supplemented by input from the public, local officials, newspaper accounts, and internet research. The two primary databases used included the National Climatic Data Center (NCDC) Storm Events Database and Spatial Hazard Events and Losses Database for the United States (SHELDUS).

The NCDC Storm Events database receives Storm Data from the National Weather Service. The NWS service receives their information from a variety of sources, including county, state and federal emergency management officials, local law enforcement officials, skywarn spotters, NWS damage surveys, newspaper clipping services, the insurance industry and the general public. Storm Data is an official publication of the National Oceanic and Atmospheric Administration (NOAA) which documents the occurrence of storms and other significant weather phenomena having sufficient intensity to cause loss of life, injuries, significant property damage, and/or disruption to commerce.

SHELDUS is a county-level hazard data set for the United States for 18 different natural hazard events types. For each event the database includes the date, location, property losses, crop losses, injuries, and fatalities that affected each county. The database includes every loss causing and/or deadly event

between 1960 through 1975 and from 1995 onward. Between 1976 and 1995, SHELDUS reflects only events that caused at least one fatality or more than \$50,000 in property or crop damages.

Vulnerability and Area of Impact

Vulnerabilities are described in terms of critical facilities, structures, population, and socioeconomic values that can be affected by the hazard event. Hazard impact areas describe the geographic extent a hazard can impact a jurisdiction and are uniquely defined on a hazard-by-hazard basis. Mapping of the hazards, where spatial differences exist, allows for hazard analysis by geographic location. Some hazards can have varying levels of risk based on location. Other hazards cover larger geographic areas and affect the area uniformly.

Probability and Magnitude

Probability of a hazard event occurring in the future was assessed based on hazard frequency over a 100 year period. Hazard frequency was based on the number of times the hazard event occurred divided by the period of record. If the hazard lacked a definitive historical record, the probability was assessed qualitatively based on regional history and other contributing factors. Probability was broken down as follows:

- Highly Likely – greater than 1 event per year (frequency greater than 1).
- Likely – less than 1 event per year but greater than 1 event every 10 years (frequency greater than 0.1 but less than 1).
- Possible – less than 1 event every 10 years but greater than 1 event every 100 years (frequency greater than 0.01 but less than 0.1).
- Unlikely – less than 1 event every 100 years (frequency less than 0.01)

The magnitude or severity of potential hazard events was evaluated for each hazard. Magnitude is a measure of the strength of a hazard event and is usually determined using technical measures specific to the hazard. Magnitude was calculated for each hazard where property damage data was available. Magnitude is:

- $(\text{Property Damage} / \text{Number of Incidents}) / \text{\$ of Building Stock Exposure} = \text{Magnitude expressed as a percentage.}$

Future Development

The impact to future development was assessed based on potential opportunities to limit or regulate development in hazardous areas such as zoning and subdivision regulations. The impacts were assessed through a narrative on how future development could be impacted by the hazard. Plans, ordinances

and/or codes currently in place were identified that could be revised to better protect future development in the county from damage caused by natural and man-made hazards.

4.1.5 Hazard Ranking and Priorities

In ranking the hazards, the Planning Team completed a Calculated Priority Risk Index (CPRI) Work Sheet for each hazard. The CPRI examines four criteria for each hazard (probability, magnitude/severity, warning time, and duration); the risk index for each according to four levels, then applies a weighting factor (**Table 4.1-1**). The result is a score that has been used to rank the hazards. Each hazard profile presents its CPRI score with a cumulative score sheet included in **Appendix C. Table 4.1-2** presents the results of the CPRI scoring for all hazards.

TABLE 4.1-1
CALCULATED PRIORITY RISK INDEX

CPRI Category	Degree of Risk			Assigned Weighting Factor
	Level ID	Description	Index Value	
Probability	Unlikely	<ul style="list-style-type: none"> Rare with no documented history of occurrences or events. Annual probability of less than 0.01. 	1	45%
	Possibly	<ul style="list-style-type: none"> Infrequent occurrences with at least one documented or anecdotal historic event. Annual probability that is between 0.1 and 0.01. 	2	
	Likely	<ul style="list-style-type: none"> Frequent occurrences with at least two or more documented historic events. Annual probability that is between 1 and 0.1. 	3	
	Highly Likely	<ul style="list-style-type: none"> Common events with a well documented history of occurrence. Annual probability that is greater than 1. 	4	
Magnitude/Severity	Negligible	<ul style="list-style-type: none"> Negligible property damages (less than 5% of critical and non-critical facilities and infrastructure). Injuries or illnesses are treatable with first aid and there are no deaths. Negligible quality of life lost. Shut down of critical facilities for less than 24 hours. 	1	30%
	Limited	<ul style="list-style-type: none"> Slight property damages (greater than 5% and less than 25% of critical and non-critical facilities and infrastructure). Injuries or illnesses do not result in permanent disability and there are no deaths. Moderate quality of life lost. Shut down of critical facilities for more than 1 day and less than 1 week. 	2	
	Critical	<ul style="list-style-type: none"> Moderate property damages (greater than 25% and less than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and at least one death. Shut down of critical facilities for more than 1 week and less than 1 month. 	3	
	Catastrophic	<ul style="list-style-type: none"> Severe property damages (greater than 50% of critical and non-critical facilities and infrastructure). Injuries or illnesses result in permanent disability and multiple deaths. Shut down of critical facilities for more than 1 month. 	4	
Warning Time	Less than 6 hours	Self explanatory.	4	15%
	6 to 12 hours	Self explanatory.	3	
	12 to 24 hours	Self explanatory.	2	
	More than 24 hours	Self explanatory.	1	
Duration	Less than 6 hours	Self explanatory.	1	10%
	Less than 24 hours	Self explanatory.	2	
	Less than one week	Self explanatory.	3	
	More than one week	Self explanatory.	4	

TABLE 4.1-2 LAKE COUNTY CALCULATED PRIORITY RANKING INDEX SUMMARY					
Hazard	Probability	Magnitude and/or Severity	Warning Time	Duration	CPRI Score
Wildfires	Highly likely	Critical	< 6 hours	> 1 week	3.70
Highway Accident	Highly likely	Limited	< 6 hours	< 24 hours	3.20
Landslides	Likely	Limited	< 6 hours	> 1 week	2.95
Structure Fire	Likely	Limited	< 6 hours	< 24 hours	2.75
Severe Winter Weather	Highly likely	Limited	6-12 hours	< 1 week	2.70
Severe Summer Weather	Likely	Limited	6-12 hours	< 24 hours	2.60
Communicable Disease - Public Health	Possibly	Limited	< 6 hours	> 1 week	2.50
Earthquake	Likely	Negligible	< 6 hours	< 6 hours	2.35
Dam Failure	Unlikely	Critical	< 6 hours	> 1 week	2.35
Railroad Accident	Unlikely	Critical	< 6 hours	> 1 week	2.35
Hazardous Materials Incidents	Possibly	Limited	< 6 hours	< 24 hours	2.30
Volcanic Ash	Unlikely	Critical	6-12 hours	> 1 week	2.20
Flooding	Possibly	Negligible	> 24 hours	> 1 week	1.75
Aircraft Accident	Unlikely	Limited	< 6 hours	< 6 hours	1.75
Terrorism/Violence	Unlikely	Negligible	< 6 hours	< 1 week	1.65
Communicable Disease - Livestock/Ag	Unlikely	Limited	> 24 hours	> 1 week	1.60
Drought	Unlikely	Limited	> 24 hours	> 1 week	1.60

The Calculated Priority Risk Index scoring method has a range from 0 to 4. "0" being the least hazardous and "4" being the most hazardous situation.

The Planning Team determined that five hazards scored using the CPRI should be de-emphasized in the County's PDM Plan for the reasons cited below:

- Volcanic Ash – Hazard does not often occur and not likely to significantly impact the County.
- Aircraft Accidents – Hazard not likely to cause mass casualties when occurring in the County.
- Terrorism/Violence – Significant events are not likely to occur in the County.
- Communicable Disease-Livestock/Agriculture – Hazard not likely to impact the County.
- Drought – Mitigation of this hazard managed under State and Federal programs.

These hazards will not be further addressed in the body of this Plan.

The Planning Team felt that with the CPRI ranking did not accurately represent the County's priorities; therefore, the list of hazards was re-prioritized as shown below. The remainder of this section contains the hazard profiles in this order.

- 1 – Wildfire (*Plan Section 4.2*)
- 2 – Transportation Accidents including Hazardous Material Incidents (*Plan Section 4.3*)
- 3 – Landslides (*Plan Section 4.4*)
- 4 – Structure Fire (*Plan Section 4.5*)
- 5 – Severe Winter Weather (*Plan Section 4.6*)
- 6 – Flooding (*Plan Section 4.7*)
- 7 – Communicable Disease (*Plan Section 4.8*)
- 8 – Severe Summer Weather (*Plan Section 4.9*)
- 9 – Earthquakes (*Plan Section 4.10*)
- 10 – Dam Failure (*Plan Section 4.11*)

4.1.6 Assessing Vulnerability – Estimating Potential Losses

The methodology used in the vulnerability analysis presents a quantitative assessment of the building stock, population, and critical facility exposure to the individual hazards. Building stock data, available from the Montana Department of Revenue's cadastral mapping program was used in the analysis. This data spatially recognizes land parcels along with the appraised value of building stock. Using GIS, hazard risk areas were intersected with the building stock data to identify the number of structures and exposure due to each hazard. Using GIS, hazard risk areas were also intersected with critical facility data to determine the number and exposure of critical facilities to each hazard. Various infrastructure (e.g. water systems, wastewater systems) were analyzed as part of the critical facility vulnerability analysis. A separate analysis was completed for the county's bridges.

Population exposure was computed using data from the 2010 census and the percentage of the census blocks located in each hazard area. Population exposure is reported according to total population living in the hazard area and a subset of this data, individuals under the age of 18 years. Using GIS, total population for the census blocks was intersected with the hazard maps to determine the population at risk. It should be noted that there are some inherent inaccuracies using this approach. Using a percentage of census block population to compute the number of individuals living in the hazard area may include more persons than actually reside in the hazard area where census blocks are large.

For hazards that are uniform across the jurisdiction (i.e. severe summer weather, structure fires, and severe winter weather) the methodology presented below was used to determine annualized property loss.

- Exposure x Frequency x Magnitude

Where:

- Exposure = building stock, vulnerable population, or critical facilities at risk

- Frequency = annual number of events determined by calculating the number of hazard events / period of record
- Magnitude = percent of damage expected calculated by: (property damage/# incidents)/ building stock or critical facility exposure

For hazards that are not uniform across the jurisdiction and instead occur in specific areas (e.g. flooding, wildfire, hazardous material incidents, dam failure, etc.) the hazard area factored into the loss estimation calculations.

For hazards without documented property damage, magnitude could not be calculated and therefore, only the exposure of the building stock or population was computed. Annualized loss estimates cannot be calculated without property damage using this risk assessment approach.

4.1.7 Data Limitations

Risk assessment results are only a general representation of potential vulnerabilities and there are many inherent inaccuracies with the risk assessment methodology used. Output is only as good as the data sources used and Lake County may wish to consider alternate data for future PDM Plan updates.

The remainder of this section presents hazard profiles organized by County priority followed by a risk assessment summary. Loss estimates, where applicable, are summarized at the end of this section.

4.2 WILDFIRE**CPRI SCORE = 3.7**Description and History

A wildfire is an unplanned fire, a term which includes grass fires, forest fires and scrub fires, both man-caused and natural in origin. Severe wildfire conditions have historically represented a threat of potential destruction within the region. Negative impacts of wildfire include loss of life, property and resource damage or destruction, severe emotional crisis, widespread economic impact, disrupted and fiscally impacted government services, and environmental degradation.

Wildfire risk is the potential for a wildfire to adversely affect things that residents value- lives, homes, or ecological functions and attributes. Wildfire risk in a particular area is a combination of the chance that a wildfire will start in or reach that area and the potential loss of human values if it does. Human activities, weather patterns, wildfire fuels, values potentially threatened by fire, and the availability (or lack) of resources to suppress a fire all contribute to wildfire risk. Summer in Lake County typically brings the fire season, the result of low rainfall, high temperatures, low humidity, and thunderstorms with lightning. However, major wildfires can occur at any time of the year. Varied topography, semi-arid climate, and numerous human-related sources of ignition make this possible.

In the past 20 years, Lake County has witnessed a number of wildfires that have destroyed property and affected wildlife habitat, scenic resources, and air quality. **Table 4.2-1** presents a summary of the wildfires on the Flathead Reservation (in Lake, Sanders, and Missoula Counties) over the past 38 years indicating a total of 4,043 fires that burned 174,281 acres. **Table 4.2-2** presents the wildfires in Lake County over 10 acres from 1980 to 2011 reported by the Montana DNRC indicating the number of structures burned and saved (where this data is available).

Year	# of Fires	Total Acres	Year	# of Fires	Total Acres	Year	# of Fires	Total Acres
1973	98	1771.5	1986	64	2,105.8	1999	210	3,047.9
1974	88	985.8	1987	43	72.4	2000	152	24,415.5
1975	34	35.6	1988	57	163.6	2001	163	1,890.9
1976	45	105.4	1989	40	422.3	2002	204	2,557.8
1977	67	89.3	1990	73	169.6	2003	243	13,132.6
1978	20	9.7	1991	50	169.8	2004	93	7,982
1979	62	253.9	1992	53	1120.4	2005	85	14,728.2
1980	36	43.3	1993	42	32.4	2006	372	7,977.6
1981	82	336	1994	88	15,203.4	2007	156	43,846
1982	34	59.5	1995	50	732.7	2008	284	14,241.5
1983	23	42.8	1996	45	1,505.5	2009	194	2,170.3
1984	55	158.9	1997	84	800	2010	153	8,636
1985	36	450	1998	153	3,560	2011	214	265.3

Source: CSKT, 2012

TABLE 4.2-2 MONTANA DNRC REPORTED WILDFIRES OVER 10 ACRES IN LAKE COUNTY, 1980-2010					
Date	Name	Size in Acres	Homes & Outbuildings Lost	Homes Saved	Outbuildings Saved
8/27/1984	Red Owl	934	0	-	-
5/10/1987	Unit 10	19	0	-	-
8/17/1988	Squeezer Face	52	0	-	-
8/9/1994	Soupy Ridge	65	0	-	-
5/3/1998	Goat Creek	235	0	-	-
6/20/1999	Hog Heaven	12	0	-	-
11/11/2001	Salmon Prairie	17	0	-	-
7/13/2007	Indian Springs	17	0	1	5
5/12/2007	Salmon Prairie	18	0	1	2

Source: Montana Department of Natural Resources and Conservation, 2012

Wildfire disasters were declared in Lake County in 1994 and 2000. State-wide wildfire disasters have been declared in 1979, 1988, 1991, 1992, 1996, 1998, 1999 and 2003 (DMA, 2011).

In Lake County there are three wildland fire protection entities: the U.S. Forest Service (USFS), DNRC, and the Tribe Division of Fire. The Tribal Division of Fire, located in Ronan, has an agreement with the State to provide protection on forested fee land. The Tribal unit also provides training for local fire departments. These entities and coordination with the 13 Volunteer Fire Districts (VFDs) provides for efficient wildland fire protection in Lake County.

Vulnerability and Area of Impact

Fire suppression has changed the vegetation patterns, structure, and composition of forests. Therefore, the role that fire plays in these ecosystems has also been altered. The last decade in Lake County has seen new homes and other structures built near and around national forests. Should fires occur, these structures within the wildland-urban interface (WUI) are very vulnerable. The WUI is defined as the line, area, or zone where structures and other human development meet or intermingle with undeveloped wildland or vegetative fuels. A WUI exists anywhere that structures are located close to natural vegetation and where a fire can spread from vegetation to structures, or vice versa. A WUI can vary from a large housing development adjacent to natural vegetation to a structure or structures surrounded by vegetation. As people, homes, and structures continue to occupy the WUI and as hazard fuels continue to accumulate, a high risk and volatile situation needs to be addressed. Long periods of warm dry summer weather combined with lightning storms are often causes associated with wildfire. Risks associated with wildfire relate to fuels, slope, orientation, access, the availability of an adequate water supply, the availability of trained personnel and fire apparatus and resource values (i.e., natural resources and property).

Homes are often located at the forest edge or in the forest itself; built out of flammable materials (wood siding and other flammable materials); constructed near the end of gulches with only one escape route or on steep hillsides with narrow, winding roads; and built on lands without adequate water. While the site or building material may be chosen for its aesthetic merit, it often has few or none of the qualities essential for the safety of both the home and its occupants in the event of a fire.

Problems with wildfire occur when combined with the human environment. People and structures near wildfires are threatened unless adequately protected through evacuation or mitigation. Most structures are flammable, and therefore, are threatened when wildfire approaches. In addition, a significant loss of life could occur to residents, firefighters, and others who are in the wildfire area and do not evacuate. Infrastructure such as electric transmission lines, fuel tanks, and radio transmission towers are not often equipped to withstand the heat from a wildfire. Timber resources, animal habitats, and waterways can all be damaged leading to negative economic and environmental impacts.

There is a changing complexion in the ownership of private forest land holdings which could result in subdivisions and new housing developments in the WUI. The DNRC has started inventorying fire risk in the Swan Valley and in interface areas around Lake Mary Ronan, along the east shore of Flathead Lake, and along the west shore of Flathead Lake in the Rollins area. Recent actions along the Mission Front and in the Jette area to reduce the likelihood of catastrophic wildfire include fuel thinning and controlled burns.

Lake County has a non-regulatory Community Wildfire Protection Plan (CWPP) and diligent efforts are underway to reduce the wildfire hazard through education and fuel reduction projects. **Appendix E** contains a copy of the Lake County CWPP. Mitigation projects identified in this plan are incorporated herein by reference.

Probability and Magnitude

Property damage is difficult to obtain for wildfires since it is typically the forest resource that sustains the damage. DNRC has collected data on structure loss from wildfires since 2003 (**Table 4.2-2**). This source indicates that in the past 10 years, wildfire has not claimed any residential structures in Lake County.

Table 4.2-3 presents the wildfire events in Lake County with reported property damages from the DES database of State and Federal disaster declarations.

TABLE 4.2-3 LAKE COUNTY WILDFIRE EVENTS WITH DAMAGES				
Date	Injuries	Fatalities	Property Damage	Remarks
1994	--	--	\$340,245*	Presidential Declaration
2000	--	--	\$1,831,472*	Presidential Declaration
TOTAL			\$2,171,717	

* Prorated amount for multi-county Presidential Disaster Declaration adjusted for inflation.

Source: DES, 2011

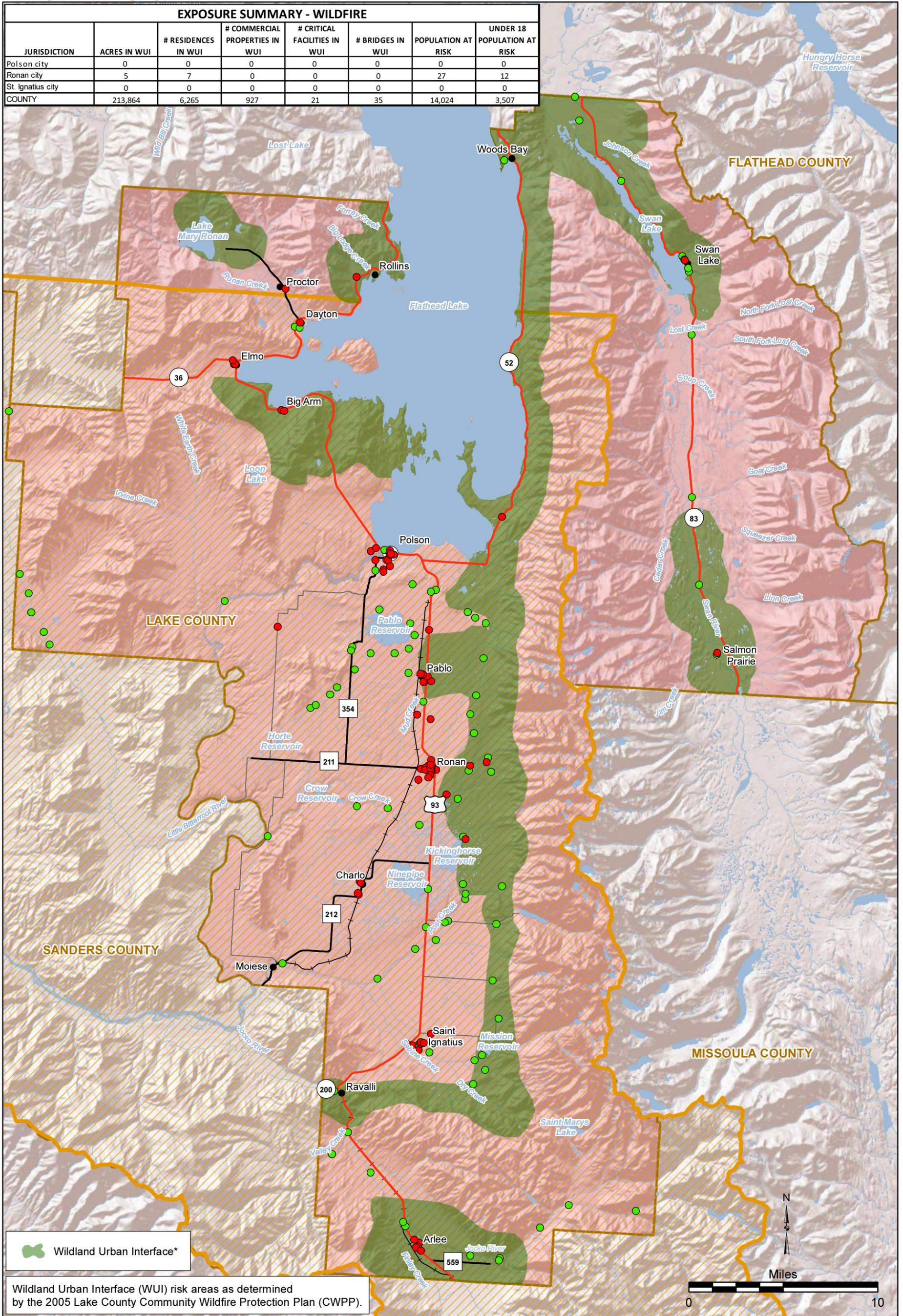
Wildfire does not present a uniform risk across Lake County. **Figure 5** presents a wildfire risk map showing the WUI and the Lake County critical facilities. The WUI layer used for this analysis consists of the risk areas determined by the 2005 Lake County CWPP, which were provided in digital format by the Lake County Planning Department.

To complete the vulnerability analysis for this project, GIS was used to intersect the resulting WUI layer with both the critical facility and MDOR cadastral parcel datasets. Estimates of vulnerable population were calculated by determining the percent exposure in each census block for the hazard area. Exposure values are presented in **Table 4.2-4**. Annualized loss estimates were calculated by applying frequency and magnitude to building stock exposure, and are presented on the Risk Assessment Summary tables in *Section 4.12 (Tables 4.12-1 through 4.12-4)*. Building exposure reflects only the monetary structure value and does not account for improvements or personal effects that may be lost to wildfire. The *Wildfire Section* in **Appendix C** presents supporting documentation from the risk assessment including a list of critical facilities in the WUI.

GIS analysis of the wildfire risk to Lake County indicates that over 213,864 acres are within the WUI. According to the vulnerability analysis, 6,265 residences, 927 commercial, industrial and agricultural buildings, and 21 critical facilities are located in the WUI. Digital data on construction type for the facilities is not available but will be considered in future PDM updates.

The history of wildfires and terrain has prompted Lake County to identify wildfire as a significant hazard. Smoke from fires both within and outside of the county can create poor air quality. Sensitive groups, such as the elderly and asthmatics, can be affected. Wildfires can also have a significant impact on the regional economy with the loss of timber, natural resources, recreational opportunities, or tourism. Although the primary concern is to structures and the interface residents, most of the costs associated with fires, come from firefighting efforts. As past events have also shown, infrastructure such as power transmission lines can also be threatened.

Wildfires generally occur more than once per year in Lake County and therefore, the probability of future events are rated as "highly likely".



- Critical Facilities
- County Seat
- County
- ~ Rivers
- Primary Route
- Bridges
- Place Names
- ▨ Flathead Indian Reservation
- Lake/Reservoir
- Secondary Route
- Other Route
- Railroad

May 2012
Figure 5
Wildfire Risk
Lake County
Pre-Disaster Mitigation Plan

**TABLE 4.2-4
LAKE COUNTY VULNERABILITY ANALYSIS – WILDFIRE**

JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE \$	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE \$	# COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK \$	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE \$	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Ronan	\$989,415	7	\$0	0	\$0	0	\$0	0	27	12
St. Ignatius	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Remainder of County	\$1,239,691,127	6,265	\$71,969,078	927	\$69,358,669	21	\$3,787,396	35	14,024	3,507
CENSUS Designated Places										
Arlee CDP	\$15,385,873	151	\$9,733,532	65	\$5,578,791	5	\$240,184	2	636	187
Bear Dance CDP	\$66,399,442	244	\$1,948,114	25	\$0	0	\$0	0	275	54
Big Arm CDP	\$22,369,725	126	\$4,629,812	43	\$ not available	2	\$0	0	177	39
Charlo CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Dayton CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Elmo CDP	\$0	0	\$0	0	\$0	0	\$0	0	68	16
Finley Point CDP	\$231,936,697	909	\$2,679,845	104	\$0	0	\$0	0	480	76
Jette CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Kerr CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Kicking Horse CDP	\$2,046,669	15	\$23,780	3	\$ not available	1	\$26,840	1	286	71
King's Point CDP	\$48,709,003	276	\$105,948	15	\$0	0	\$0	0	136	24
Lake Mary Ronan CDP	\$10,572,670	77	\$1,457,076	15	\$0	0	\$0	0	65	5
Lindisfarne CDP	\$77,983,856	443	\$1,148,242	54	\$0	0	\$0	0	284	56
Pablo CDP	\$32,898,978	340	\$9,782,087	101	\$62,567,543	6	\$0	0	2074	695
Ravalli CDP	\$4,172,219	52	\$1,303,480	25	\$0	0	\$0	0	76	12
Rocky Point CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Rollins CDP	\$51,820,088	274	\$1,741,158	38	\$ not available	1	\$0	0	209	38
Swan Lake CDP	\$24,312,788	139	\$1,007,539	26	\$62,567,543	1	\$102,400	4	113	15
Turtle Lake CDP	\$746,239	6	\$0	0	\$0	0	\$0	0	209	88
Woods Bay CDP	\$101,436,397	452	\$9,502,827	67	\$0	0	\$34,400	1	661	128
County Commissioner Districts										
District 1	\$1,011,880,374	4,646	\$35,239,540	612	\$243,360	6	\$1,919,412	10	5,629	1,048
District 2	\$120,112,532	793	\$25,654,228	164	\$5,588,791	7	\$1,536,368	18	4,090	1,225
District 3	\$108,687,636	833	\$11,075,310	151	\$63,526,518	8	\$331,616	7	4,332	1,246

Future Development

The Lake County Subdivision Regulations contain standards designed to minimize the risk of destructive fire to life and residential property. They address design and improvement standards for new subdivisions in WUI areas in order to: improve access to developments, homes and other property; minimize the potential spread of fire from wildland areas to structures and from structure fires to wildland areas; permit efficient suppression of fires; insure that new subdivisions in the WUI provide water supply systems with suitable access for firefighting crews and apparatus; and, educate property owners, residents, and people that they have a responsibility for prevention of wildland fire on their own property.

All subdivisions must be planned, designed, constructed, and maintained so as to minimize the risk of fire and to permit the effective and efficient suppression of fires in order to protect persons, property and forested areas including: the placement of structures so as to minimize the potential for flame spread and to permit adequate access for firefighting equipment; the presence of adequate firefighting facilities either on site or in the vicinity of the subdivision, including an adequate water supply and distribution system; and, the availability, through a fire protection district or other means, of fire protection services adequate to respond to fires that may occur within a subdivision.

For unincorporated areas of Lake County a Fire Risk Rating Form must accompany the submission of any application for preliminary plat approval. The risk rating determines access requirements, minimum lot sizes, building spacing, water supply requirements, and vegetative treatments. The subdivider must also provide a Fire Prevention and Control Plan to provide a strategy for reducing fire potential and provides safe working areas for emergency responders fighting fire.

The Polson Development Code indicates that at the discretion of the administrator, any proposed development may be evaluated by the Polson Fire Chief for the potential fire hazard where vegetation types, water supply, access, and the area's fire history shall be considered. Conditions of approval may include fuels reduction, water supply improvements, access improvements, requiring buildings to be set back from slopes and other fire safety improvements.

4.3 TRANSPORTATION ACCIDENTS (INCLUDING HIGHWAY & RAILROAD ACCIDENTS AND HAZARDOUS MATERIAL INCIDENTS)

CPRI SCORES:
HIGHWAY ACCIDENTS = 3.2
RAILROAD ACCIDENTS = 2.3
HAZARDOUS MATERIAL INCIDENTS = 2.3

Description and History

Lake County maintains a total of 1,153 miles of roads that range from county highways to local access type roadways. Paved surfaces account for about 230 miles with the remaining 923 miles gravel surfaced. Lake County also maintains approximately 100 bridges (Lake County Growth Policy). Montana Rail Link traverses the south portion of Lake County for 15 miles. Rail service along a spur line running from Dixon to Polson was discontinued in 2011.

No interstate highways traverse Lake County. U.S. Highway 93, a north-south route extending the entire length of Lake County, is part of the National Highway System and is classified as a principal arterial. U.S. Highway 93 between Hamilton and Polson is the most heavily traveled non-interstate corridor in Montana. The highway carries a mix of traffic including passenger automobiles, commercial vehicles, logging trucks, recreational vehicles and agricultural vehicles. In Lake County there is substantial visitor traffic in the summer between Missoula and Kalispell/Glacier Park. Montana Highway 35, on the east side of Flathead Lake, and Highway 83, through the Swan Valley, are part of Montana's primary highway system and act as minor arterials.

The source and location of highway accidents vary but the response is typically the same. Response is focused on determining the presence of hazardous materials and then assisting the injured. Statistics on highway accidents in Lake County over the past 9 years were provided by the Montana Highway Patrol, and are presented in **Table 4.3-1**. Information is not available on whether these incidents involved a hazardous material response.

Number of Accidents	Fatalities	Injuries	# Involving Property Damage	Total Property Damage
3,933	101	2,340	768	>\$426,750

Sources: Montana Highway Patrol, 2012

A hazardous material release is the contamination of the environment (i.e. air, water, soil) by any material that because of its quantity, concentration, or physical or chemical characteristics threatens human health, the environment, or property. Hazardous materials, including petroleum products and agricultural chemicals, are commonly stored and used in Lake County and are regularly transported via the regions roadways, railroads, and pipelines. A release of hazardous materials from both fixed and transportation incidents pose possible threats to the County. Hazards range from small spills on

roadways to major transportation releases on railways. Records of hazardous material events in Lake County, available from the National Response Center database, are summarized in **Table 4.3-2**.

TABLE 4.3-2 LAKE COUNTY HAZARDOUS MATERIAL INCIDENTS							
Incident Date	Type Of Incident	Incident Cause	Location	Nearest City	Suspected Responsible Company	Medium Affected	Material Name
6/28/1991	Unknown Sheen	Unknown	Flathead Lake Dayton Yacht Harbor	Polson		Water	Unknown Oil
6/12/1992	Mobile	Operator Error	Highway 35	Polson	Columbia Falls Alum Co	Land	Sodium Cyanide
10/10/1996	Mobile	Accident	Hwy 93, MM: 38	St. Ignatius	Wilbert Ellis	Land	Unknown Material
2/25/1997	Fixed	Other	Hwy 93	Ronan	Ford Motor Co.	Water	Waste Oil; Ethylene Glycol
2/25/1997	Fixed	Unknown	#5 Third Ave. NW Ronan, Mt.	Ronan	Don Aadsen	Water	Oil, Fuel: No. 2-D; Waste Oil
9/22/1997	Unknown Sheen	Unknown	Hwy 93 North MM:17	Missoula		Water	Unknown Oil
8/1/2000	Fixed	Dumping	Flathead River	Polson	City Of Polson Water Dept	Water	Raw Sewage
5/27/2001	Vessel	Dumping	Woods Bay Marina Area			Water	Oil, Misc: Motor; Oil, Fuel: No. 2-D
9/25/2001	Fixed	Unknown	Unknown	Pablo		Air	Tires
5/22/2003	Storage Tank	Equipment Failure	305 5th Ave. E.	Pablo		Land	Oil, Fuel: No. 2
1/24/2004	Mobile	Accident	Off Hwy 83 Into Swan Lake		Eagle Express Lines	Water	Motor Oil
3/23/2004	Storage Tank	Unknown	Courville Trail	Polson		Land	Drug Residue; Unknown Oil
4/13/2004	Mobile	Accident	I-93, MM 45N	Ronan	N.A.Van Lines	Land	Diesel
4/19/2004	Mobile	Accident	MM 90 Near Rollins	Rollins		Water	Motor Oil
8/19/2004	Mobile	Operator Error	Flathead Lake			Water	Motor Oil
10/21/2004	Storage Tank	Equipment Failure	Pacific Pride	Polson	CHS Transport	Other	Unleaded Gasoline
1/26/2006	Storage Tank	Other	111 5th Avenue W.	Polson		Water	Home Heating Oil
7/4/2006	Mobile	Other	Hwy 35, MM 17.3	Big Fork		Water	Unleaded Gasoline
7/11/2006	Mobile	Equipment Failure	Polson Bridge On Hwy 93	Polson	Rocky Mountain Veterinary Service	Water	Diesel
10/19/2006	Storage Tank	Operator Error	Polson Co-Op 808 Main St.	Polson	Cenex Harvest States	Land	Oil, Fuel: No. 1-D
1/29/2007	Fixed	Equipment Failure	Kerr Dam	Polson	American Hydro	Water	Mobile Heavy Turbine Oil
3/13/2008	Fixed	Dumping	Alco Auto Sales 57730 Hwy 93 North	Pablo		Land	Oil, Misc: Motor; Ethylene Glycol
4/2/2008	Mobile	Unknown	Montana Hwy 35 MM 5.5	Polson	Keller Transport Inc.	Soil	Unleaded Gasoline
3/23/2009	Storage Tank	Other	316 First St. East	Polson		Soil	Oil: Diesel
10/3/2009	Vessel	Vessel Sinking	Off Rocky Point Flat Head Lake	Polson		Water	Unleaded Gasoline
8/16/2010	Fixed	Equipment Failure	49708 US Hwy 93	Polson	Kwataqnuq	Water	Unleaded Gasoline
10/25/2010	Fixed	Dumping	Hwy 93 South, 16 Mi. NW of Polson	Big Arm		Water	Raw Sewage
4/1/2010	Fixed	Other	52469 Camp Tuffit Rd	Proctor	Camp Tuffit LLC	Water	Sewage; Unleaded Gasoline

Source: National Response Center, 2011

Major toxic spills into Flathead Lake in recent years include the 2001 sinking of a barge on the lake that resulted in the spill of a significant amount of diesel fuel at Woods Bay, and the 2008 crash of a tanker truck on Highway 35 that spilled 6,400 gallons of gasoline on the East Shore south of Finley Point. After the 2008 spill, a local group encouraged the Montana Department of Transportation (MDT) to undertake a comprehensive analysis of highway conditions and use (including the amount and kinds of hazardous materials transported), impacts and costs of the spill, documentation of previous spills, and a thorough evaluation of various alternative remedies (including potential highway improvements, limiting speeds in areas in proximity to the lake, prohibiting “pup” trailers, limiting hazardous materials transport, and increasing enforcement of regulations). The MDT conducted a limited analysis and made some changes, including expanding “no passing zones”. The PDM Planning Team indicated that the 2008 tanker truck spill caused over \$10 million in damages.

Another hazardous material incident reported by the PDM Planning Team was a 1996 crash between an agricultural tanker and car in the Post Creek area. Products mixed together and resulted in closure of U.S. Highway 93 for 24 hours.

Locations of chemical/petroleum storage in Lake County with regulatory reporting requirements include:

- AT&T, Ravalli and Polson
- Polson Propane, Polson
- Northern Energy, Polson
- CHS Inc. – Mountain West Cooperative, Polson
- CHS Inc. – Energy Partners, Ronan and Polson
- Century Link, Polson

Vulnerability and Area of Impact

Transportation accidents are of primary concern in Lake County. U.S. Highway 93 is a heavily traveled corridor that presents safety problems due to increased traffic and outdated design (in some areas). Although mass casualty events with busses have not occurred, several car crashes have resulted in four or more being killed.

Several kinds of hazardous materials are regularly transported through Lake County. Thirty rail cars, each containing 33,000 gallons of gasoline, pass through the county daily along the 15 miles of railroad track. A problem with even one rail car filled with gasoline could cause a significant spill affecting the Jocko and/or Clark Fork Rivers in the Arlee and Ravalli areas. In addition, semi-trucks loaded with agricultural herbicides and pesticides travel the local highways. Lake County has an agreement with the haz-mat Team in Missoula County to assist in the event of any major incidents. The Tribes also have individuals trained in dealing with hazardous materials (Lake County Growth Policy).

The Emergency Planning and Community Right-to-Know Act (EPCRA) was enacted in 1986 to inform communities and citizens of chemical hazards in their areas. Sections 311 and 312 of EPCRA require businesses to report the locations and quantities of chemicals stored on-site to state and local governments in order to help communities prepare to respond to chemical spills and similar emergencies. EPCRA Section 313 requires the EPA and the states to annually collect data on releases and transfers of certain toxic chemicals from industrial facilities, and make the data available to the public in the Toxics Release Inventory (TRI). In 1990 Congress passed the Pollution Prevention Act, which required that additional data on waste management and source reduction activities be reported under TRI. The goal of TRI is to empower citizens, through information, to hold companies and local governments accountable in terms of how toxic chemicals are managed. There are no TRI facilities in Lake County.

To model the spatial distribution of hazardous material incident risk a GIS data layer of transportation arteries was used, which included highways, major roadways and railroads. Facilities in the county with hazardous materials or petroleum reporting requirements were added to this layer and it was then buffered by 0.25 miles. Building exposure was calculated by intersecting the hazardous material buffer with the MDOR parcel and critical facility GIS layers. Population exposure was calculated by intersecting the hazardous material buffer with census block data. **Figures 6A through 6E** present the hazardous material buffer for the County, Polson, Ronan, St. Ignatius, and Pablo, respectively, and indicate the vulnerability of critical facilities to hazardous material incidents. **Table 4.3-3** presents the exposure risk in these hazard areas.

The GIS analysis indicates that there are 81,543,000 acres in Lake County in the hazardous material buffer including 5,847 residences, 1,848 commercial, industrial and agricultural buildings, and 57 critical facilities. The *Hazardous Material Incident Section* in **Appendix C** lists the critical facilities within the hazardous material buffer and presents other supporting documentation from the risk assessment.

Probability and Magnitude

Lake County is vulnerable to all types of transportation emergencies. The two major effects of transportation accidents are human injury and hazardous materials releases. There have been no Presidential Disaster Declarations or State emergency declarations associated with the Transportation Accident hazard in Lake County and the likelihood of a significant event resulting in a disaster declaration is considered low.

Transportation accidents have caused well over \$400,000 dollars in property damage over the past nine years and resulted in 101 fatalities and over 2,340 injuries. There have been 28 hazardous material incidents over the past 21 years in Lake County with one accident resulting in over \$10 million in damages. Since transportation accident/hazardous material incident hazard occurs more than once per

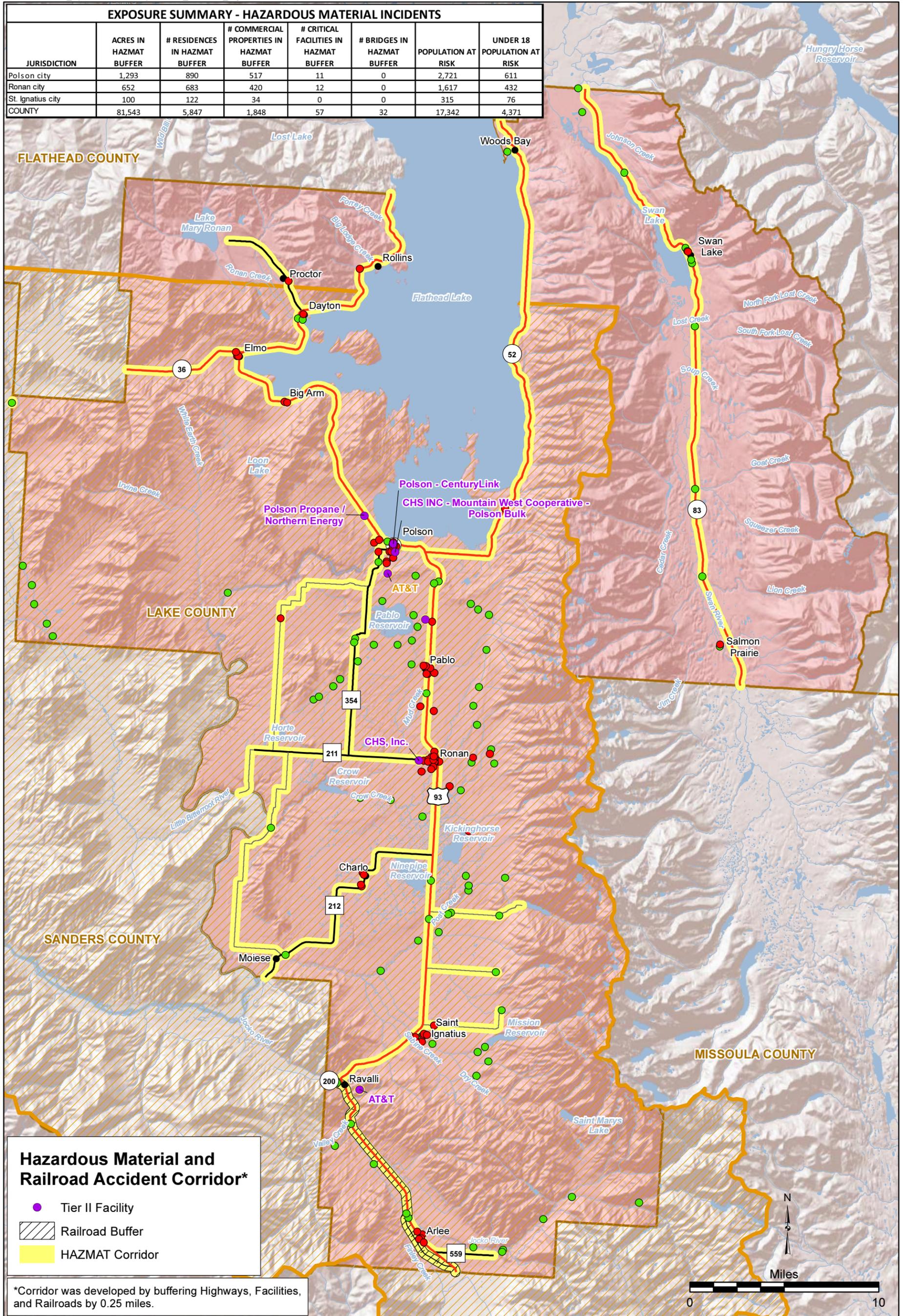
year, the probability of future events is rated as “highly likely”. The PDM Planning Team rated the hazardous material incident hazard as “possible” using the Calculated Priority Risk Index.

Future Development

Lake County does not have any ordinances or regulations requiring special considerations to mitigate the effects of transportation accidents. There are no land use regulations that restrict building around industrial facilities or along transportation routes or in the vicinity of facilities that store large quantities of hazardous materials/petroleum products.

The Polson Development Code states that any development that generates, handles, stores, or disposes of hazardous materials shall demonstrate continuing compliance with state or federal requirements for such activities, and, within the city limits, with the applicable requirements of the city’s fire and building codes. In addition, all applications for permits for such uses shall be accompanied by an initial list of hazardous chemicals, or the materials safety data sheets for such chemicals, proposed to be on the site. No permit shall be approved until the fire department has reviewed this list and indicated that it has the capability to effectively respond to an emergency at the proposed development. No development to which the fire department cannot effectively respond shall be approved.

The Polson Development Code also includes a goal to address the community’s need for a U.S. Highway 93 bypass that could require that hazardous material transport bypass the main business district.



- Critical Facilities
- Bridges
- County Seat
- Place Names
- County
- Flathead Indian Reservation
- Rivers
- Lake/Reservoir
- Primary Route
- Secondary Route
- Other Route
- Railroad

May 2012
Figure 6A
Hazardous Material and Railroad Accident Buffer
Lake County
Pre-Disaster Mitigation Plan

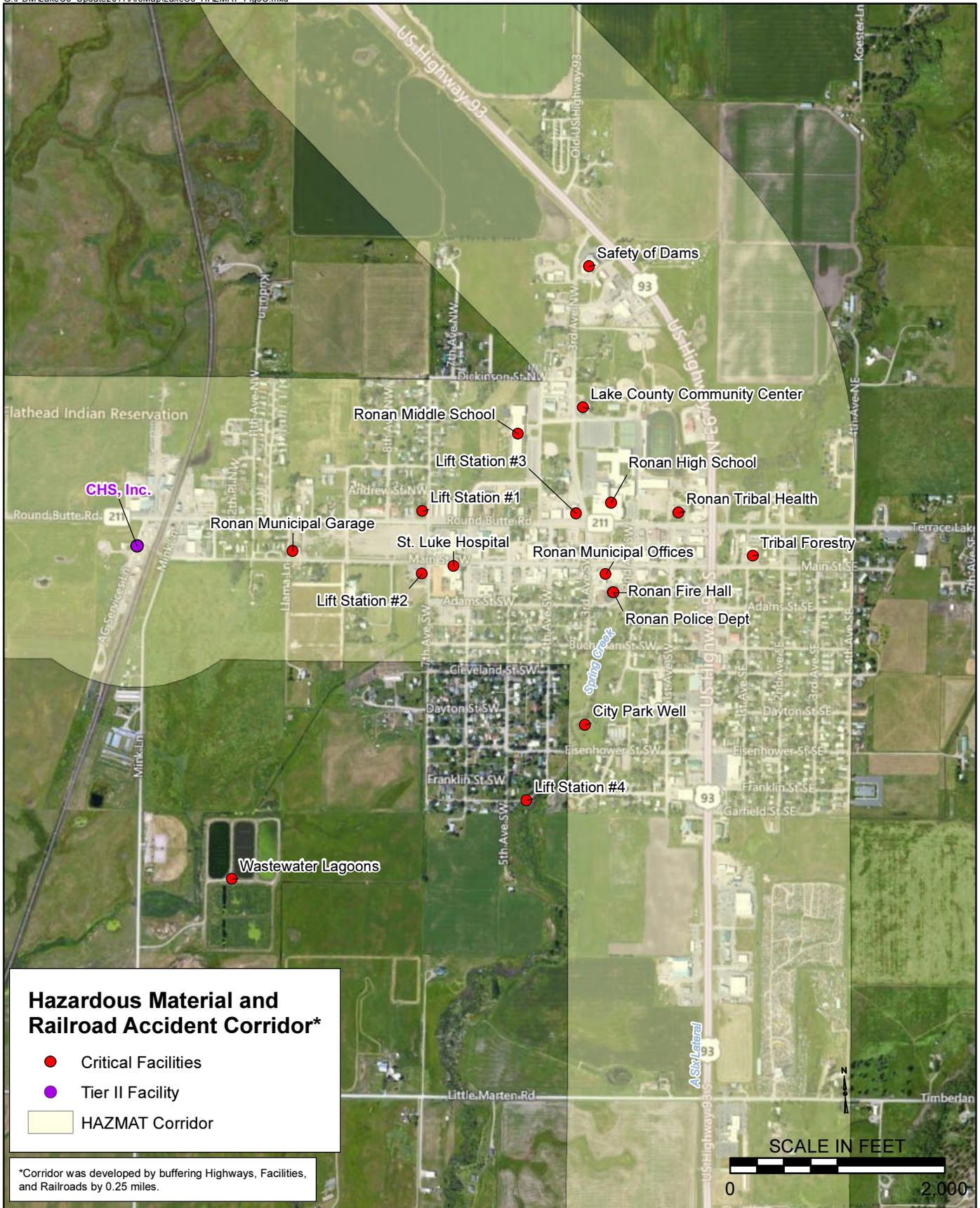


May 2012

Figure 6B

**Polson - Hazardous Material and Railroad Accident Buffer
Lake County
Pre-Disaster Mitigation Plan**





Hazardous Material and Railroad Accident Corridor*

- Critical Facilities
- Tier II Facility
- HAZMAT Corridor

*Corridor was developed by buffering Highways, Facilities, and Railroads by 0.25 miles.

May 2012

Figure 6C

**Ronan - Hazardous Material and Railroad Accident Buffer
Lake County
Pre-Disaster Mitigation Plan**





May 2012

Figure 6D

**Saint Ignace - Hazardous Material and Railroad Accident Buffer
Lake County
Pre-Disaster Mitigation Plan**





May 2012

Figure 6E

Pablo - Hazardous Material and Railroad Accident Buffer
Lake County
Pre-Disaster Mitigation Plan



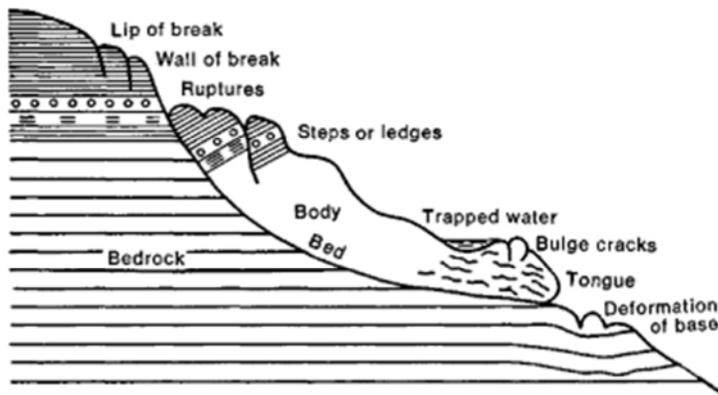
TABLE 4.3-3 LAKE COUNTY VULNERABILITY ANALYSIS – TRANSPORTATION ACCIDENTS/HAZARDOUS MATERIAL INCIDENTS										
JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE \$	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE \$	# COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK \$	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE \$	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	\$90,923,471	890	\$149,850,759	517	\$31,062,173	11	\$3,277,204	1	2,721	611
Ronan	\$50,690,419	683	\$110,298,707	420	\$57,042,214	12	\$0	0	1,617	432
St. Ignatius	\$11,038,483	122	\$4,050,397	34	\$0	0	\$0	0	315	76
Remainder of County	\$878,162,473	5,847	\$354,779,480	1,848	\$163,529,316	57	\$6,828,276	32	17,342	4,371
CENSUS Designated Places										
Arlée CDP	\$11,301,631	119	\$9,727,230	62	\$5,578,791	5	\$240,184	2	588	169
Bear Dance CDP	\$64,855,885	235	\$1,863,070	21	\$0	0	\$0	0	275	54
Big Arm CDP	\$21,426,322	122	\$4,615,489	40	\$ not available	2	\$0	0	175	39
Charlo CDP	\$13,566,621	168	\$3,485,537	53	\$53,611	4	\$0	0	377	105
Dayton CDP	\$9,690,596	66	\$29,244,973	125	\$ not available	1	\$0	0	65	7
Elmo CDP	\$6,886,918	43	\$646,874	35	\$ not available	1	\$0	0	180	44
Finley Point CDP	\$37,854,239	142	\$758,545	17	\$0	0	\$0	0	224	35
Jette CDP	\$7,428,780	49	\$155,470	2	\$0	0	\$0	0	165	27
Kerr CDP	\$14,904,728	77	\$22,277	2	\$0	0	\$44,400	1	241	67
Kicking Horse CDP	\$0	0	\$0	0	\$0	0	\$0	0	6	1
King's Point CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Lake Mary Ronan CDP	\$0	0	\$0	0	\$0	0	\$0	0	20	3
Lindisfarne CDP	\$21,804,345	116	\$490,667	13	\$0	0	\$0	0	146	31
Pablo CDP	\$16,863,540	180	\$6,437,841	53	\$29,867,535	5	\$0	0	1,484	510
Ravalli CDP	\$4,172,219	52	\$1,303,480	25	\$0	0	\$0	0	76	12
Rocky Point CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Rollins CDP	\$25,993,657	138	\$1,214,145	21	\$ not available	1	\$0	0	181	28
Swan Lake CDP	\$22,070,857	125	\$1,007,539	26	\$0	0	\$102,400	4	113	15
Turtle Lake CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Woods Bay CDP	\$40,918,594	242	\$8,511,823	41	\$0	0	\$0	0	581	116
County Commissioner Districts										
District 1	\$629,359,599	3,330	\$164,070,441	836	\$33,836,171	19	\$4,918,964	13	7,335	1,443
District 2	\$138,265,585	1,343	\$79,404,466	385	\$13,566,148	13	\$1,556,640	13	5,492	1,485
District 3	\$136,143,433	1,275	\$149,217,367	677	\$90,146,956	24	\$352,672	6	5,934	1,698

4.4 LANDSLIDES

CPRI SCORE = 2.95

Description and History

A landslide is the movement of a soil and/or rock mass down a slope. Any area composed of very weak or fractured materials resting on a steep slope can and likely will experience landslides. Landslides or debris flows, are often difficult to distinguish from flash floods and possess similar destructive potential and rapid onset. Debris flows generally occur during periods of intense rainfall or rapid snowmelt. They usually start on steep hillsides as shallow slides that liquefy and accelerate. The consistency of debris



flow range from watery mud to thick, rocky mud that can carry large items such as boulders, trees and cars. When the flow reaches flatter ground, debris can spread over a broad area, sometimes accumulating in thick deposits. Any given mass movement is triggered by a single event. The two most common triggers are earthquakes and heavy rainfall.

Slope failure occurs when the gravitational force of slope materials exceed resisting forces due to strength, friction, and cohesion of the supporting materials. Slope properties, such as steepness, layering, fracturing of materials, or lack of vegetation, can make them inherently susceptible to failure. Factors such as moisture, overloading, and undercutting, can make matters worse. These factors can occur naturally or induced by development activity. Slope failures are distinguished by five types: falls or free drops from steep cliffs; slides or movement of unconsolidated materials along slip surfaces of shear failure; slumps or movements of consolidated materials along the surface of shear failures; flows; and the slow or rapid fluid-like movement of soils and other unconsolidated materials. Very slow down-slope flow of soil is referred as creep. The average flow rate of materials can range from a fraction of an inch to 4 to 5 inches a week. Factors that influence creep include growing vegetation, freezing and thawing, and burrowing animals. Lateral spreads may occur on flat or gently sloping land due to liquefaction of underlying materials.

Vulnerability and Area of Impact

Lake County has many areas where slopes are too steep for development. These areas occur along the slopes of the Mission, Swan and Salish Ranges and along some parts of the shore of Flathead Lake. Steep slopes, including stretches of Montana Highway 35 along the east side of Flathead Lake, are prone to falling rock.

Landslides appear to have a stronger association with faulting than with any specific geologic unit; however, some slides are most common where the underlying bedrock is sedimentary or volcanic. Volcanic-derived soils contain significant amounts of clay that can be susceptible to failure when wet or disturbed. Small slides and slumps can also occur along the steeper slopes of gullies and drainages. Steep slopes may be most vulnerable to debris flow, especially if the area were to burn.

According to the Lake County Growth Policy, slopes up to 8 percent are generally the most suited for development. Slopes between 25-35 percent have extensive engineering limitations. Slopes over 35 percent are generally not suitable for development. Building on steep slopes must factor in soil erosion rates, falling rock and slope instability. Rain or ice on steep slopes presents additional safety concerns, particularly where emergency access is concerned.

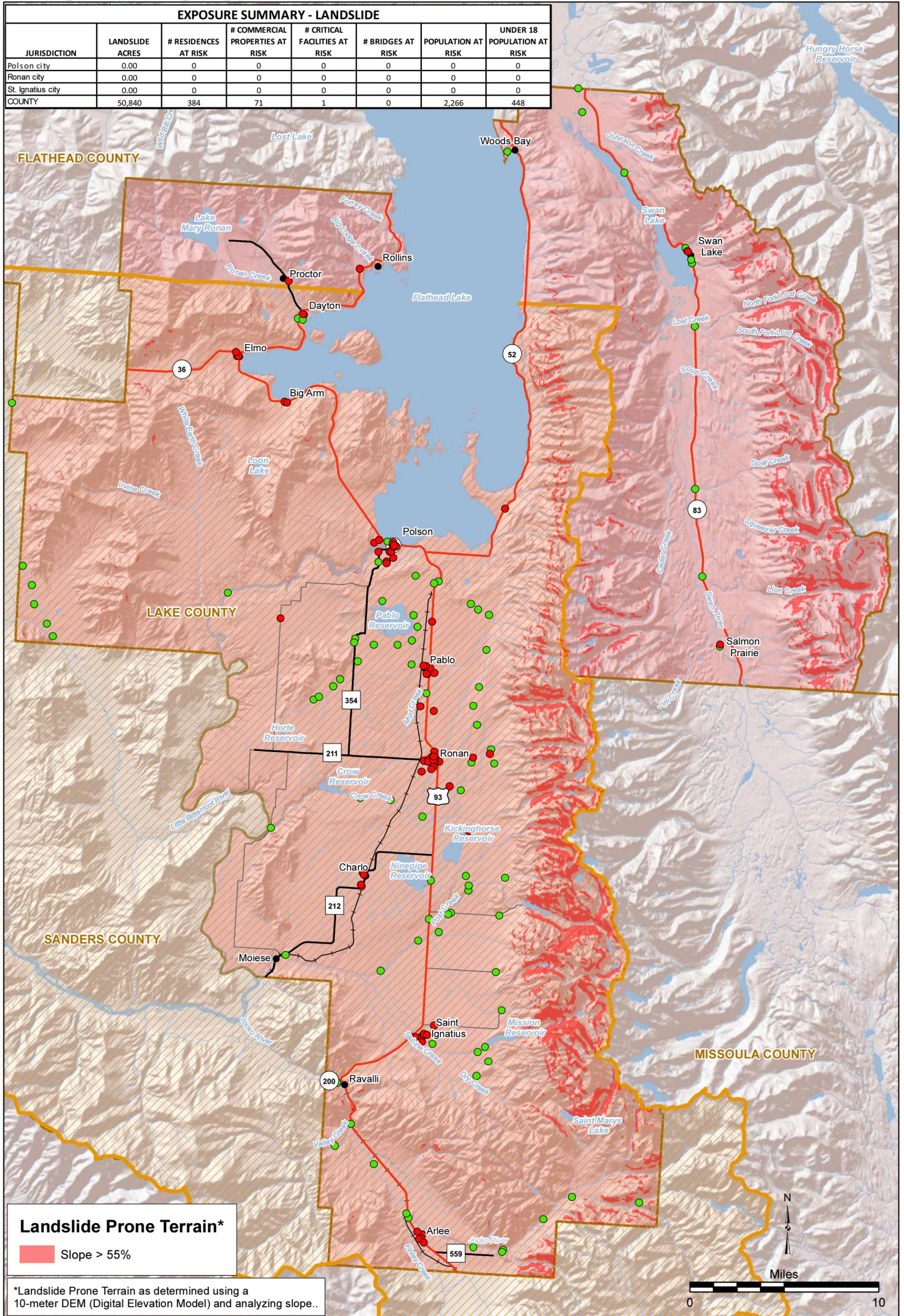
The PDM Planning Team indicated that Kerr Dam was impacted by a landslide in the past and in 2011, a landslide on the East Shore of Flathead Lake occurred causing road damage.

Probability and Magnitude

Landslide risk was determined by using GIS data provided in the Montana State Hazard Mitigation Plan (Montana DES, 2010). Shape files used for the GIS layer included areas of mapped historic landslides, available from the Montana Bureau of Mines and Geology (MBMG) and slopes greater than 55 degrees, based on methodology developed by the USFS for a delineation of landslide-prone areas in the Clearwater-Nez Perce National Forest (**Figure 7A**). Landslide-prone areas along Montana Highway 35 (**Figure 7B**) were also digitized and added to the analysis area. The landslide-prone areas were intersected with the critical facility and MDOR parcel datasets to determine exposure. Population exposure was calculated by the percent of the landslide-prone area in each census block. **Table 4.4-1** presents the results of the landslide vulnerability analysis.

The GIS analysis indicates that there are 50,840 acres prone to landslides in the county including 384 residences and 71 commercial, industrial, and/or agricultural buildings, and 1 critical facility. The *Landslide Section* in **Appendix C** presents supporting documentation from the vulnerability analysis.

Based on the frequency of small landslide/slope failure events in Lake County, the probability for a more significant event in the future is rated as “possible”. Using the Calculated Priority Risk Index, the PDM Planning team rated the landslide probability as “likely”.



- Critical Facilities
- Bridges
- County Seat
- Place Names
- County
- Flathead Indian Reservation
- Rivers
- Lake/Reservoir
- Primary Route
- Secondary Route
- Other Route
- +— Railroad



- Critical Facilities
- Bridges

Future Development

It is the responsibility of those who wish to develop their property to assess the degree of hazard in their selection of development sites. Although the physical cause of many landslides cannot be removed, geologic investigations, good engineering practices, and effective enforcement of land-use management standards can reduce landslide hazards.

The Lake County Subdivision Regulations have development standards for subdivisions containing areas of steep slopes, in areas containing sustained slopes of 100 feet or longer that average 20 percent. The developer must demonstrate that the proposed subdivision will not have adverse impact on conditions that relate to the public health and safety including rock falls or landslides, unstable soils, or steep slopes. In areas where there is potential for landslides or slope instability, an erosion and sedimentation control plan, prepared by a registered engineer, is required with the preliminary plan application. The plan must include a description of protection measures for long-term slope stability.

The Polson Development Code considers slope when determining allowable lot coverage. On lots with an average slope of 9-35 percent where a suitable building site exists, the maximum allowed lot coverage is subject to a Runoff Management Plan approved by the City Engineer and certification by a licensed engineer that the development adequately addresses all safety, slope stability and erosion control concerns.

4.5 STRUCTURE FIRE**CPRI SCORE = 2.75**Description and History

Structure fires are usually individual disasters and not community-wide events; however, the potential exists for widespread structure fires that displace several businesses or families. Urban blocks, commercial structures, and apartment buildings are especially vulnerable. Statistics from the structure fires in Lake County over the past 11 years are presented in **Table 4.5-1**.

Property Type	Fires	Fire Fighter Deaths	Fire Fighter Injuries	Civilian Deaths	Civilian Injuries	Property Loss
Residential	292	0	1	3	1	\$4,155,300
Commercial	27	0	0	0	6	\$696,200
Industrial	56	0	0	0	0	\$692,150
TOTAL	375	0	1	3	7	\$5,543,650

Sources: State Fire Marshal, 2012

Below are accounts of two recent structure fires in Lake County.

January 18, 2012 – When firefighters showed up at a structure fire at 806 14th Ave. E. in Polson, there was smoke coming out of the basement. “We believe the cause was electrical in nature, but so much damage was done to the basement, we can’t pinpoint a specific cause,” Polson VFD public information officer Karen Sargeant reported. Damages to the building are \$30,000 to \$40,000, Sargeant estimated with at least an extra \$20,000 for contents. (*Structure Fire Damages Polson Home*, Valley Journal [Berl Tiskus], January 18, 2012).



March, 1, 2012 - A mountain home near Pablo burned to the ground late Sunday afternoon. The fire started around 4:45 p.m. and by the time crews responded to the blaze on Snyder Hill Lane at the base of the Mission Mountains, the house was completely engulfed in flames. “It was a total loss,” Ronan Fire Chief Mark Clary said. “When we arrived, there were flames wall to wall.” The Ronan Fire Department had four engines, a heavy rescue vehicle and a water tender on the scene and received mutual aid from the Polson Fire Department, which brought two engines and a water tender. (*Structure Fire Destroys Home*, Lake County Leader [Dylan Kitzan], March 1, 2012).



Structure fire protection services are provided by several entities in Lake County. These organizations include 13 Volunteer Fire Districts (VFDs) throughout the county. The incorporated cities of Polson, Ronan and St. Ignatius provide fire protection within their corporate limits, as well as the surrounding rural districts. Mutual-aid agreements have been developed between fire protection entities. The agreements have proven essential to increasing the level of service provided to the constituents of the area. The mutual-aid structure provides for assistance among fire departments, thus expanding the equipment and personnel resources available to respond to an incident. This mechanism allows for increased utilization of the expensive capital equipment that is necessary for fire protection service and achieves a higher level of service in the county than could be achieved by any one fire protection entity.

Vulnerability and Area of Impact

Based on review of historic structure fire data and consultation with the State Fire Marshal, the entire project area has been classified with a uniform risk for structure fire since vulnerable structures are not restricted to a specific area within the county. Structure fires have resulted in over \$5.5 million dollars in property loss over the past 11 years. Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12 (Tables 4.12-1 through 4.12-4)*.

According to the Lake County Growth Policy, a number of challenges make residential firefighting difficult for the VFDs. Construction in the wildland urban interface does not typically have adequate fire provisions. Such provisions include a defensible space around homes, fire resistant roof materials, and private roads wide enough for fire trucks to be used to access structures and maneuver effectively and safely. Another challenge has been a limited water supply. However, with the addition of two new wells in Polson and the six dry hydrants that have recently been installed throughout Lake County, there should be significant improvement in this area.

Probability and Hazard Magnitude

History has shown that structure fires are a serious concern for Lake County. The losses, primarily covered by insurance, have not resulted in a Presidential Disaster Declaration, but have resulted in other negative impacts such as economic losses for the area.

With over 375 structure fires in the 11 period of record, the probability of this hazard occurring in the future is rated as “highly likely”.

Future Development

The City of Polson has adopted the International Fire Code (IFC) and Lake County is considering adopting this code. The IFC is a comprehensive code that includes regulations governing the safeguarding of life and property from all types of fire and explosions hazards. Topics include general precautions against

fire, emergency planning and preparedness, fire department access, fire hydrants, automatic sprinkler systems, fire alarm systems, hazardous materials storage and use, and fire safety requirements for new and existing buildings and premises.

4.6 SEVERE WINTER WEATHER**CPRI SCORE = 2.7**

The winter weather hazard profiled below includes several weather conditions that generally occur from November through April. Snow, blizzards, extended cold and high winds frequently occur together but also occur independent of one another during these months.

Description and History

Winter storms and blizzards follow a seasonal pattern that begins in late fall and lasts until early spring. These storms have the potential to destroy property, and kill livestock and people. Winter storms may be categorized as sleet, ice storms or freezing rain, heavy snowfall or blizzards, and low temperatures. Blizzards are most commonly connected with blowing snow and low visibility. Winter also brings sustained straight-line winds that can be well over 50 mph.

A severe winter storm is generally a prolonged event involving snow or ice and extreme cold. The characteristics of severe winter storms are determined by the amount and extent of snow or ice, air temperature, wind speed, and event duration. Severe winter storms create conditions that disrupt essential regional systems such as public utilities, telecommunications, and transportation routes.

A combination of temperatures below zero and high winds can close roads, threaten disruption of utilities, limit access to rural homes, impede emergency services delivery and close businesses. Such storms also create hazardous travel conditions, which can lead to increased vehicular accidents and threaten air traffic. Additionally, motorists stranded due to closed roads and highways may present a shelter problem.

The National Weather Service provides short-term forecasts of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including blizzards and wind chill. Warning and Advisory Criteria for winter weather is presented in **Table 4.6-1**.

Winter Weather	Winter Weather Advisory	Winter Storm/Blizzard Warning
Snow	2-5 inches of snow in 12 hours	6 inches or more in 12 hours, or 8 inches in 24 hours
Blizzard	(see blowing snow)	Sustained winds or frequent gusts to 35 mph with visibility below a ¼ mile for three hours or more
Blowing Snow	Visibility at or less than a ½ mile.	Visibility at or less than a ½ mile in combination with snowfall at or greater than 6 inches and/or freezing precipitation

TABLE 4.6-1 WARNING AND ADVISORY CRITERIA FOR WINTER WEATHER		
Ice/Sleet	(see freezing rain/drizzle)	Accumulations of ¼ inch or more of ice.
Freezing Rain/Drizzle	Light precipitation and ice forming on exposed surfaces.	None
Wind Chill	Wind chills of -20 to -39 degrees with a 10 mph wind in combination with precipitation	Wind chills -40 degrees or colder with a 10 mph wind in combination with precipitation.

Source: National Weather Service (NWS, 2011)

Snowstorms and bitterly cold temperatures are common occurrences in Lake County and generally do not cause any problems as residents are used to winter weather and are prepared for it. Sometimes, however, blizzards can occur and overwhelm the ability to keep roads passable. Heavy snow and ice events also have the potential to bring down power lines and trees. Extreme wind chill temperatures may harm residents if unprotected outdoors or if heating mechanisms are disrupted.

Table 4.6-2 presents winter weather events with reported damages from the SHELDUS and NCDC databases. The dataset used to populate SHELDUS typically includes every loss causing and/or deadly event between 1960 through 1975 and from 1995 onward. Between 1976 and 1995, SHELDUS reflects only events that caused at least one fatality or more than \$50,000 in property or crop damages. The NCDC data contains sporadic damage figures, which were added to the dataset when they represented a unique damaging event.

TABLE 4.6-2 LAKE COUNTY SEVERE WINTER WEATHER EVENTS WITH DAMAGES (~NOVEMBER - APRIL)					
Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
5/4/1961	0	0	\$4,127	\$0	Heavy Snow
2/22/1962	0	0	\$73	\$0	High Wind, Snow, Blowing Snow, and Cold
11/19/1962	0.07	0	\$6,516	\$0	High Winds
12/15/1964	0	0	\$65,163	\$0	High Wind, Blowing Snow, Severe Cold
1/15/1967	0	0	\$6,082	\$0	High Wind
4/30/1968	1	0	\$36,111	\$0	High Wind
1/1/1969	0	0	\$537	\$0	Cold And Snow
4/23/1969	0	0	\$30,588	\$0	Wind
5/10/1970	0	0	\$14,444	\$0	Heavy, Wet Snow and Strong Wind
3/3/1971	0	0	\$912	\$0	Wind, Snow
11/25/1971	0.37	0	\$1,014	\$0	Hoarfrost, Ice
12/5/1971	0	0	\$27,368	\$0	Heavy Snow
1/9/1972	0	0	\$4,801	\$0	Strong Winds
1/16/1972	0	0	\$9,123	\$0	Strong Winds
2/16/1972	0	0	\$944	\$0	High Wind
3/5/1972	0	0	\$912	\$0	High Winds
1/29/1974	0	0	\$4,037	\$0	Wind
12/26/1974	0	0	\$780	\$0	High Winds
10/21/1975	0	0	\$2,080,000	\$20,800	Snow
2/3/1976	0	0	\$200,000	\$0	Wind
1/18/1978	0	0	\$173,333	\$0	Heavy Snow

Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
11/4/1978	0	0	\$0	\$0	Strong Winds
11/9/1985	1	0	\$53,061	\$0	Wind
2/3/1986	3	1	\$2,080	\$0	Ice Storm
12/13/1988	0	0	\$24,074	\$0	Wind
1/31/1989	0	0	\$27,645	\$276	Blizzard
2/1/1989	0	0	\$160,049	\$160	Severe Cold
1/29/1990	0	0	\$9,630	\$0	Snow
4/27/1990	0	0	\$2,796	\$0	Winter Storm
11/22/1990	0	0	\$23,423	\$0	High Winds
11/23/1990	0	0	\$9,630	\$0	High Winds
12/18/1990	0	0	\$5,778	\$5,778	Blizzard, Heavy Snow
12/27/1990	0	0	\$21,667	\$0	Blizzard
10/16/1991	0	0	\$21,667	\$0	Wind
8/22/1992	0	0	\$353	\$35,326	Winter Storm
8/25/1992	0	0	\$0	\$1,425	Frost/Freeze
10/7/1993	0	0	\$7,879	\$0	Winter Storm
11/3/1993	0	0	\$788	\$7,879	High Winds
2/23/1994	0	0	\$13,416	\$0	Winter Storm
4/25/1994	0	0	\$6,373	\$0	Heavy Snow, Winter Storm
11/16/1994	0	0	\$6,373	\$0	Heavy Snow
11/25/1994	0	0	\$10,924	\$0	Heavy Snow
3/24/1995	0	0	\$74,286	\$0	Winter Storm
2/1/1996	0	0	\$6,741	\$0	Extreme Cold
11/18/1996	0.09	0.18	\$0	\$0	Winter Storm
2/15/2001	0.25	0.13	\$0	\$0	
6/3/2001	0	0	\$974,936.44	\$0	Heavy Snow
12/15/2006	0	0	\$11,860	\$0	High Wind
11/12/2007	2	0	\$721,297	\$0	High Wind
1/13/2008	0	0	\$81	\$0	Avalanche
6/10/2008	0	0	\$1,052	\$0	Heavy Snow
12/12/2008	0	0.25	\$1,327	\$0	Blizzard
1/1/2009	0	0	\$1,387	\$0	Winter Storm
TOTAL	7.78	1.56	\$4,867,438	\$71,645	

Source: SHELUS, 2011 (adjusted to 2011 dollars); NCDC, 2011 (adjusted to 2012 dollars).

Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from this event.

The table above indicates that winter storms, high winds, and heavy snow have caused property loss in Lake County. Planning Team members reported big snow years and cold in 1996 and 2002.

No Presidential Disaster Declarations have been granted for winter storms in Lake County. State-wide winter storm disasters were declared in 1978, 1989 and 1996 (DMA, 2011).

Vulnerability and Area of Impact

Lake County is equally exposed to effects of extended cold and winter storms during the winter months. During this time, winter storm events may affect the higher regions with more snowfall. But because the population is concentrated in the lower elevations, the hazard risk area for winter storms is considered uniform for the entire County. Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12 (Tables 4.12-1 through 4.12-4)*. The Severe *Winter Weather Section* in **Appendix C** presents supporting documentation from the risk assessment.

Probability and Magnitude

Severe winter storms and extended periods of extreme cold occur in Lake County multiple times each year. Therefore, the probability of a severe winter storm event occurring in the future is rated as “highly likely”. Using the Calculated Priority Risk Index, the PDM Planning Team scored the probability of the severe winter weather hazard as “likely”.

Snow generally does not cause the communities to shut down or disrupt activities. Occasionally, though, extreme winter weather conditions can cause problems. The most common incident in these conditions are motor vehicle accidents due to poor road conditions. Such incidents normally involve passenger vehicles; however, an incident involving a commercial vehicle transporting hazardous materials or a vulnerable population such as a school bus is also possible.

Since winter storms and cold spells typically do not cause major structural damage, the greatest threat to the population is the potential for utility failure during a cold spell. Although cold temperatures and snow are normal in the county, handling the extremes can go beyond the capabilities of the community. Should the temperatures drop below -15 for over 30 days or several feet of snow fall in a short period of time, the magnitude of frozen water pipes and sewer lines or impassable streets could result in disastrous conditions for many people. If power lines were to fail due to snow/ice load, winds, or any other complicating factor, the situation would be compounded. In the event power or other utilities were disrupted, many homes could be without heat. With temperatures frequently dropping below zero in a typical winter, an event where heating systems failed could send many residents to shelters for protection. Other residents may try to heat their homes through alternative measures and increase the chance for structure fires or carbon monoxide poisoning.

Sheltering of community members could present significant logistical problems when maintained over a period of more than a day. Transportation, communication, energy (electric, natural gas, and vehicle fuels), shelter supplies, medical care, food availability and preparation, and sanitation issues all become exceedingly difficult to manage in extreme weather conditions. Local government resources could be

quickly overwhelmed. Mutual aid and state aid might be hard to receive due to the regional impact of this kind of event.

Future Development

The State of Montana has adopted the 2009 International Building Codes (IBC) and these codes are recognized by Lake County and the incorporated communities as the standards for construction. The IBC includes a provision that buildings must be constructed to withstand a wind load of 75 mph constant velocity and three second gusts of 90 mph. Buildings must be designed to withstand a snow load of 30 pounds per square foot minimum. Only the incorporated cities of Polson and Ronan require structural building permits at this time.

4.7 FLOODING

CPRI SCORE = 1.75

Description and History

A flood is a natural event for rivers and streams. Excess water from snowmelt and rainfall accumulates and overflows onto the banks and adjacent floodplains. Floodplains are lowlands, adjacent to rivers and lakes that are subject to recurring floods. A flash flood generally results from a torrential (short duration) rain or cloudburst on a relatively small drainage area. Ice jam flooding occurs when pieces of floating ice carried by the streams current accumulate at an obstruction to the stream. The water held back can cause flooding upstream, and if the obstruction suddenly breaks, flash flooding can then occur downstream as well.

Hundreds of floods occur each year, making it one of the most common hazards in all 50 states. Floods kill an average of 150 people a year nationwide. Most injuries and deaths occur when people are swept away by flood currents and most property damage results from inundation by sediment-laden water. Faster moving floodwater can wash buildings off their foundations and sweep vehicles downstream. Pipelines, bridges, and other infrastructure can be damaged when high water combines with flood debris. Basement flooding can cause extensive damage to the structure and systems of a building.

The National Weather Service provides short-term forecasts and warnings of hazardous weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including heavy rain and flooding. A “watch” is issued when conditions are favorable for severe weather in or near the watch area. A “warning” is issued when the severe weather event is imminent or occurring in the warned area. Warning and Advisory Criteria for flooding is presented below.

- Flash Flood Warning: Flooding is imminent, water levels rise rapidly with inundation occurring in less than 6 hours.
- Flood Warning: Flooding is expected to occur more than 6 hours after the causative event.

Typically, the most severe flooding in Lake County occurs in the spring and early summer as a result of snowmelt and/or runoff from heavy rains. Occasionally, a long sustained rainfall will cause localized flooding. On rare occasions ice jams and log jams will cause localized flooding. This is especially true of the Swan River (FEMA, 1987).

Since 1922 there have been five large flood peaks recorded on the Swan River at Bigfork. These floods occurred in 1928, 1933, 1948, 1964, and 1974. The largest of these events occurred on June 20, 1974. The recorded discharge was 8,890 cubic feet per second (FEMA, 1987).

The flood documented most extensively was the 1964 event. The peak flow of the Swan River during the 1964 flood was four percent less than the previous record at the gaging station near Bigfork in 1948. Upstream at Strom's Store, near Condon, the 1948 peak discharge was exceeded by about 20 percent (FEMA, 1987).

In the Jocko River Valley, U.S. Highway 93, south of Arlee, was flooded in two places by Agency Creek during the 1964 flood. Many small bridges on county roads were damaged, washed out, or sustained approach damage. Nearly 300 feet of the Northern Pacific Railway track was washed out by the Jocko River near the Jocko Cabin Camp. A local resident reported he had never seen flooding of this magnitude in the Jocko River Valley since 1915. Polson residents awoke to find an overnight rainstorm of 2½ inches had caused flooded basements and curb-high waters at intersections (FEMA, 1987).

There have been no Presidential disasters due to flooding in Lake County; however, statewide flood disasters were declared in 1978, 1981, 1984, 1986, 1997, 1998, 2003, and 2011. Lake County received a State emergency declaration due to flooding in 1995 and for Ronan in 2005 (DMA, 2011).

Vulnerability and Area of Impact

The Natural Resource Conservation Service identifies four categories of flooding frequency: none, rare, occasional, and frequent. Areas designated as occasional flood hazard have a 5 to 50 percent probability of flooding in any given year. Areas with occasional flooding in Lake County include of East Bay on Flathead Lake, Post Creek, Crow Creek, Dry Creek and White Earth Creek. Areas with frequent flooding, defined as a 50 percent or greater chance of flooding in any year, include low lands along the Flathead River, Mission Creek at St. Ignatius and Moiese, the Jocko River at Ravalli and in the Jocko Valley north and south of Arlee and Dayton Creek. The Flathead River and Flathead Lake are controlled so flooding has historically been limited to minor seasonal flooding of some tributaries with little or no property damage (Lake County, 2003).

According to the City of Ronan's Growth Policy the condition of Spring Creek and its floodplain needs to be addressed. The floodplain has not been mapped and could pose danger to life and property if a large scale flood were to occur. Spring Creek flows from the northeast to the southwest under U.S. Highway 93 and Community Bank and emerges in Bockman Park. The stream appears to have been straightened and does not include many natural stream features that support fish and wildlife including meanders, substantial riparian vegetation and fallen woody debris.

Flood Protection Measures

The Flood Insurance Study of Lake County and Incorporated Areas (FEMA, 1987) presents the following discussion on flood protection measures.

There are minimal flood protection works along the Swan River in Lake County. Swan Lake provides some flood storage and flood peak attenuation capability; however, it is a natural lake and therefore not intended to reduce downstream flooding. Upstream of Swan Lake there are no reservoirs to control downstream discharges.

There are a number of reservoirs, ditches and diversion canals in Lake County; however, they provide little flood protection. Mud Creek flows into Lower Crow Reservoir, but there are no upstream flood control structures. Crow Creek also flows into Lower Crow Reservoir. Upstream there is a diversion into Kicking Horse Reservoir, which has little effect on flooding.

Post Creek is controlled by McDonald Reservoir. The usable capacity of the reservoir is 8,220 acre-feet and is operated for water storage. There are several canals (Pablo Feeder and Kicking Horse) which divert water from Post Creek, but they have little effect on flood flows.

Mission Creek is controlled by Mission Reservoir and St. Mary's (Tabor) Lake on Dry Creek, which is a direct tributary to Mission Creek. Both of these reservoirs were designed for water conservation and have little flood control storage. The Pablo Feeder Canal diverts water from Mission Creek.

There are several canals that divert water from the Jocko River into Mission Reservoir and St. Mary's Lake; however, the amount of flood protection provided by the diversions is minimal.

Floodplain and Floodway Management

Preliminary Digital Flood Insurance Rate Maps (DFIRMs) are available for portions of Lake County and were used in the PDM analysis. The maps distinguish floodplains, floodways and floodway fringes. The floodway is the highest risk area consisting of stream channels and banks where most damage and destruction occurs. Residential and commercial development, mobile homes and septic systems are prohibited in this area. The DFIRMS are an update of the Flood Insurance Rate Maps (FIRMs) prepared in the late 1980s.

The National Flood Insurance Program (NFIP) encourages local governments to adopt "sound" floodplain management programs to reduce private and public property losses due to floods. Lake County and the communities of Libby and Eureka are part of the NFIP under emergency provisions. **Table 4.7-1** presents statistics on flood insurance policies and losses. The City of Polson participates in the NFIP but doesn't have any policies in affect.

There are no repetitive loss properties or significant repetitive loss properties in Lake County or the incorporated communities. A repetitive Loss property is any insurable building for which two or more claims of more than \$1,000 were paid by the NFIP within any rolling ten-year period, since 1978. Severe

repetitive loss properties have had at least four NFIP claim payments over \$5,000 each and the cumulative amount exceeding \$20,000; or, where at least two separate claim payments have been made with the cumulative amount exceeding the market value of the building.

Jurisdictions	Policies in Force	Insurance in Force	Number of Losses	Total Payments
Lake County	123	\$28,997,500	17	\$53,318
City of Ronan	3	\$234,200	0	--
Town of St. Ignatius	2	\$630,000	0	--

Source: <http://bsa.nfipstat.com/reports/1011.htm#MTT>; <http://bsa.nfipstat.com/reports/1040.htm#30>

The NFIP's Community Rating System (CRS) recognizes community efforts (beyond minimum standards) by reducing flood insurance premiums for the community's property owners. CRS discounts on flood insurance premiums range from 5 percent up to 45 percent. Those discounts provide an incentive for new flood protection activities that can help save lives and property in the event of a flood. To participate in the CRS, a community can choose to undertake some of the 18 public information and floodplain management activities. Based on the total number of points a community earns, the CRS assigns you to one of ten classes. Your discount on flood insurance premiums is based on your class. Neither Lake County nor the incorporated communities currently participate in the CRS.

Probability and Magnitude

Flood listings with associated property damage from the SHELDUS database and Montana DES database of State and Federal disaster declarations are presented in **Table 4.7-2**.

Date	Injuries	Fatalities	Property Damage	Crop Damage
3/17/1969	0	0	\$5,366	\$0
2/24/1986	0.04	0.04	\$0	\$144,444
11/24/1990	0	0	\$41,600	\$0
5/13/1991	0	0	\$21,667	\$0
5/18/1991	0	0	\$20,968	\$0
2/7/1996	0	0	\$41,935	\$0
5/1/1997	0	0	\$151,337	\$0
5/26/1998	0	0	\$293,858	\$0
6/2/2005	0	0	\$260,282	\$0
TOTAL	0.04	0.04	\$837,013	\$144,444

*Threshold amount of damage for Presidential Disaster Declaration

Source: SHELDUS, 2011 (adjusted to 2011 dollars); National Weather Service (NCDC, 2011)

Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from the event.

Preliminary DFIRM maps exist for Lake County and were used to create a flood hazard layer in GIS, as shown on **Figures 8A through 8D** for the County, Polson, Ronan, and St. Ignatius, respectively. The flood hazard area was intersected with the critical facility and MDOR parcel datasets using GIS (**Table 4.7-3**). Vulnerable population was calculated based on the percentage of flood risk area in each census block. Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12 (Tables 4.12-1 through 4.12-4)*. The *Flooding Section* in **Appendix C** presents supporting documentation from the risk assessment.

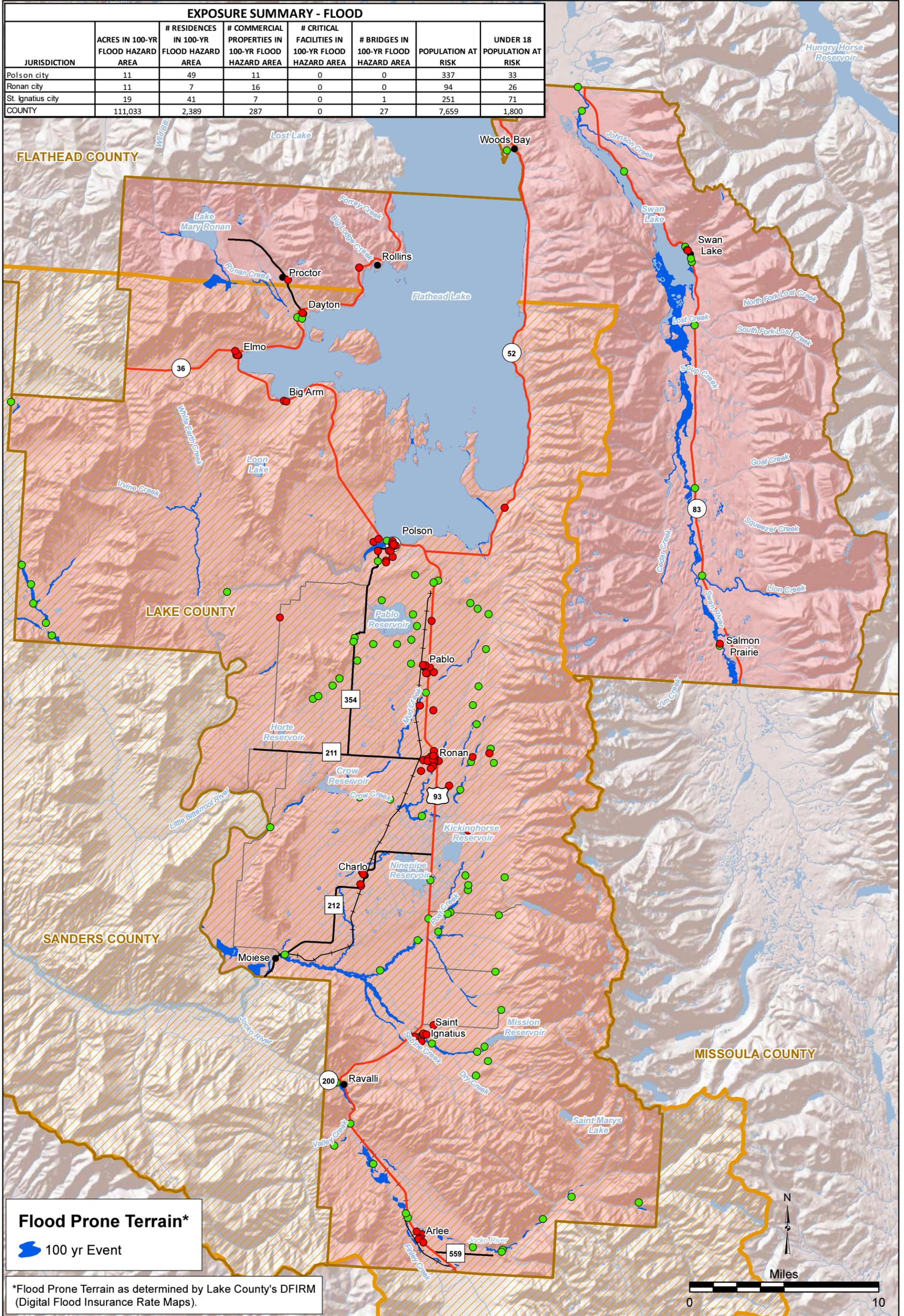
The GIS analysis indicates that 111,033 acres in Lake County are located in the 100-year flood hazard area including 2,389 residences, 287 commercial, industrial and agricultural buildings, and no critical facilities.

Based on the frequency of past events, the probability of flooding in Lake County is rated as “likely”; an event that may occur more than once per decade but not every year. The PDM Planning Team rated flooding as “possible” using the Calculated Priority Risk Index.

Future Development

Lake County adopted floodplain development regulations in 1991 which limit the development that can take place in the designated 100-year floodplains and floodway fringe areas of fee lands. The regulations provide guidance for development in flood-prone areas by restricting uses that are dangerous to public health, safety and property. Uses are delineated as to which uses are permitted, permitted conditionally or prohibited, as outlined in the current floodplain regulations.

The Lake County and City of Polson Subdivision Regulations restrict subdivision of land for building or residential purposes if it is located in the floodway of a 100-year flood event or other land determined to be subject to flooding. If any portion of a proposed subdivision is within 2,000 horizontal feet and 20 vertical feet of a live stream draining an area of 25 square miles or more, and no official floodway delineation or floodway studies of the stream have been made, the subdivider shall provide to the Montana DNRC a flood hazard evaluation, including the calculated 100 year frequency water surface elevations and the 100 year floodplain boundaries. This detailed evaluation must be performed by a licensed professional engineer.



Flood Prone Terrain*
 100 yr Event

*Flood Prone Terrain as determined by Lake County's DFIRM (Digital Flood Insurance Rate Maps).



- Critical Facilities
- County Seat
- County
- ~ Rivers
- Primary Route
- Bridges
- Place Names
- ▨ Flathead Indian Reservation
- Lake/Reservoir
- Secondary Route
- Other Route
- Railroad

May 2012
Figure 8A
Flood Prone Terrain
Lake County
Pre-Disaster Mitigation Plan



May 2012

Figure 8B

**Polson - Flood Prone Terrain
Lake County
Pre-Disaster Mitigation Plan**





Flood Prone Terrain*

- Critical Facilities
- 100 yr Event

*Flood Prone Terrain as determined by Sanders County's DFIRM (Digital Flood insurance Rate Maps).

SCALE IN FEET
0 2,000



May 2012
Figure 8C
Ronan - Flood Prone Terrain
Lake County
Pre-Disaster Mitigation Plan



May 2012

Figure 8D

**Saint Ignatus - Flood Prone Terrain
Lake County
Pre-Disaster Mitigation Plan**



TABLE 4.7-3 LAKE COUNTY VULNERABILITY ANALYSIS – FLOODING										
JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE \$	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE \$	# COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK \$	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE \$	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	\$10,314,441	49	\$1,322,741	11	\$0	0	\$3,277,204	1	337	33
Ronan	\$615,416	7	\$14,259,884	16	\$0	0	\$0	0	94	26
St. Ignatius	\$4,604,999	41	\$181,280	7	\$0	0	\$40,232	1	251	71
Remainder of County	\$608,995,285	2,389	\$24,472,893	287	\$0	0	\$7,076,280	27	7,659	1,800
CENSUS Designated Places										
Arlee CDP	\$2,327,944	24	\$438,868	5	\$0	0	\$126,800	1	261	68
Bear Dance CDP	\$30,114,942	83	\$855,087	6	\$0	0	\$0	0	102	17
Big Arm CDP	\$2,623,311	14	\$194,951	6	\$0	0	\$0	0	76	12
Charlo CDP	\$1,121,491	8	\$0	0	\$0	0	\$0	0	118	33
Dayton CDP	\$2,243,866	20	\$1,170,056	8	\$0	0	\$78,028	1	32	0
Elmo CDP	\$2,106,475	11	\$93,200	11	\$0	0	\$0	0	68	16
Finley Point CDP	\$125,650,735	582	\$595,542	57	\$0	0	\$0	0	245	27
Jette CDP	\$1,380,312	11	\$70,671	2	\$0	0	\$0	0	56	5
Kerr CDP	\$1,656,606	5	\$61,891	2	\$0	0	\$0	0	41	11
Kicking Horse CDP	\$152,593	2	\$553	1	\$0	0	\$0	0	71	26
King's Point CDP	\$21,712,875	106	\$25,149	7	\$0	0	\$0	0	110	17
Lake Mary Ronan CDP	\$1,849,467	18	\$592,164	2	\$0	0	\$0	0	38	4
Lindisfarne CDP	\$23,987,580	129	\$227,603	7	\$0	0	\$0	0	141	20
Pablo CDP	\$1,310,237	11	\$6,391	1	\$0	0	\$0	0	597	189
Ravalli CDP	\$725,543	7	\$0	0	\$0	0	\$0	0	14	0
Rocky Point CDP	\$3,394,002	14	\$27,433	2	\$0	0	\$0	0	44	8
Rollins CDP	\$25,591,195	108	\$227,837	12	\$0	0	\$0	0	65	7
Swan Lake CDP	\$15,904,601	86	\$281,621	8	\$0	0	\$0	0	55	11
Turtle Lake CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Woods Bay CDP	\$16,129,057	67	\$2,186,447	19	\$0	0	\$34,400	1	141	22
County Commissioner Districts										
District 1	\$552,168,830	2,063	\$19,996,843	243	\$0	0	\$5,470,944	13	3,008	434
District 2	\$59,957,984	352	\$3,419,853	55	\$0	0	\$1,618,748	14	3,601	1,001
District 3	\$12,403,327	71	\$16,820,102	23	\$0	0	\$26,820	1	1,732	495

4.8 COMMUNICABLE DISEASE

CPRI SCORE = 2.5

Description and History

Communicable diseases, sometimes called infectious diseases, are illnesses caused by organisms such as bacteria, viruses, fungi and parasites. Sometimes the illness is not due to the organism itself, but rather a toxin that the organism produces after it has been introduced into a human host. Communicable disease may be transmitted (spread) either by: one infected person to another, from an animal to a human, from an animal to an animal, or from some inanimate object (doorknobs, table tops, etc.) to an individual. A pandemic is a global disease outbreak. Human diseases, particularly epidemics, are possible throughout the nation and Lake County is not immune to this hazard. In addition, livestock and animal disease could have a devastating effect on the economy and food supply in Lake County and beyond. Highly contagious diseases are the most threatening to both populations.

Communicable disease or biological agents could be devastating to the population or economy of Lake County. Human diseases when on an epidemic scale, can lead to high infection rates in the population causing isolation, quarantines and potential mass fatalities. Diseases that have been eliminated from the U.S. population, such as smallpox, could be used in bioterrorism.

The following list gives examples of biological agents or diseases that could occur naturally or be used by terrorists as identified by the Centers for Disease Control and Prevention (2011).

Category A

Definition - The U.S. public health system and primary healthcare providers must be prepared to address various biological agents, including pathogens that are rarely seen in the United States. High-priority agents include organisms that pose a risk to national security because they:

- Can be easily disseminated or transmitted from person to person;
- Result in high mortality rates and have the potential for major public health impact;
- Might cause public panic and social disruption; and
- Require special action for public health preparedness.

Agents/Diseases

- Anthrax (*Bacillus anthracis*)
- Botulism (*Clostridium botulinum* toxin)
- Plague (*Yersinia pestis*)
- Smallpox (*variola major*)

- Tularemia (*Francisella tularensis*)
- Viral hemorrhagic fevers (filoviruses [e.g., Ebola, Marburg] and arenaviruses [e.g., Lassa, Machupo])

Category B

Definition - Second highest priority agents include those that:

- Are moderately easy to disseminate;
- Result in moderate morbidity rates and low mortality rates; and
- Require specific enhancements of Centers for Disease Control and Prevention's diagnostic capacity and enhanced disease surveillance.

Agents/Diseases

- Brucellosis (*Brucella* species)
- Epsilon toxin of *Clostridium perfringens*
- Food safety threats (e.g., *Salmonella* species, *Escherichia coli* O157:H7, *Shigella*)
- Glanders (*Burkholderia mallei*)
- Melioidosis (*Burkholderia pseudomallei*)
- Psittacosis (*Chlamydia psittaci*)
- Q fever (*Coxiella burnetii*)
- Ricin toxin from *Ricinus communis* (castor beans)
- Staphylococcal enterotoxin B
- Typhus fever (*Rickettsia prowazekii*)
- Viral encephalitis (alphaviruses [e.g., Venezuelan equine encephalitis, eastern equine encephalitis, western equine encephalitis])
- Water safety threats (e.g., *Vibrio cholerae*, *Cryptosporidium parvum*)

Category C

Definition - Third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because of:

- Availability;
- Ease of production and dissemination; and
- Potential for high morbidity and mortality rates and major health impact.

Agents

- Emerging infectious diseases such as Nipah virus and hantavirus

These diseases/bioterrorism agents can infect populations rapidly, particularly through groups of people in close proximity such as schools, assisted living facilities, and workplaces.

Historically, the Spanish influenza outbreak after World War I in 1918-1919 caused 9.9 deaths per 1,000 people in the State of Montana (Brainerd and Siegler, 2002). Historical records from newspapers show that the influenza outbreak was so bad in 1918 that residents were quarantined from November 30 to December 17 after 18 people died and 53 new cases were discovered. In 1979 and again in late 2003, a flu epidemic hit the U.S. infecting hundreds of people. The swine flu (H1N1) pandemic of 2009 caused a number of fatalities in the country.

The Montana Department of Public Health and Human Services (DPHHS) manages a database of reportable communicable disease occurrences. The communicable disease summary for Lake County between 1997 and 2009 is presented in **Table 4.8-1**.

Disease	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<i>Vaccine Preventable Diseases</i>										
Hepatitis A	-	2	-	-	-	-	-	-	-	-
Pertussis	-	-	-	1	1	4	1	-	34	-
Tuberculosis	-	-	-	-	1	1	2	1	-	-
Varicella	-	-	-	-	-	-	-	-	-	1
<i>Enteric Diseases</i>										
Campylobacter	3	5	6	6	7	1	5	4	8	3
E Coli	1	-	1	-	-	-	1	-	-	-
Giardia	3	3	4	5	2	5	7	3	4	7
Salmonella	1	5	2	5	48	7	7	6	1	3
<i>Other Communicable Diseases</i>										
West Nile Virus	-	-	-	-	-	-	1	-	1	1
Lyme	-	-	-	-	-	-	-	-	2	-
Sexually Transmitted Disease	62	108	144	109	107	138	138	147	161	136
TOTAL	70	123	157	126	166	156	162	161	211	151

Source: Montana Department of Public Health and Human Services, 2011

A 2008 DPHHS report on *Foodborne, Waterborne, and Institutional Outbreaks* indicates that Lake County experienced two significant Norovirus outbreaks; 220 cases at the Arlee School and 14 cases at the Ronan Long Term Care Facility.

The PDM Planning Team recalled several instances where communicable disease has affected Lake County residents: there was a Salmonella outbreak at an Amish community in Lake County which was caused by raw eggs in ice cream; and, contamination of the St. Ignatius water system required temporary chlorination.

Prior to the mid-1980s, Polson relied primarily on surface water from Hell Roaring Creek for the public water supply. Discoveries of *Giardia lamblia* cysts in the Hell Roaring Creek supply in 1985 led to

temporary abandonment of the supply. The City of Polson began developing additional groundwater supplies to replace the surface water system and a shift to groundwater for the Polson public water supply eliminated the contamination problem (Lake County, 2005).

Vulnerability and Area of Impact

Diseases threaten the population of Lake County as opposed to structures. The entire population is at risk for contracting disease. The more urban nature of the population centers makes them more vulnerable to rapidly spreading and highly contagious diseases than other more rural parts of the county and Montana. Another contributing factor is that Lake County has a higher percentage of persons over 65 years old than many other communities in Montana. Approximately 16.8 percent of the population is over 65, compared to 14.8 percent for the State of Montana. The number of fatalities in the county would depend on the mortality (disease/agent attack) rate and the percentage of the population affected. The ability to control the spread of disease will be dependent on the contagiousness of the disease and movement of the population. Given the uncertain nature of diseases, Lake County is assumed to have the same communicable disease risk county-wide.

Probability and Magnitude

The probability of an epidemic in Lake County is difficult to assess based on history and current data. Given the rural nature of most of the county, the probability of rapid infection is somewhat less than in urban areas. Individual infectious diseases will likely be reported on an annual basis giving this hazard a probability rating of “highly likely”.

The magnitude of a communicable disease outbreak varies from common viral outbreaks to widespread bacterial infection. During the 1918 influenza pandemic, infection rates approached 28 percent in the United States (Billings, 1997). Other pandemics produced infection rates as high as 35 percent of the total population (World Health Organization, 2009). Such a pandemic affecting Lake County represents a severe magnitude event. Almost any communicable disease that enters the regional population could overwhelm local health resources as would any rapidly spreading bioterrorism event for which there is no available vaccine or containment capability.

Future Development

There are no land use regulations for future development that could impact the communicable disease hazard. New residents and population add to the number of people threatened in the County but the location of such population increases would not increase their vulnerability to the hazard.

4.9 SEVERE SUMMER WEATHER

CPRI SCORE = 3.20

Severe summer weather includes thunderstorms, wind, hail, lightning, tornadoes, and microbursts that typically occur between May and October of each year in Lake County.

Description and History

A severe thunderstorm is defined by the National Weather Service as a thunderstorm that produces wind gusts at or greater than 58 mph (50 knots), hail 1-inch or larger, and/or tornadoes. Although not considered “severe”, lightning and heavy rain can also accompany thunderstorms. Thunderstorms can produce intense downburst and microburst wind. In addition, strong winds, defined below, can occur outside of thunderstorms when the overall weather conditions are favorable.

Tornadoes are the most concentrated and violent storms produced by the earth’s atmosphere. They are created by a vortex of rotating wind and strong vertical motion, which possess remarkable strength and can cause widespread damage. The most violent tornadoes are capable of tremendous destruction with wind speeds of 300 mph or more. Maximum wind speeds in tornadoes are confined to small areas and vary over short distances. Tornadoes are most common in the Great Plains, and are more infrequent and generally small west of the Rockies. Thunderstorms can produce deadly and damaging tornadoes.

A microburst is a very localized column of sinking air, producing damaging divergent and straight-line winds at the surface that are similar to, but distinguishable from, tornadoes. The scale and suddenness of a microburst makes it a great danger to aircraft due to the low-level wind shear caused by its gust front, with several fatal crashes having been attributed to the phenomenon over the past several decades. Microbursts in forested regions have flattened acres of standing timber. According to FEMA’s wind zone classifications the entire county is in Zone I (130 mph Design Wind Speeds).

The National Weather Service provides short-term forecasts and warnings of severe summer weather to the public by producing regularly-scheduled severe weather outlooks and updates on various forms of hazardous weather including tornado warnings, as listed below.

- Severe Thunderstorm Warning: Any thunderstorm wind gust equal to or greater than 58 mph; any hail size 1-inch or larger.
- High Wind: Sustained winds of 40 mph for an hour or any gust to 58 mph (non-convective winds).
- Tornado Warning: A violently, rotating column of air extending from the base of a thunderstorm to the ground.

Since the 2005 Lake County PDM Plan was completed, several incidents of severe summer weather have affected the county. **Table 4.9-1** presents severe summer storm events from the NCDC database indicating the magnitude of these events.

TABLE 4.9-1 LAKE COUNTY SEVERE SUMMER WEATHER REPORTS (~MAY-OCTOBER)							
Date	Location	Event	Magnitude	Date	Location	Event	Magnitude
5/26/1961	Lake County	Tstm Wind	0 kts.	3/14/2003	Ronan	Tstm Wind	53 kts.
7/5/1962	Lake County	Hail	1.25 in.	5/25/2003	Arlee	Tstm Wind	61 kts.
8/20/1982	Lake County	Tstm Wind	0 kts.	6/10/2003	Arlee	Tstm Wind	63 kts.
8/27/1985	Lake County	Hail	1.00 in.	6/10/2003	Pablo	Tstm Wind	52 kts.
6/15/1987	Lake County	Tstm Wind	65 kts.	6/10/2003	Ronan	Hail	0.88 in.
6/17/1988	Lake County	Tstm Wind	70 kts.	8/5/2003	Arlee	Tstm Wind	52 kts.
8/17/1988	Lake County	Tstm Wind	65 kts.	8/3/2004	Arlee	Hail	1.00 in.
7/15/1989	Lake County	Hail	0.75 in.	8/6/2004	Polson	Tstm Wind	53 kts.
7/16/1989	Lake County	Hail	1.75 in.	8/19/2004	Proctor	Hail	0.75 in.
8/12/1989	Lake County	Tstm Wind	0 kts.	8/20/2004	Big Arm	Hail	0.75 in.
3/3/1991	Lake County	Tornado	F0	8/10/2005	Polson	Tstm Wind	50 kts.
5/31/1993	Swan Lake	Tstm Wind	0 kts.	4/5/2006	St. Ignatius	Heavy Rain	N/A
5/15/1994	Swan Lake	Tstm Wind	0 kts.	6/12/2006	St. Ignatius, Charlo, Ronan	Hail	1.00 in.
8/22/1994	Lake County	High Winds	60 kts.	6/13/2006	Polson, Ronan	Hail	1.00 in.
4/16/1996	St. Ignatius	Tstm Wind/Hail	60 kts.	3/13/2006	Moiese	Tstm Wind	60 kts.
6/15/1996	Arlee, Ronan, St. Ignatius	Tstm Wind	52 kts.	6/13/2006	Polson	Hail	0.75 in.
6/16/1996	Ronan	Hail	1.75 in.	6/16/2006	Ronan	Flood	N/A
7/2/1996	Finley Point	Hail	1.00 in.	8/8/2006	Ronan	Tstm Wind	60 kts.
6/16/1997	Ronan	Funnel Cloud	N/A	8/10/2006	Ronan	Tstm Wind	60 kts.
8/7/1997	Polson, St. Ignatius	Hail	0.75 in.	6/5/2007	St. Ignatius	Tstm Wind, Hail	63 kts.;1 in.
8/20/1997	St. Ignatius	Lightning	N/A	6/20/2007	St. Ignatius	Hail	0.75 in.
7/3/1998	St. Ignatius	Tstm Wind	52 kts.	6/29/2007	Polson, Ronan	Tstm Wind	52 kts.
7/4/1998	Big Arm	Hail	0.75 in.	7/17/2007	Ravalli	Tstm Wind	50 kts.
7/10/1998	Arlee	Tstm Wind	61 kts.	7/18/2007	Pablo	Tornado	
8/22/1998	Arlee	Tstm Wind	50 kts.	7/18/2007	Pablo	Tstm Wind	78 kts.
6/24/1999	Round Butte	Hail	0.75 in.	7/4/2008	Charlo, Ronan	Hail	0.88 in.
6/1/2001	Ronan Airport	Tstm Wind	50 kts.	7/4/2008	Swan Lake	Tstm Wind	52 kts.
6/27/2002	Charlo	Hail	1.75 in.	5/25/2009	Polson	Hail	0.88 in.
7/13/2002	Arlee	Tstm Wind	54 kts.	5/3/2010		High Wind	62 kts.
7/23/2002	Arlee	Hail	1.50 in.	7/22/2010	Elmo, Swan Lake	Tstm Wind	50 kts.
8/16/2002	Lake County	High Winds	69 kts.	7/31/2010	Charlo	Hail	1.75 in.

Source: National Weather Service (NCDC, 2010)

Notes: Tstm = Thunderstorm; kts. = knots; in. = inches

The PDM Planning Team indicated that there have been several microbursts in Lake County, including one on Melita Island which was reported as a tornado.

There have been no Presidential Disaster Declarations or State Disasters issued for the severe summer weather in Lake County. **Table 4.9-2** presents severe summer weather events in Lake County with reported damages since 1960.

TABLE 4.9-2 LAKE COUNTY SEVERE SUMMER WEATHER EVENTS WITH DAMAGES (~MAY-OCTOBER)					
Date	Injuries	Fatalities	Property Damage	Crop Damage	Remarks
5/26/1961	0	0	\$18,571	\$186	Thunderstorm and Gusty Wind
6/6/1964	0	1.2	\$0	\$0	Heavy Rain
6/30/1965	0	0	\$1,955	\$195,489	Funnel Cloud, Hail
7/19/1968	0	0	\$1,121	\$0	High Wind, Thunderstorms
1/26/1969	0	0	\$5	\$0	Lightning
9/12/1970	0	0	\$144,444	\$0	Strong Winds
9/19/1971	0	0	\$1,610	\$0	Wind
9/12/1973	0	0	\$16	\$0	Wind Storm
7/26/1974	0	0	\$754	\$0	High Winds
6/1/1977	0.17	0	\$30,952	\$0	Wind
6/30/1978	0	1	\$0	\$0	Lightning
5/21/1980	0	0	\$22,807	\$0	Rain
9/13/1980	0	0	\$136,842	\$0	Wind
5/21/1981	0	0	\$825,397	\$0	Heavy Rains
6/20/1985	0.02	0	\$2,468	\$2,468	Hail/Wind
6/4/1986	0	0	\$5,200	\$520,000	Hail
7/18/1987	0	0	\$0	\$50,000	Heavy Rain
3/31/1991	0	0	\$41,560	\$0	Tornado
10/16/1991	0	0	\$171,165	\$0	Wind
5/31/1993	0	0	\$783,464	\$0	Swan Lake; Thunderstorm Winds
5/15/1994	0	0	\$853,892	\$0	Thunderstorm Winds
9/9/2000	2	0.25	\$0	\$0	Dust Storm
3/14/2003	0	0	\$24,762	\$0	Severe Storm/Thunderstorm, Wind
7/18/2007	0	0	\$41,497	\$0	Pablo: Tornado
7/4/2008	0	0	\$19,236	\$0	Hail
10/7/2008	0	0	\$3,020	\$0	Strong Wind
10/3/2009	0	0	\$17,687	\$0	High Wind
5/3/2010	0	0	\$13,000	\$0	Wind
7/22/2010	0	0	\$6,240	\$0	Severe Storm/Thunderstorm, Wind
7/31/2010	0	0	\$6,240	\$0	Hail
TOTAL	2.19	2.45	\$3,173,905	\$768,142	

Source: SHELDUS, 2011 (adjusted to 2011 dollars); NCDC, 2011 (adjusted to 2012 dollars)

Note: Often casualties and damage information are listed without sufficient spatial reference. In order to assign the damage amount to a specific county, the fatalities, injuries and dollar losses were divided by the number of counties affected from this event.

Vulnerability and Area of Impact

On review of historic weather data, the entire project area has been classified with a uniform risk for severe summer weather events. Structures, utilities, and vehicles are most at risk from the wind component of these storms, with crops and livestock being additionally threatened by hail. Mostly likely, though, only isolated areas would be affected by these types of storms rather than encompassing the entire county. Annualized loss estimates are presented in the Risk Assessment Summary Tables in *Section 4.12 (Tables 4.12-1 through 4.12-4)*. The *Severe Summer Weather Section* in **Appendix C** presents additional information from the risk assessment.

Probability and Hazard Magnitude

Windstorms and microbursts affect areas with significant tree stands, as well as areas with exposed property, major infrastructure, and aboveground utility lines. Severe hailstorms can also cause considerable damage to buildings and automobiles, but rarely result in loss of life. Nationally, hailstorms cause nearly \$1 billion in property and crop damage annually, as peak activity coincides with peak agricultural seasons.

The history of thunderstorm, wind, hail and microburst events in Lake County indicate that they occur more than once per year. Therefore, the probability of this hazard occurring in the future is rated as “highly likely”.

Future Development

The State of Montana has adopted the 2009 International Building Codes (IBC) and these codes are recognized by Lake County and the incorporated communities as the standards for construction. The IBC includes a provision that buildings must be constructed to withstand a wind load of 75 mph constant velocity and three second gusts of 90 mph. Only the incorporated cities of Polson and Ronan require structural building permits at this time.

4.10 EARTHQUAKE

CPRI SCORE = 2.2

Description and History

An earthquake is ground shaking and radiated seismic energy caused most commonly by a sudden slip on a fault, volcanic or magmatic activity, or other sudden stress changes in the earth. An earthquake of magnitude 8 or larger on the Richter Scale is termed a great earthquake. Fortunately, Montana has not experienced a great earthquake in recorded history. A great earthquake is not likely in Montana but a major earthquake (magnitude 7.0-7.9) occurred near Hebgen Lake in 1959 and dozens of active faults have generated magnitude 6.5-7.5 earthquakes during recent geologic time.

Earthquakes are measured by two variables, magnitude and intensity. The magnitude of an earthquake, as measured on the Richter scale, reflects the energy release of an earthquake. The intensity of an earthquake is gauged by the perceptions and reactions of observers as well as the types and amount of damage. The intensity of an earthquake is rated by the Modified Mercalli Scale. This scale ranks the intensity from I to XII. An earthquake rated as a I, would not be felt except by very few people under especially favorable circumstances. An intensity rating of XII on the other hand would result in total destruction.

A belt of seismicity known as the Intermountain Seismic Belt extends through western Montana, from the Flathead Lake region to the Yellowstone National Park region where the borders of Montana, Idaho, and Wyoming meet. The Intermountain Seismic Belt continues southward through Yellowstone Park, along the Idaho-Wyoming border, through Utah, and into southern Nevada. In western Montana, the Intermountain Seismic Belt is up to 100 km wide. Lake County is located within this belt. The map below shows the occurrence and magnitude of earthquakes within the northern portion of the Intermountain Seismic Belt. (Source: MBMG, 2010)

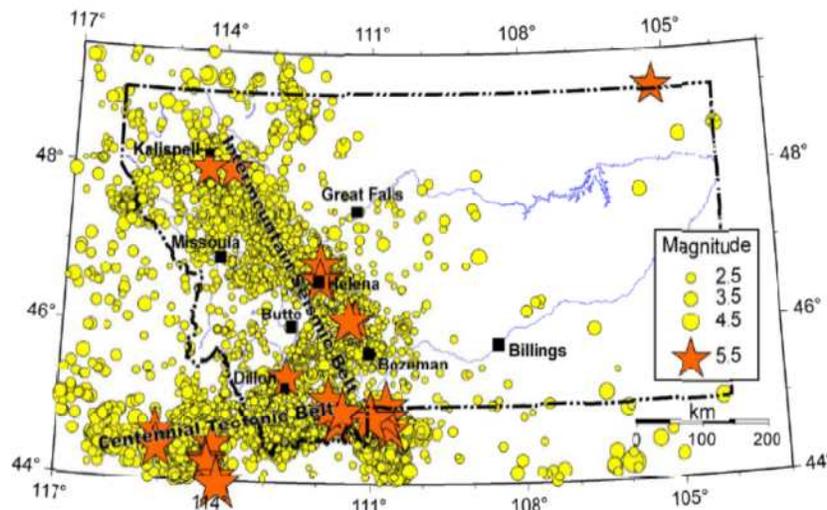


Table 4.10-1 shows the historic earthquakes that have occurred in Montana and the surrounding region since 1900 with a magnitude of 5.5 or greater. Although one significant earthquake occurred in eastern Montana in 1909, the majority have occurred along the Intermountain Seismic Belt and Centennial Tectonic Belt in western Montana.

Date	Magnitude	Approximate Location	Date	Magnitude	Approximate Location
05/16/1909	5.5	Northeast Montana	08/18/1959	6.0	Hebgen Lake
06/28/1925	6.6	Clarkston Valley, MT	08/18/1959	5.6	Hebgen Lake
02/16/1929	5.6	Clarkston Valley, MT	08/18/1959	6.3	Hebgen Lake
10/12/1935	5.9	Helena	08/19/1959	6.0	Hebgen Lake
10/19/1935	6.3	Helena	10/21/1964	5.6	Hebgen Lake
10/31/1935	6.0	Helena	06/30/1975	5.9	Yellowstone Park
07/12/1944	6.1	Central Idaho	12/08/1976	5.5	Yellowstone Park
02/14/1945	6.0	Central Idaho	10/28/1983	7.3	Challis, ID
09/23/1945	5.5	Flathead Valley	10/29/1983	5.5	Challis, ID
11/23/1947	6.1	Virginia City	10/29/1983	5.5	Challis, ID
04/01/1952	5.7	Swan Range	08/22/1984	5.6	Challis, ID
08/18/1959	7.5	Hebgen Lake	07/26/2005	5.6	Beaverhead County
08/18/1959	6.5	Hebgen Lake			

Source: Stickney and others, 2000

Major earthquakes are not common in Lake County, although a number have been felt since the earliest historical occupation of the region. **Table 4.10-2** shows earthquakes near Lake County which have occurred in the past 20 years.

Date	Magnitude	Depth	Miles from Polson	Date	Magnitude	Depth	Miles from Polson
4/1/1992	4.0	3.1 mi.	24 mi.	4/15/1998	4.0	4.1 mi	30 mi
5/2/1995	4.5	5.6 mi	38 mi	12/22/1998	4.7	7.6 mi	55 mi
6/29/1995	4.1	3.1 mi	37 mi	6/28/2000	4.5	6.1 mi.	76 mi.

Source: http://www.city-data.com/county/Lake_County-MT.html

Vulnerability and Area of Impact

Lake County lies at the north end of the Intermountain Seismic Belt. Small earthquakes (up to 3.5 on the Richter Scale) are common locally and are prevalent in the Arlee and Polson areas. Earthquakes of this magnitude may be felt, but are not serious enough to cause damage.

In the early 1990s the Mission Fault was discovered. This fault runs along the Mission Front from St. Mary's Lake (southeast of St. Ignatius) to around the Pablo latitude. Trenches were excavated across the fault by the U.S. Bureau of Reclamation to determine the time when the fault last moved. Radio carbon

and other dating techniques determined that this occurred approximately 7,000 years ago with an event the magnitude of 7.5 on the Richter Scale. Most of the interseismic period for that fault, estimated to be between 5,000 and 8,000 years, has passed and a return event could occur. There is also a fault scarp along the Jocko Front, named the Jocko Fault. This fault is believed to be relatively young. No trenches have been dug to determine the seismic intervals, but this is another potentially active fault (Lake County Growth Policy, 2003).

The Big Arm area experienced earthquakes of a 4.9 magnitude in 1969 and 1971. Some structural damage, although not widespread, resulted from these quakes. The Montana Bureau of Mines and Geology (MBMG), which monitors seismic activity in Montana and beyond, reports a poor correlation between earthquake epicenters and known faults. Most of the quake activity is not associated with known faults. **Figure 9** indicates the general location of faults in Lake County.

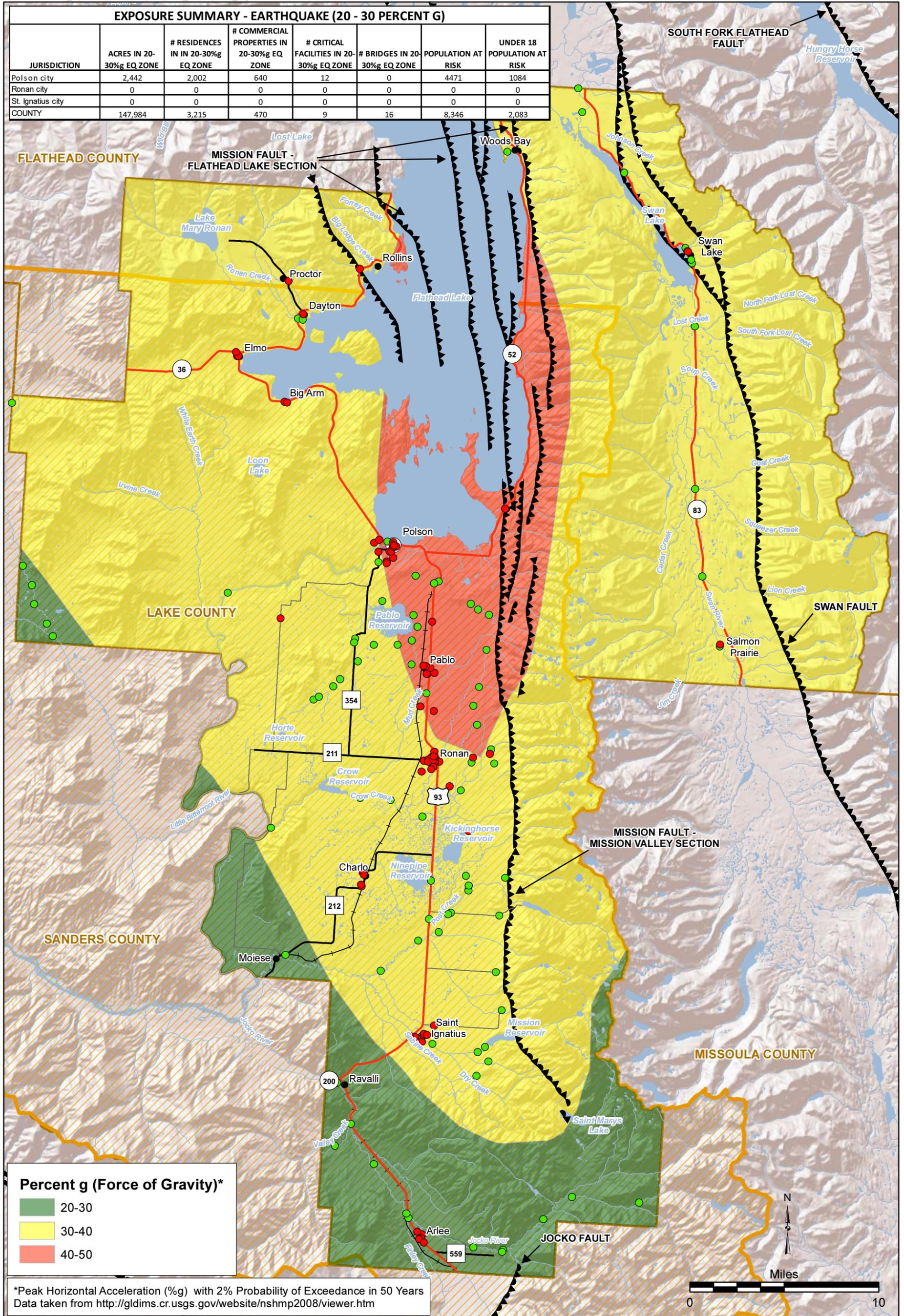
The U.S. Geologic Survey's (USGS) National Seismic Hazard Mapping Project has created peak ground acceleration maps. The maps show the strength of seismic shaking that has a 2 percent probability of being exceeded in a 50-year period. The strength of the shaking is measured as a percent of the acceleration of gravity (%g). **Figure 9** shows peak ground acceleration zones and the location of Lake County's critical facilities.

Peak ground acceleration increases across Lake County from northwest to southeast indicating that portions of the county from Polson south to Ronan, around Rollins, and along the East Shore of Flathead Lake could experience seismic shaking between 40 and 50%g; enough to cause considerable damage and partial collapse in ordinary buildings. According to Qamar (2008), at 9.2%g the earthquake is felt by all with many frightened. Some heavy furniture is moved with a few instances of fallen plaster. Damage is considered slight. At 18%g, damage is negligible in buildings of good design and construction, slight to moderate in well-built ordinary structures, and considerable in poorly-built or badly designed structures. Some chimneys may be broken, and the shaking is noticed by people driving cars. At 34%g, damage is slight in specially designed structures, considerable in ordinary substantial buildings with partial collapse, and great in poorly built structures. Chimneys and walls may fall and heavy furniture is overturned.

Many structures, including critical facilities within Lake County, have not been seismically assessed. Many of the existing homes, businesses, and critical facilities may not be structured to withstand seismic shaking.

Probability and Hazard Magnitude

The population would have little and mostly likely no warning prior to an earthquake, so the impact to that population could be considered high with little time to take protective actions.



- Critical Facilities
- Bridges
- County Seat
- Place Names
- County
- ▨ Flathead Indian Reservation
- ~ Rivers
- ☪ Lake/Reservoir
- Primary Route
- Secondary Route
- Other Route
- Railroad

TABLE 4.10-3 LAKE COUNTY VULNERABILITY ANALYSIS – EARTHQUAKE (40 - 50% g PEAK GROUND ACCELERATION)										
JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE \$	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE \$	# COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK \$	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE \$	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	\$262,630,066	2,002	\$186,321,779	640	\$79,827,069	14	\$3,277,204	1	4,471	1,084
Ronan	\$0	0	\$0	0	\$0	0	\$0	0	0	0
St. Ignatius	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Remainder of County	\$623,671,365	3,215	\$40,303,575	470	\$63,186,190	9	\$4,003,148	16	8,346	2,083
CENSUS Designated Places										
Arlee CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Bear Dance CDP	\$66,399,442	244	\$1,948,114	25	\$0	0	\$0	0	275	54
Big Arm CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Charlo CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Dayton CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Elmo CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Finley Point CDP	\$139,101,581	568	\$2,204,591	71	\$0	0	\$0	0	480	76
Jette CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Kerr CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Kicking Horse CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
King's Point CDP	\$55,981,199	311	\$109,662	19	\$0	0	\$0	0	151	24
Lake Mary Ronan CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Lindisfarne CDP	\$32,886,119	156	\$548,197	23	\$0	0	\$0	0	100	19
Pablo CDP	\$37,391,847	388	\$10,588,590	120	\$62,567,543	6	\$0	0	2,254	744
Ravalli CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Rocky Point CDP	\$9,224,677	46	\$58,498	6	\$0	0	\$0	0	88	17
Rollins CDP	\$18,428,761	62	\$65,623	4	\$0	0	\$0	0	116	23
Swan Lake CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Turtle Lake CDP	\$746,239	6	\$0	0	\$0	0	\$0	0	209	88
Woods Bay CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
County Commissioner Districts										
District 1	\$601,166,910	2,866	\$109,160,373	517	\$30,345,025	8	\$3,277,204	1	4,466	831
District 2	\$0	0	\$0	0	\$0	0	\$0	0	0	0
District 3	\$285,134,521	2,351	\$117,464,981	593	\$112,668,234	15	\$725,944	15	8,351	2,336

To complete the vulnerability analysis for the earthquake hazard, GIS was used to intersect the USGS peak ground acceleration maps with both the critical facility and MDOR cadastral parcel datasets. Estimates of vulnerable population were calculated by determining the percent exposure in each census block for the hazard area. Exposure values are presented in **Table 4.10-3**. The *Earthquake Section* in **Appendix C** presents supporting documentation from the risk assessment including a list of critical facilities in the various seismic zones.

GIS analysis of the earthquake risk to Lake County indicates that over 147,984 acres are within the 40-50%g zone of peak horizontal acceleration. According to the vulnerability analysis, 3,215 residences, 470 commercial, industrial and agricultural buildings, and 9 critical facilities are located in the 40-50%g zone. Digital data on construction type for the facilities is not available but will be considered in future PDM updates.

Hazard probability was assessed based on hazard frequency over a 10-year period. Since the earthquake hazard does not occur with an intensity to cause significant property damage or loss of life more than once every 10 years it was given a “possibly” probability rating. The PDM Planning Team rated this hazard as “likely” using the Calculated Priority Risk Index.

Future Development

Seismic risk is not addressed in policies outlined in the Lake County Growth Policy. Subdivision regulations also do not address seismic risk.

New construction must adhere to seismic provisions in the 2009 International Building Code (IBC) for commercial buildings and the 2006 International Residential Code (IRC) for residential dwellings, as adopted by the State of Montana. Only the incorporated cities of Polson and Ronan require structural building permits at this time.

4.11 DAM FAILURE**CPRI SCORE = 1.6**Description and History

Dams have been placed around Montana for many reasons including recreation, flood control, irrigation, water supply, hydroelectricity, and mining. Dams are built and owned by a variety of entities such as private individuals, utilities, and the government. Dams come in all shapes and sizes from small earthen dams to large concrete structures. The structural integrity of a dam depends on its design, maintenance, and weather/drainage situation. Problems arise when a dam fails and people and/or property lie in its inundation area. Dams can fail for a variety of reasons including seismic activity, poor maintenance, overwhelming weather and flow conditions, or by an intentional act. Dam failure can be compared to riverine or flash flooding in the area downstream from the dam, and sometimes for long distances from the dam, depending on the amount of water retained and the drainage area. Others may be located in areas that result in little if any damages during a failure.

The U.S. Army Corps of Engineers, National Inventory of Dams (NID) website keeps a record of dams across the country. Montana DES also keeps an extensive library of Emergency Action Plans (EAPs) for the state's high hazard dams. Hazard ratings are also given to those dams for emergency management planning purposes. These ratings, high, significant, and low, are based on the potential for loss of life and property damage from the failure of the dam, not the condition or probability of the dam failing, as described below.

Low Hazard Potential: Dams assigned the low hazard potential classification are those where failure or misoperation results in no probable loss of human life and low economic and/or environmental losses. Losses are principally limited to the owner's property.

Significant Hazard Potential: Dams assigned the significant hazard potential classification are those dams where failure or misoperation results in no probable loss of human life but can cause economic loss, environmental damage, disruption of lifeline facilities, or impact other concerns. Significant hazard potential classification dams are often located in predominantly rural or agricultural areas but could be located in areas with population and significant infrastructure.

High Hazard Potential: Dams assigned the high hazard potential classification are those where failure or misoperation will probably cause loss of human life.

Lake County, including area within the Flathead Reservation, has 10 high hazard dams and several significant or low hazard dams. There are also three dams in adjoining Flathead and Sanders Counties with the potential to impact human life in Lake County if a failure were to occur. **Figures 10A through 10C** shows the high hazard dam locations and their inundation areas in the County, Polson and St.

Ignatius, respectively. These dams are described in **Table 4.11-1**, below. No inundation areas would impact the City of Ronan.

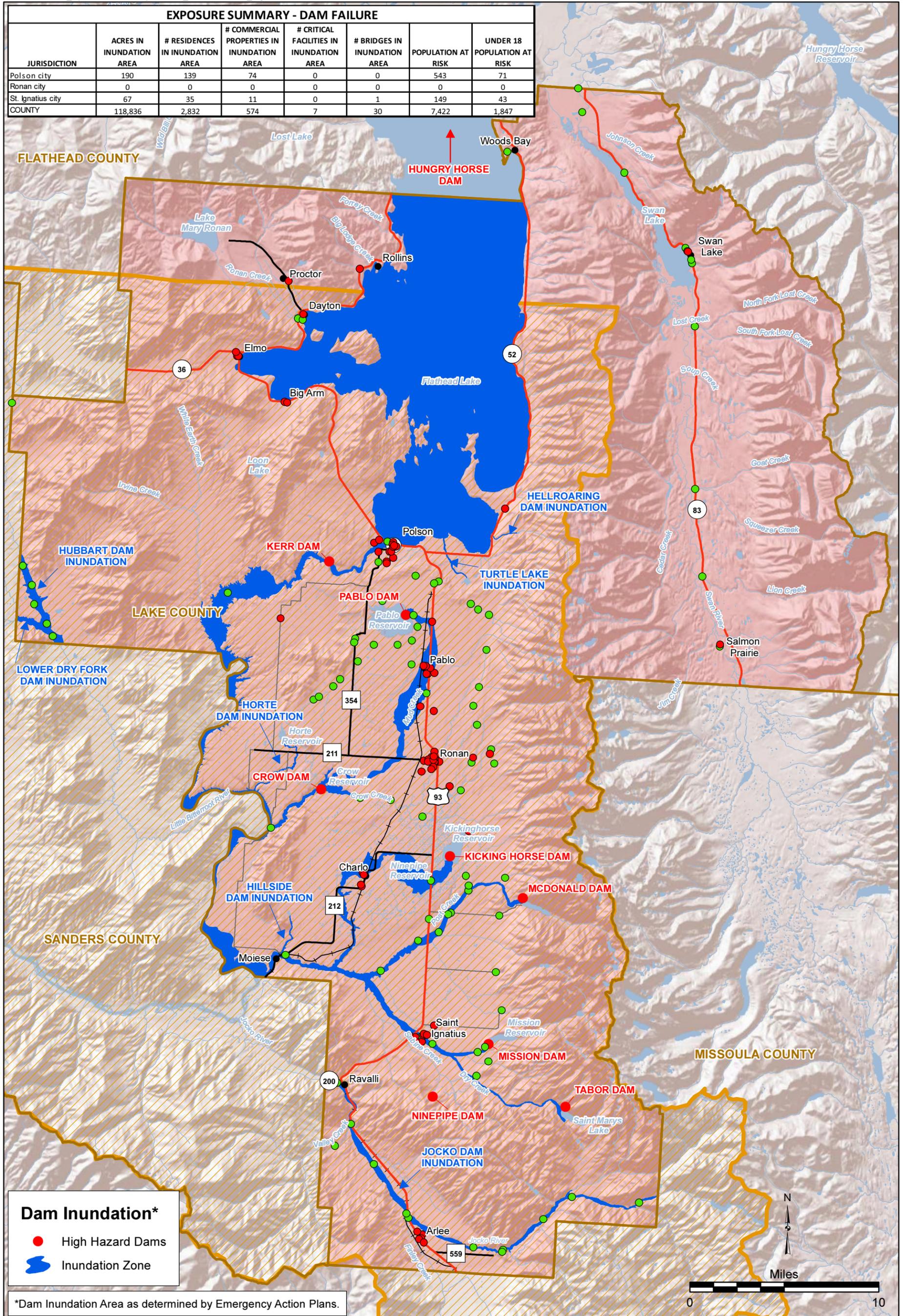
Most of the dams in Lake County were constructed for irrigation purposes many years ago. The average age of the dams in Lake County is over 80 years. The flagship dam in Lake County is Kerr Dam, which controls the outflows of Flathead Lake. Ownership of the Kerr hydroelectric facility is PPL Montana. The Tribes are co-license holders with the utility on Kerr Dam with an option to assume operations of the dam in the year 2015.

According to the Lake County Growth Policy, the Bureau of Reclamation, in cooperation with the Tribes and the BIA, prioritized the dams on the Flathead Reservation based on risk. Excluding Kerr Dam, which is under the jurisdiction of Federal Energy Regulatory Commission and was not included in the risk analysis, the dams in the county are not considered to be “high risk.” The Tribes have installed an early warning system at each dam, which is monitored remotely 24 hours a day. According to the PDM Planning Team, several dams in Lake County have restrictions because of maintenance issues. Pablo Dam was on the list for three years and Lower Crow Dam has a broken outtake works.

There is no record of failure of a high hazard dam in Lake County.

Dam Name	Drainage	Height (feet)	Maximum Storage (acre-ft)	Drainage Area (sq mi)	Year Completed	Purpose	Owner
Kerr	Flathead River	186	1,960,000	7,096	1939	Hydroelectric	PPL Montana & CSKT
Tabor	Dry Creek	53	23,300	12	1930	Irrigation	CSKT
Mission	Mission Creek	71	8,200	14	1935	Irrigation	CSKT
McDonald	Post Creek	40	8,220	21	1920	Irrigation	CSKT
Ninepipe	Dublin Gulch	38	15,150	8	1923	Irrigation	CSKT
Pablo	Pablo Canal	43	29,600	4	1914	Irrigation	CSKT
Lower Crow	Crow Creek	98	10,350	177	1933	Irrigation	CSKT
Kicking Horse	Dublin Gulch	27	8,350	2	1930	Irrigation	CSKT
Black Lake	Middle Fork Jocko River	60	5,200	4	1967	Irrigation	CSKT
Jocko	Middle Fork Jocko River	20	9,000	5	1937	Recreation	CSKT
Hubbart (Sanders County)	Little Bitterroot River	87	15,840	117	1923	Irrigation	CSKT
Lower Dry Fork (Sanders County)	Dry Fork Creek	26	4,270	19	1921	Irrigation	CSKT
Hungry Horse (Flathead County)	South Fork Flathead River	524	3,588,000	1,640	1953	Hydroelectric	DOI, BuRec

CSKT = Confederated Salish and Kootenai Tribe; DOI = U.S. Department of Interior; BuRec = Bureau of Reclamation



- Critical Facilities
- County Seat
- County
- Rivers
- Primary Route
- Bridges
- Place Names
- Flathead Indian Reservation
- Lake/Reservoir
- Secondary Route
- Other Route
- Railroad



May 2012

Figure 10B

**Polson - Dam Inundation Area
Lake County
Pre-Disaster Mitigation Plan**





May 2012

Figure 10C

**Saint Ignatus - Dam Inundation Area
Lake County
Pre-Disaster Mitigation Plan**



Vulnerability and Area of Impact

Dams that could have the greatest impact to life and property demonstrated by their NID hazard rating are the high hazard dams. Those areas directly downstream from these high hazard dams would be the areas most at risk for loss of life and structural damage. Lake County OEM has Emergency Action Plans for the high hazard dams that could affect the county.

To model the exposure from a breach of the high hazard dams in Lake County, a GIS data layer was created for this project and figures created showing the dam failure hazard (**Figures 10A through 10C**). Inundation areas were digitized from the EAPs and intersected with critical facility and MDOR parcel datasets to determine building exposures. Vulnerable populations were calculated based on the percent census block in the inundation areas. Exposure values are presented in **Table 4.11-2**.

GIS analysis of the dam failure risk to Lake County indicates that over 118,836 acres are within the inundation areas of the high hazard dams, including 2,832 residences, 574 commercial, industrial and agricultural buildings, and 7 critical facilities. The *Dam Failure Section* in **Appendix C** presents supporting documentation from the risk assessment including a list of critical facilities in the inundation areas.

Probability and Magnitude

The probability of a significant dam breach in Lake County was ranked as “unlikely” by the Planning Team.

Future Development

The Lake County subdivision regulations do not address new construction in dam inundation areas.

TABLE 4.11-2 LAKE COUNTY VULNERABILITY ANALYSIS – DAM FAILURE										
JURISDICTION	RESIDENTIAL PROPERTY EXPOSURE \$	# RESIDENCES AT RISK	COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTY EXPOSURE \$	# COMMERCIAL, INDUSTRIAL & AGRICULTURAL PROPERTIES AT RISK	CRITICAL FACILITIES EXPOSURE RISK \$	# CRITICAL FACILITIES AT RISK	BRIDGE EXPOSURE \$	# BRIDGES AT RISK	PERSONS AT RISK	PERSONS UNDER 18 AT RISK
Incorporated Communities & County										
Polson	\$27,392,343	139	\$31,785,452	74	\$0	0	\$3,277,204	1	543	71
Ronan	\$0	0	\$0	0	\$0	0	\$0	0	0	0
St. Ignatius	\$4,577,891	35	\$480,338	11	\$0	0	\$40,232	1	149	43
Remainder of County	\$603,058,548	2,832	\$58,782,990	574	\$29,867,535	7	\$6,408,838	30	7,422	1,847
CENSUS Designated Places										
Arlee CDP	\$4,086,587	18	\$394,668	4	\$0	0	\$126,800	1	203	64
Bear Dance CDP	\$43,146,186	102	\$881,450	8	\$0	0	\$0	0	102	17
Big Arm CDP	\$10,332,194	64	\$2,999,894	22	\$0	0	\$0	0	49	5
Charlo CDP	\$8,638,650	103	\$816,760	23	\$ not available	1	\$0	0	280	75
Dayton CDP	\$16,904,379	128	\$29,745,843	151	\$ not available	1	\$78,028	1	83	11
Elmo CDP	\$6,632,461	42	\$646,874	35	\$0	0	\$0	0	138	34
Finley Point CDP	\$193,168,628	711	\$995,192	67	\$0	0	\$0	0	346	50
Jette CDP	\$9,150,542	55	\$166,620	6	\$0	0	\$0	0	79	7
Kerr CDP	\$4,369,129	13	\$61,891	2	\$0	0	\$0	0	48	12
Kicking Horse CDP	\$0	0	\$0	0	\$0	0	\$0	0	6	1
King's Point CDP	\$38,764,343	187	\$29,672	13	\$0	0	\$0	0	110	17
Lake Mary Ronan CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Lindisfarne CDP	\$48,498,948	235	\$478,624	20	\$0	0	\$0	0	196	30
Pablo CDP	\$24,177,458	283	\$9,681,452	106	\$29,867,535	5	\$0	0	2,071	683
Ravalli CDP	\$1,137,479	12	\$0	0	\$0	0	\$0	0	14	0
Rocky Point CDP	\$9,702,350	38	\$29,064	4	\$0	0	\$0	0	88	17
Rollins CDP	\$35,571,906	160	\$274,013	16	\$0	0	\$0	0	132	18
Swan Lake CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
Turtle Lake CDP	\$0	0	\$0	0	\$0	0	\$0	0	60	12
Woods Bay CDP	\$0	0	\$0	0	\$0	0	\$0	0	0	0
County Commissioner Districts										
District 1	\$541,023,628	2,242	\$69,802,534	471	\$ not available	1	\$4,484,202	9	2,518	383
District 2	\$58,732,720	414	\$3,949,993	62	\$29,867,535	5	\$1,891,048	20	2,506	648
District 3	\$35,272,434	350	\$17,296,253	126	\$ not available	1	\$73,820	2	3,090	930

4.12 RISK ASSESSMENT SUMMARY

This section summarizes the results of the individual risk assessments presented under the hazard profiles. There have been no repetitive loss properties due to flooding in Lake County. Neither the County nor the communities of Polson, Ronan or St. Ignatius have repetitive loss properties associated with other hazards. Annual loss estimates are presented for each hazard where damage data is available. Future development projects in Lake County are discussed as they relate to the hazard areas.

Vulnerability Analysis - Loss Estimation Summary

Estimating potential losses and calculating risk requires evaluating where hazard areas and vulnerabilities to them coincide, how frequently the hazards occur, and then estimating the magnitude of damage resulting from a hazard event. Annualized loss was computed for the hazards where damage data was available. *Section 4.1* presents the methodology for loss estimation calculations. **Tables 4.12-1 through 4.12-4** present annual loss for the various hazards for residential, commercial (including industrial and agricultural buildings), and critical facilities in the county and incorporated communities. **Appendix C** contains supporting information.

Future Development

Within the next 10 years, the following projects are proposed for development in Lake County. These include new critical facilities and infrastructure improvements.

- Polson Stormwater Treatment Facility
- Search and Rescue Building, south of Polson
- Core Motion Building Facility, south of Ronan
- Ronan Stormwater Treatment Facility
- Ronan Lagoon System
- St. Ignatius – Water System Update

Figures 11A through 11D present the composite of hazard prone areas in the county and incorporated communities. These figures show future development projects identified during the planning process and/or can be used to help locate future projects outside hazard-prone areas. **Table 4.12-5** presents a matrix of each identified future development project, showing which hazards they will be exposed to. Data on proposed construction method and estimated cost were not available.

**TABLE 4.12-1
HAZARD VULNERABILITY SUMMARY; LAKE COUNTY**

Hazard	Residential Building Stock \$ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock \$ Annual Loss	Commercial, Industrial & Agricultural Building Stock \$ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock \$ Annual Loss	Critical Facility \$ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities \$ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	\$1,239,691,127	6,265	\$55,614	\$71,969,078	927	\$3,229	\$69,358,669	21	\$3,112	14,024	3,507
Transportation Accidents/Hazardous Material Incidents	\$852,497,082	5,619	NA	\$349,089,825	1,767	NA	\$163,529,316	57	NA	17,342	4,371
Landslides	\$65,526,956	384	NA	\$10,389,748	71	NA	\$ not available	1	NA	2,266	448
Structure Fire	\$1,900,032,008	10,026	\$351,686	\$152,796,089	1,713	\$28,282	\$72,839,343	37	\$13,482	21,545	5,424
Severe Winter Weather	\$1,900,032,008	10,026	\$7,905	\$152,796,089	1,713	\$636	\$72,839,343	37	\$303	21,545	5,424
Flooding	\$608,995,285	2,389	\$5,122	\$24,472,893	287	\$206	\$0	0	NA	7,659	1,800
Severe Summer Weather	\$1,900,032,008	10,026	\$42,215	\$152,796,089	1,713	\$3,395	\$72,839,343	37	\$1,618	21,545	5,424
Earthquakes	\$623,671,365	3,215	NA	\$40,303,575	470	NA	\$63,186,190	9	NA	8,346	2,083
Dam Failure	\$603,058,548	2,832	NA	\$58,782,990	574	NA	\$29,867,535	7	NA	7,422	1,847

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.

Flooding exposure is presented for the 100-year event.

Earthquake exposure is presented for 40-50 %g peak ground acceleration

It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.

**TABLE 4.12-2
HAZARD VULNERABILITY SUMMARY; CITY OF POLSON**

Hazard	Residential Building Stock \$ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock \$ Annual Loss	Commercial, Industrial & Agricultural Building Stock \$ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock \$ Annual Loss	Critical Facility \$ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities \$ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	\$0	0	NA	\$0	0	NA	\$0	0	NA	0	0
Transportation Accidents/Hazardous Material Incidents	\$90,923,471	890	NA	\$149,850,759	517	NA	\$31,062,173	11	NA	2,721	611
Landslides	\$0	0	NA	\$0	0	NA	\$0	0	NA	0	0
Structure Fire	\$264,253,693	2,014	\$48,912	\$186,643,179	641	\$34,547	\$80,471,317	14	\$14,895	4,488	1,085
Severe Winter Weather	\$264,253,693	2,014	\$1,099	\$186,643,179	641	\$776	\$80,471,317	14	\$335	4,488	1,085
Flooding	\$10,314,441	49	\$87	\$1,322,741	11	\$11	\$0	0	NA	337	33
Severe Summer Weather	\$264,253,693	2,014	\$5,871	\$186,643,179	641	\$4,147	\$80,471,317	14	\$1,788	4,488	1,085
Earthquakes	\$262,630,066	2,002	NA	\$186,321,779	640	NA	\$79,827,069	14	NA	4,471	1,084
Dam Failure	\$27,392,343	139	NA	\$31,785,452	74	NA	\$0	0	NA	543	71

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.

Flooding exposure is presented for the 100-year event.

Earthquake exposure is presented for 40-50 %g peak ground acceleration

It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.

**TABLE 4.12-3
HAZARD VULNERABILITY SUMMARY; CITY OF RONAN**

Hazard	Residential Building Stock \$ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock \$ Annual Loss	Commercial, Industrial & Agricultural Building Stock \$ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock \$ Annual Loss	Critical Facility \$ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities \$ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	\$989,415	7	\$44	\$0	0	\$0	\$0	0	\$0	27	12
Transportation Accidents/Hazardous Material Incidents	\$50,690,419	683	NA	\$110,298,707	420	NA	\$57,042,214	12	NA	1,617	432
Landslides	\$0	0	NA	\$0	0	NA	\$0	0	NA	0	0
Structure Fire	\$68,159,449	869	\$12,616	\$111,261,523	428	\$20,594	\$59,905,388	16	\$11,088	1,871	518
Severe Winter Weather	\$68,159,449	869	\$284	\$111,261,523	428	\$463	\$59,905,388	16	\$249	1,871	518
Flooding	\$615,416	7	\$5	\$14,259,884	16	\$120	\$0	0	\$0	94	26
Severe Summer Weather	\$68,159,449	869	\$1,514	\$111,261,523	428	\$2,472	\$59,905,388	16	\$1,331	1,871	518
Earthquakes	\$0	0	NA	\$0	0	NA	\$0	0	NA	0	0
Dam Failure	\$0	0	NA	\$0	0	NA	\$0	0	NA	0	0

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.

Flooding exposure is presented for the 100-year event.

Earthquake exposure is presented for 40-50 %g peak ground acceleration

It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.

**TABLE 4.12-4
HAZARD VULNERABILITY SUMMARY; TOWN OF ST. IGNATIUS**

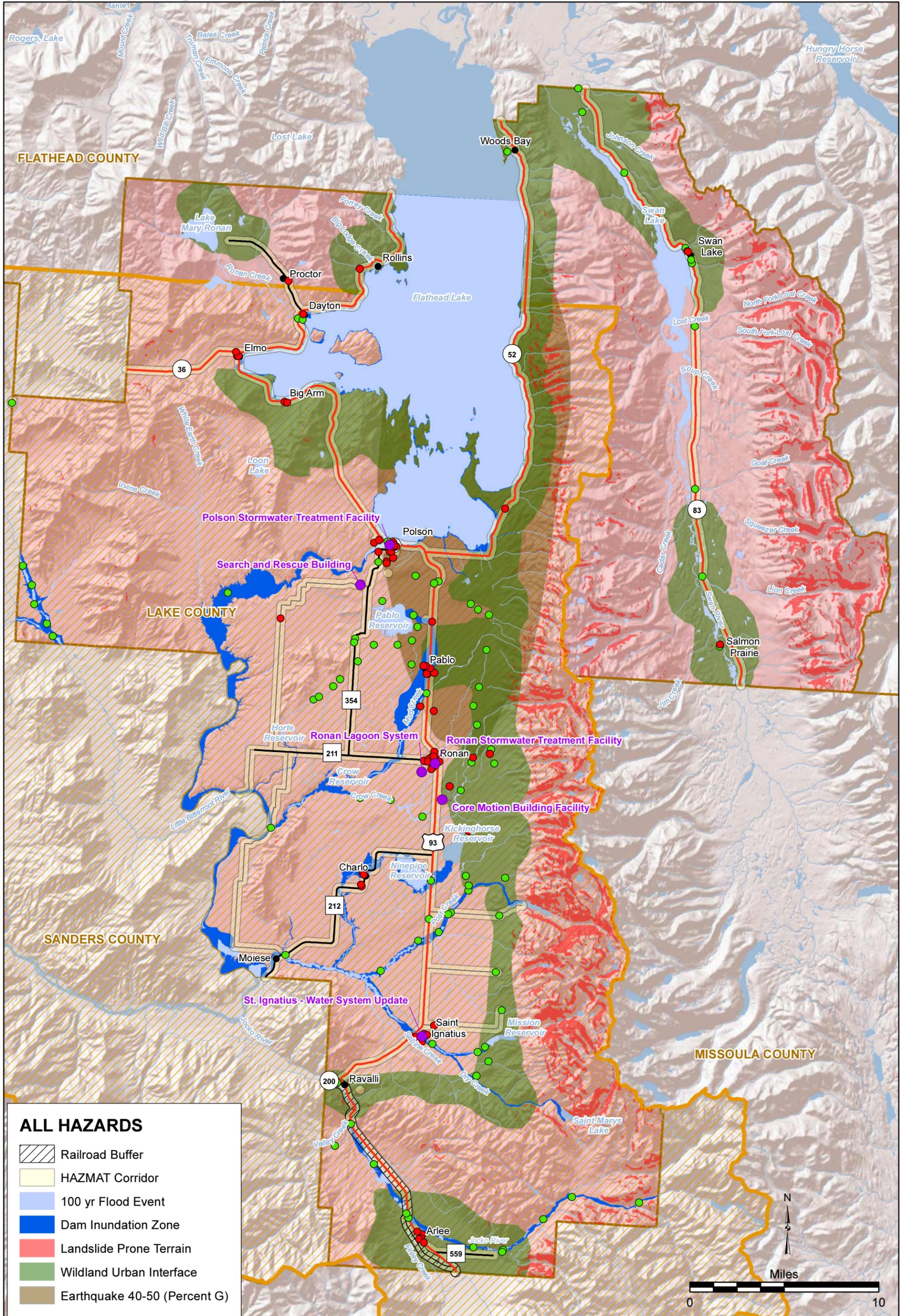
Hazard	Residential Building Stock \$ Exposure in Hazard Area	# Residential Structures in Hazard Area	Residential Building Stock \$ Annual Loss	Commercial, Industrial & Agricultural Building Stock \$ Exposure in Hazard Area	# Commercial, Industrial & Agricultural Structures in Hazard Area	Commercial, Industrial & Agricultural Building Stock \$ Annual Loss	Critical Facility \$ Exposure in Hazard Area	# Critical Facilities Exposure in Hazard Area	Critical Facilities \$ Annualized Loss	Persons in Hazard Area	Under 18 in Hazard Area
Wildfire	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	0	0
Transportation Accidents/Hazardous Material Incidents	\$11,038,483	122	NA	\$4,050,397	34	NA	\$0	0	NA	315	76
Landslides	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	0	0
Structure Fire	\$28,062,140	323	\$5,194	\$11,480,359	98	\$2,125	\$10,134,008	7	\$1,876	842	254
Severe Winter Weather	\$28,062,140	323	\$117	\$11,480,359	98	\$48	\$10,134,008	7	\$42	842	254
Flooding	\$4,604,999	41	\$39	\$181,280	7	\$2	\$0	0	\$0	251	71
Severe Summer Weather	\$28,062,140	323	\$623	\$11,480,359	98	\$255	\$10,134,008	7	\$225	842	254
Earthquakes	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	0	0
Dam Failure	\$4,577,891	35	NA	\$480,338	11	NA	\$0	0	NA	149	43

NA = Not Available. Annual loss cannot be computed due to the absence of historic property damage figures that are required to calculate magnitude. See Section 4.1 on page 4-1 which describes risk assessment methodology for additional information.

Flooding exposure is presented for the 100-year event.

Earthquake exposure is presented for 40-50 %g peak ground acceleration

It should be noted that there are some inherent inaccuracies using a percentage of census block population to compute the number of individuals living in the hazard area. More persons than actually reside in the hazard area where census blocks are large.



- Future Development
- Critical Facilities
- Bridges
- County Seat
- Place Names
- County
- Flathead Indian Reservation
- ~ Rivers
- ◡ Lake/Reservoir
- Primary Route
- Secondary Route
- Other Route
- +— Railroad



*Flooding along the shoreline is also present, yet covered up by the Dam Inundation layer in this figure.

May 2012

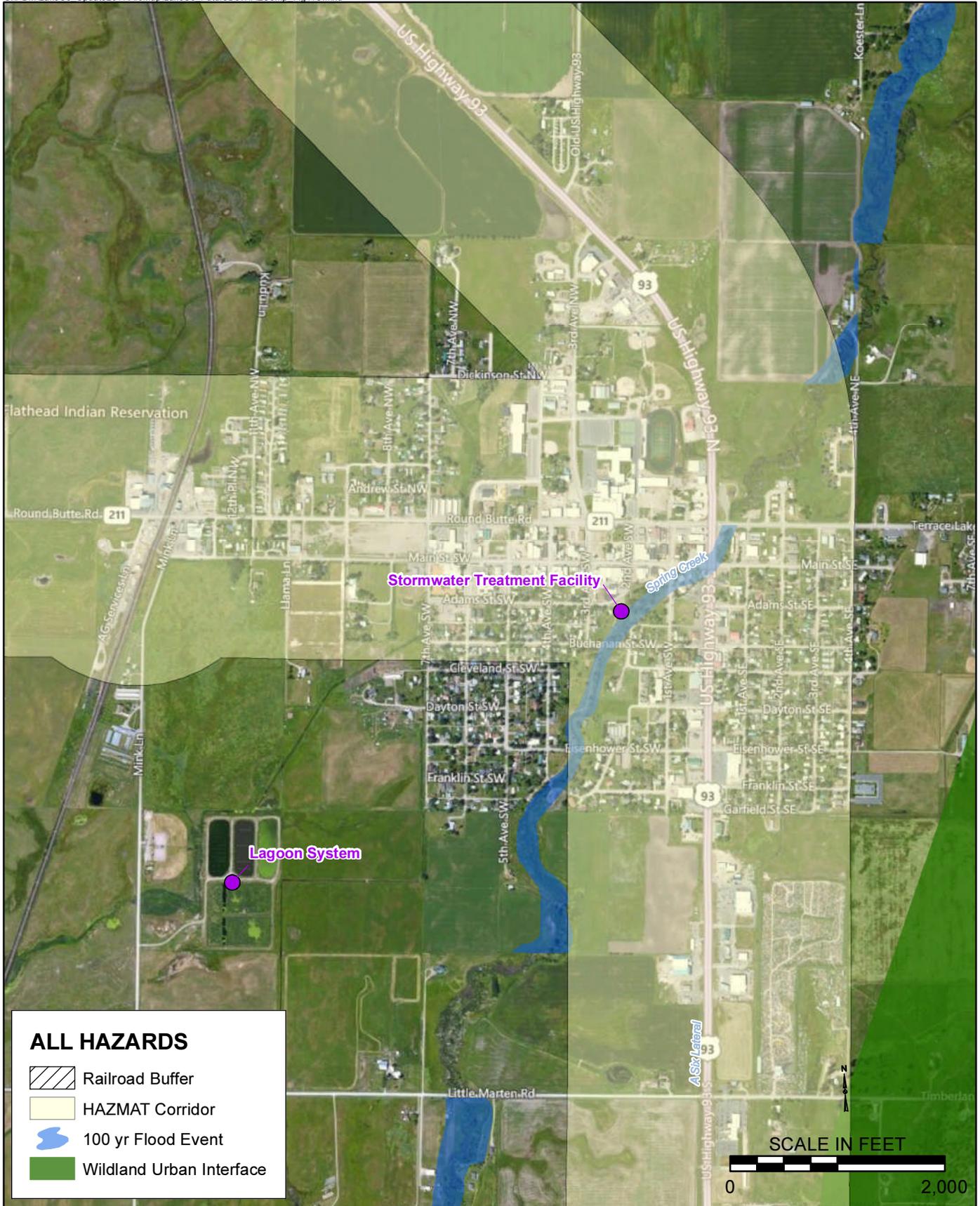
Figure 11B

**Polson - Future Development and Hazard Composite
Lake County**

Pre-Disaster Mitigation Plan



● Future Development

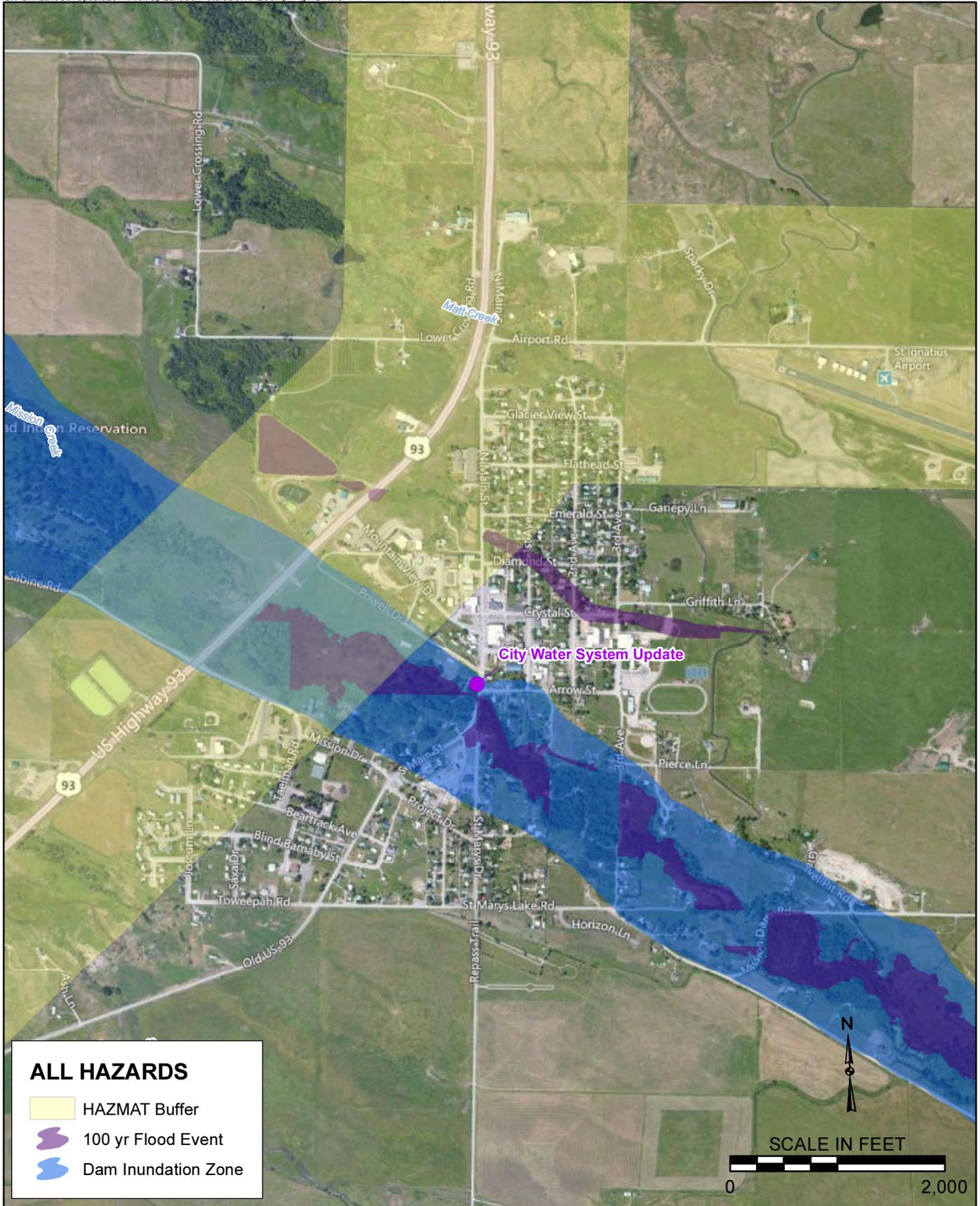


May 2012

Figure 11C

Ronan - Future Development and Hazard Composite
Lake County
Pre-Disaster Mitigation Plan





May 2012

Figure 11D



● Future Development

St. Ignatius - Future Development and Hazard Composite
Lake County
Pre-Disaster Mitigation Plan

**TABLE 4.12-5
FUTURE DEVELOPMENT SUMMARY**

Proposed Project	Hazard Areas									
	Wildfire	Transportation Accidents/Hazardous Material Incidents	Landslides	Structure Fire	Severe Winter Weather	Flooding	Communicable Disease	Severe Summer Weather	Earthquake (40-50%g)	Dam Failure
Ronan Lagoon System	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No
Ronan Stormwater Treatment Facility	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No
Core Motion Building Facility	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No
St. Ignatius – Water System Update	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Polson Stormwater Treatment Facility	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes
Search and Rescue Building	No	Yes	No	Yes	Yes	No	Yes	Yes	No	No

5.0 MITIGATION STRATEGY

Hazard mitigation, as defined by the Disaster Mitigation Act of 2000, is any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. The development of a mitigation strategy allows the community to create a vision for preventing future disasters, establish a common set of mitigation goals, prioritize actions, and evaluate the success of such actions.

Specific mitigation goals and projects were developed for Lake County by the Planning Team and reviewed and enhanced at the public meetings. A matrix developed for project ranking emphasizing cost-benefit and input from local officials was used to determine project prioritization. Project implementation is discussed at the conclusion of this section. **Appendix D** contains supporting documentation for the mitigation strategy including: example mitigation projects and a mitigation action plan with individual project worksheets.

The mitigation strategy in this PDM Plan update has been expanded to include several additional hazards beyond what was developed in the 2005 Plan. **Appendix D** presents a table summarizing the status of the 2005 mitigation strategy, identifying completed projects, and reconciling projects that are were not carried forward to the 2012 strategy.

5.1 HAZARD MITIGATION GOALS

The PDM Plan goals describe the overall direction that Lake County can take to work toward mitigating risk from natural and man-made hazards and avoid long-term vulnerabilities to these hazards. Mitigation goals for this plan are listed below.

- Reduce the Impacts from Wildfire
- Reduce the Impacts from Transportation Accidents
- Reduce Impacts from Landslides
- Reduce Impacts from Structure Fires
- Reduce Impacts from Severe Winter Weather
- Reduce Impacts from Flooding
- Reduce Impacts from Communicable Disease
- Reduce Impacts from Severe Summer Weather
- Reduce Impacts from Earthquakes
- Reduce Impacts from Dam Failure
- Reduce Impacts from All Hazards

5.2 HAZARD MITIGATION OBJECTIVES AND PROJECTS

The Planning Team reviewed a wide range of mitigation projects prior to determining what actions to include in the Lake County PDM Plan (**Appendix D**). Particular attention was given to new and existing buildings and infrastructure, and developing appropriate mitigation strategies for these facilities. Prior to analyzing and prioritizing the mitigation actions, projects were grouped under the following objectives.

- Prevention
- Property Protection
- Public Education and Awareness
- Natural Resource Protection
- Structural Projects
- Emergency Services

Projects included in the 2012 Lake County mitigation strategy are presented in **Table 5.4-1**.

5.3 PROJECT RANKING AND PRIORITIZATION

Each of the proposed projects has value; however, time and financial constraints do not permit all projects to be implemented immediately. By prioritizing the actions, the most critical, cost effective projects can be achieved in the short term.

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*, *Project Feasibility* and *Cost*, as described below:

- For the *Population Protected* category, a “high” rank represents greater than 50 percent of County residents would be protected by implementation of the mitigation strategy; a “medium” rank represents 20 to 50 percent of County residents would be protected; and, a “low” rank represents less than 20 percent of County residents would be protected.
- For the *Property Protected* category, a “high” represents that greater than \$500,000 worth of property would be protected through implementation of the mitigation strategy; “medium” represents that \$100,000 to \$500,000 worth of property would be protected; and, “low” would be less than \$100,000 would be protected.
- For the *Project Feasibility* category a “high” rank represent that technology is available and implementation is likely; a “medium” rank indicates technology may be available but

implementation could be difficult; and, a “low” rank represents that no technology is available or implementation would be unlikely.

- For the *Project Cost* category, a “high” represents that the mitigation project would cost more than \$500,000; a “medium” rank represents the project cost would be between \$100,000 and \$500,000; and, “low” represents the project would cost less than \$100,000.

The overall cost-benefit was then calculated by summing the total score for each project. **Table 5.3-1** presents the cost-benefit scoring matrix. The mitigation action plans in **Appendix D** present the scoring of each project.

	Population Protected	Property Protected	Project Feasibility	Cost
High	3	3	3	1
Medium	2	2	2	2
Low	1	1	1	3

After considering all mitigation projects, the Planning Team prioritized the projects as high, medium, or low based on which projects were most needed to protect life and property. Prioritization of the projects serves as a guide for choosing and funding projects. **Table 5.4-1** and the mitigation action plans in **Appendix D** present the County priority for each project.

5.4 PROJECT IMPLEMENTATION

The Planning Team reviewed the projects and assigned a corresponding county/city/town department responsible for its implementation. Cooperating organizations for implementation may also include local, federal or regional agencies that are capable of implementing activities and programs. The Planning Team identified a schedule for implementation and potential funding sources. The schedule for implementation included several categories including: “on-going” for projects that are part of the County’s emergency management program; “short-term” for projects to be completed within 1-2 years; “mid-term” for projects to be completed within 3-4 years; “long-term” for projects to be completed in 5 or more years; and “Year 1-5” for projects which will span the entire planning period. Implementation details are shown in **Table 5.4-1** and in the mitigation action plans in **Appendix D**. Potential funding sources are discussed in *Section 6.3*. The Lake County OEM Directory will be responsible for the administration of mitigation projects.

**TABLE 5.4-1
LAKE COUNTY MITIGATION STRATEGY**

Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 1 - Reduce Impacts from Wildfire	Objective 1.1 - Enhance Emergency Services to Mitigate Impacts from Wildfire	1.1.1 - Identify and facilitate additional training for firefighters.	High / 11 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	Individual Fire Chiefs	Ongoing	Grants, Fire Service Training School
	Objective 1.2 - Protect Property from Wildfire	1.2.1 - Continue to be proactive in fuel management county- and reservation-wide.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	Commissioners, Tribal Fire	Ongoing	Lake County Fuel Reduction Program
		1.2.2 - Support interagency collaboration on fuel management projects.	High / 11 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, Fuel Reduction Office, Commissioners	Ongoing	County
		1.2.3 - Continue to support and enhance County fuel reduction program.	High / 11 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	Fuel Reduction Office, Commissioners	Ongoing	County, Lake County Fuel Reduction Program
	Objective 1.3 - Provide Public Education and Awareness on Wildfire	1.3.1 - Provide wildfire mitigation information to urban interface landowners.	High / 11 points High Priority	Lake County, Polson, Ronan, St. Ignatius	County Planning Dept., Fire Chiefs	Ongoing	County
Goal 2 - Reduce Impacts from Transportation Accidents	Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents	2.1.1 - Coordinate emergency response activities between railroad, Tribes, counties and municipalities.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	TERC/LEPC, Fire Chiefs	Ongoing	County (including RFD budgets)
		Project 2.1.2 - Encourage local emergency responders to have adequate training to respond to hazardous material incidents consistent with local capabilities.	High / 10 points High Priority	Lake County, Polson, Ronan, St. Ignatius	TERC/LEPC, DES	Ongoing	County
		2.1.3 - Work with MDT to enhance chain-up areas along Highway 93.	Medium/ 9 points Medium Priority	Lake County	TERC/LEPC	Ongoing	County, Tribe, State
		2.1.4 - Continue to work with MRL and encourage ongoing training with local responders.	Medium/ 7 points Medium Priority	Lake County	DES	Ongoing	County
	Objective 2.2 - Implement Actions to Prevent Impacts from Transportation Accidents	2.2.1 - Explore the possibility of a Polson Bypass for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population center.	Medium/ 9 points Low Priority	Lake County, Polson	Commissioners	Long-term	County
		2.2.2 - Encourage truck traffic to use Highway 93 instead of Highway 35 around Flathead Lake.	High / 10 points Medium Priority	Lake County	DES, TERC/LEPC, RFDs	Ongoing	County

**TABLE 5.4-1
LAKE COUNTY MITIGATION STRATEGY**

Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 2 - Reduce Impacts from Transportation Accidents	Objective 2.3 - Provide Public Education and Awareness on Transportation Accidents	2.3.1 - Increase public awareness of common hazardous materials either stored, used or transported through the area.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	TERC/LEPC	Ongoing	County
Goal 3 - Reduce Impacts from Landslides	Objective 3.1 - Protect Property from Landslides	3.1.1 - Encourage MDT to work with the County to identify landslide prone areas.	High / 10 points Medium Priority	Lake County	DES, County Planning Dept.	Ongoing	County
		3.1.2 - Encourage MDT to implement preservation/stabilization measures of slide-prone areas.	Medium / 7 points Medium Priority	Lake County	DES, County Planning Dept.	Ongoing	County
Goal 4 - Reduce Impacts from Structure Fire	Objective 4.1 - Protect Property from Structure Fire	4.1.1 - Encourage fire sprinkler systems in residential and older commercial buildings.	High / 12 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	RFDs, City Fire Depts.	Ongoing	County
		4.1.2 - Continue to consult with Fire Chiefs regarding whether new water supplies are needed to maintain fire flows in new housing developments.	Medium / 8 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	Planning Dept., Fire Chiefs, Commissioners	Ongoing	County
	Objective 4.2 - Enhance Emergency Services to Mitigate Impacts from Structure Fire	4.2.1 - Encourage volunteer fire departments to recruit and train volunteers.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	RFDs	Ongoing	County
	Objective 4.3 - Provide Public Education and Awareness on Structure Fire	4.3.1 - Support volunteer fire department fire prevention activities.	High / 12 points Low Priority	Lake County, Polson, Ronan, St. Ignatius	RFDs	Ongoing	County
Goal 5 - Reduce Impacts from Severe Winter Weather	Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather	5.1.1 - Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	County Road Dept., City Public Works, MDT, Tribal Housing	Ongoing	County, Tribe, State
		5.1.2 - Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems.	High / 11 points High Priority	Lake County, Polson, Ronan, St. Ignatius	DES, Commissioners, Cities, Tribe, MDT	Ongoing	County, Cities, Tribe, State
		5.1.3 - Continue to aggressively address rural locations within the county so people's residences can be found for rescue purposes.	Medium / 8 points High Priority	Lake County, Polson, Ronan, St. Ignatius	County GIS, County Planning	Ongoing	County
		5.1.4 - Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES	Ongoing	County

TABLE 5.4-1 LAKE COUNTY MITIGATION STRATEGY							
Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 5 - Reduce Impacts from Severe Winter Weather	Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather	5.2.1 - Continue to distribute educational material on how to prepare for winter.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES	Ongoing	County, State
		5.2.2 - Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow County to develop and maintain database with this information.	Medium / 8 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	County Public Health Dept., E911, DES, Tribe	Long-term	Grants
		5.2.3 - Promote the National Weather Service's Winter Weather Awareness Week (third full week in October).	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	TERC/LEPC	Ongoing	County, NWS
Goal 6 - Reduce Impacts from Flooding	Objective 6.1 - Implement Actions to Prevent Impacts from Flooding	6.1.1 - Support FEMA's Map Modernization Program which will provide Lake County with updated floodplain mapping (DFIRMS).	Medium / 8 points High Priority	Lake County, Polson, Ronan, St. Ignatius	County Planning Dept.	Ongoing	County
		6.1.2 - Update flood regulations when DFIRMS are adopted to protect future development.	High / 10 points High Priority	Lake County, Polson, Ronan, St. Ignatius	County Planning Dept., Cities, Commissioners,	Short-term	County, Cities
	Objective 6.2 - Implement Actions to Protect Natural Resources from Flooding	6.2.1 - Work with partner agencies to identify erosion and sediment control issues.	Medium / 6 points High Priority	Lake County, Polson, Ronan, St. Ignatius	County Planning Dept., County Road Dept., Tribe	Ongoing	County
	Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding	6.3.1 - Continue to resize and upgrade culverts in various locations throughout the county.	Medium / 9 points Medium Priority	Lake County	County Road Dept., MDT, Tribe	Ongoing	County, FEMA, State
		6.3.2 - Identify locations throughout the county where culverts are needed.	High / 10 points Medium Priority	Lake County	County Road Dept., MDT, Tribe	Ongoing	County, FEMA, State
	Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding	6.4.1 - Continue to work with landowners, ranchers, and response agencies on flood response activities.	High / 11 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, County Planning Dept.	Ongoing	County
		6.4.2 - GPS all homes along waterways.	Medium / 9 points Low Priority	Lake County, Polson, Ronan, St. Ignatius	County GIS, County Planning Dept.	Long-term	County, Grants

**TABLE 5.4-1
LAKE COUNTY MITIGATION STRATEGY**

Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 6 - Reduce Impacts from Flooding	Objective 6.5 - Provide Public Education and Awareness on Flooding	6.5.1 - Continue to educate homeowners on purchasing flood insurance through the National Flood Insurance Program through availability of information.	High / 10 points Low Priority	Lake County, Polson, Ronan, St. Ignatius	County Planning Dept.	Ongoing	County, FEMA
		6.5.2 - Educate homeowners on flood concerns.	High / 11 points High Priority	Lake County, Polson, Ronan, St. Ignatius	DES	Ongoing	County
		6.5.3 - Publish and distribute floodplain maps to homeowners.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	County GIS, County Planning Dept.	Short-term	County
Goal 7 - Reduce Impacts from Communicable Disease	Objective 7.1 - Provide Public Education and Awareness on Communicable Disease	7.1.1 - Encourage and support local public health in preparing plans for biological hazards.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	County Public Health Dept.	Ongoing	County
		7.1.2 - Provide public awareness on communicable disease prevention.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	County Public Health Dept.	Ongoing	County
Goal 8 - Reduce Impacts from Severe Summer Weather	Objective 8.1 - Protect Property from Severe Summer Weather	8.1.1 - Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	County Planning Dept.	Ongoing	County
		8.1.2 - Develop strategies for clearing roads of fallen trees, and clearing debris from public and private property.	High / 10 points Low Priority	Lake County, Polson, Ronan, St. Ignatius	County Road Dept., City Public Works, MDT, RFDs, Power Companies	Ongoing	County, Cities, State
	Objective 8.2 - Provide Public Education and Awareness on Severe Summer Weather	8.2.1 - Continue participation in National Weather Service Storm Ready Community Program.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES	Ongoing	County, NWS
		8.2.2 - Promote National Weather Service's severe weather spotter training program.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, TERC/LEPC	Ongoing	County
Goal 9 - Reduce Impacts from Earthquakes	Objective 9.1 - Protect Property from Earthquakes	9.1.1 - Encourage non-structural projects in schools and critical facilities.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, TERC/LEPC, Schools	Year 1 – 5	County
		9.1.2 - Encourage schools and critical facilities to identify the need for structural retrofits.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, TERC/LEPC, Schools	Year 1 – 5	County
		9.1.3 - Encourage homeowners to perform structural and non-structural retrofits on their homes.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES	Year 1 – 5	County, FEMA

TABLE 5.4-1 LAKE COUNTY MITIGATION STRATEGY							
Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 9 - Reduce Impacts from Earthquakes	Objective 9.2 - Provide Public Education and Awareness on Earthquakes	9.2.1 - Conduct educational earthquake awareness and preparedness in schools and for the general public.	High / 10 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, TERC/LEPC	Year 1 – 5	County, FEMA
Goal 10 - Reduce Impacts from Dam Failure	Objective 10.1 - Implement Actions to Prevent Impacts from Dam Failure	10.1.1 - Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.	Medium / 9 points Medium-High Priority	Lake County, Polson, Ronan, St. Ignatius	County Planning Dept.	Year 1 – 5	County
	Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam Failure	10.2.1 - Coordinate with dam owners to exercise EAPs with responders.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, TERC/LEPC	Ongoing	Dam Owners
		10.2.2 - Maintain Emergency Action Plans of high hazard dams and work with owners to keeps plans current.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	Dam Owners, DES	Ongoing	Dam Owners
Goal 11 - Reduce Impacts from All Hazards	Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards	11.1.1 - Buy weather radios for various critical facilities.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES	Ongoing	County
		11.1.2 - Continue coordinating with public broadcasting stations with Early Alert System information.	High / 10 points High Priority	Lake County, Polson, Ronan, St. Ignatius	DES, Chief Elected Officials	Ongoing	County, Cities
		11.1.3 - Continue to encourage that public facilities and schools obtain generators for backup power.	High / 10 points High Priority	Lake County, Polson, Ronan, St. Ignatius	DES, TERC/LEPC	Ongoing	County, Schools, Cities
		11.1.4 - Identify emergency shelters and encourage them to obtain generators.	Medium / 6 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES, TERC/LEPC	Year 1 – 5	County
	Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards	11.1.5 - Continue to enhance and improve back-up location for dispatch center.	Medium / 8 points High Priority	Lake County, Polson, Ronan, St. Ignatius	Sheriff, DES, Commissioners	Ongoing	County
		11.1.6 - Continue to enhance and improve Reverse 911 capabilities through exercise and software development.	Medium / 8 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	E911, Sheriff	Ongoing	County
	Objective 11.2 - Provide Public Education and Awareness on All Hazards	11.2.1 - Promote the need for emergency action plans for special needs populations.	Medium / 8 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	TERC/LEPC, County Public Health Dept.	Ongoing	County
		11.2.2 - Encourage preparation of Family Emergency Plans.	High / 10 points High Priority	Lake County, Polson, Ronan, St. Ignatius	TERC/LEPC, County Public Health Dept., RFDs, DES	Ongoing	County
		11.2.3 - Promote disaster-related educational programs through the school system.	Medium / 9 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	TERC/LEPC	Ongoing	County

**TABLE 5.4-1
LAKE COUNTY MITIGATION STRATEGY**

Goal	Objective	Project	Ranking / Score County Priority	Jurisdictions	Responsible Agency / Department	Schedule	Potential Funding Source
Goal 11 - Reduce Impacts from All Hazards	Objective 11.3 - Implement Actions to Prevent Impacts from All Hazards	11.3.1 - Continue to work with cell phone companies to get a tower in towns, as needed.	Medium / 8 points Medium Priority	Lake County, Polson, Ronan, St. Ignatius	DES	Ongoing	County

Notes: DES = Lake County Disaster and Emergency Services (aka Office of Emergency Management); FEMA = Federal Emergency Management Agency; GIS = Geographic Information Systems; LEPC = Local Emergency Planning Committee; MDT = Montana Department of Transportation; NWS = National Weather Service; RFDs = Rural Fire Departments; TERC = Tribal Emergency Response Commission; Tribe = Confederated Salish & Kootenai Tribes.

6.0 CAPABILITY ASSESSMENT

Lake County's capabilities to implement mitigation projects include community planners, floodplain managers, GIS personnel, emergency managers, and financial, legal and regulatory requirements (zoning, subdivision regulations, building codes, lakeshore protection regulations, and a floodplain management ordinance). These resources have the responsibility to provide overview of past, current, and ongoing pre- and post-disaster mitigation planning projects including capital improvement programs, wildfire mitigation programs, stormwater management programs, and NFIP compliance projects. The goals and objectives used to mitigate natural and technological hazards builds on the community's existing capabilities.

6.1 LAKE COUNTY OFFICE OF EMERGENCY MANAGEMENT

The Lake County OEM plans, organizes and manages the county emergency preparedness program; evaluates, improves and promotes comprehensive disaster planning efforts; participates in multi-jurisdiction, multi-discipline work groups and task forces; and, promotes interagency coordination. These efforts are designed to enhance the capacity of the local government to plan for, respond to, and mitigate the consequences of threats and disasters using an all-hazard framework.

The Lake County OEM includes one full time staff person whose salary is half federally-funded and half funded by the County.

6.2 LAKE COUNTY FUELS REDUCTION COORDINATOR

The mission of the Lake County Fuels Reduction Coordinator is to protect lives, property, and the environment through hazard analysis and implementing mitigation projects to reduce identified risks. The position reports directly to the Lake County OEM, however direction and guidance is also provided by the Fuels Reduction Advisory Committee. The position is three-quarters time and is funded through grant money received by the County. Duties Include:

- Program manager of the County's Hazardous Fuels Reduction program.
- Public information and education related to wildfire risk management.
- Prepares grant applications and administers projects conducted under awarded grants.
- Manages planning activities in accordance with the Community Wildfire Protection Plan.
- Provides professional forestry advice to the Fuels Reduction Advisory Committee.
- Works with the Lake County Fire Association in other wildfire-related matters.

6.3 TERC/LEPC

Emergency services providers in Lake County participate in a Local Emergency Planning Committee (LEPC) that is chaired by the OEM Director. This group is combined with a group representing the Flathead Reservation that has similar responsibilities; the Tribal Emergency Response Commission (TERC). The mission of the TERC/LEPC is to provide resources and guidance to the community through education, coordination and assistance in haz-mat planning and to assure public health and safety. They do not function in actual emergency situations, but attempt to identify and catalogue potential hazards, identify available resources, and mitigate hazards when feasible. The TERC/LEPC consists of representatives from businesses, local government, emergency responders and citizen groups. The group meets on a monthly basis.

6.4 LAKE COUNTY FIRE ASSOCIATION

The Lake County Fire Association is comprised of representatives from all of the fire departments, rural fire districts, fire service areas and wildland fire protection agencies in the County. The Association meets at least every two months, and works to improve the effectiveness of the County's fire service through cooperation and information exchange. Topics routinely handled include joint training programs, equipment compatibility, communications, mutual aid agreements, fire prevention activities and response coordination.

6.5 FUELS REDUCTION ADVISORY COMMITTEE

In 2004, the Lake County Commissioners formed an informal working group comprised of representatives from agencies in Lake County involved in wildland fires to address the hazardous fuels issue in WUI areas. These agencies include Lake County OEM, CSKT, Montana DNRC, U.S. Forest Service, and the Lake County Fire Association. This group is involved in coordinating efforts to reduce the risk of loss due to wildfires through planning activities, application for grants, and the administration of fuels reduction projects. The chairman of the committee is the Lake County OEM Director.

6.6 FUNDING OPPORTUNITIES

Although a number of the mitigation projects listed in *Section 5.1* may not be eligible for FEMA funding, Lake County may secure alternate funding sources to implement these projects in the future including federal and state grant programs, and funds made available through the county. Alternate funding sources may include the following:

U.S. Department of Housing and Urban Development, Community Development Block Grants (CDBG).

The CDBG program is a flexible program that provides communities with resources to address a wide range of unique community development needs. CDBG money can be used to match FEMA grant money. More Information:

<http://www.hud.gov/offices/cpd/communitydevelopment/programs/>

U.S. Bureau of Land Management, Rural Fire Assistance Program. BLM provides funds to rural fire departments for wildfire fighting; also provides wildland fire equipment, training and/or prevention materials. More Information:

http://199.134.225.50/nwcc/t2_wa4/pdf/RuralAssistance.pdf

U.S. Department of Homeland Security. Enhances the ability of states, local and tribal jurisdictions, and other regional authorities in the preparation, prevention, and response to terrorist attacks and other disasters, by distributing grant funds. Localities can use grants for planning, equipment, training and exercise needs. These grants include, but are not limited to areas of Critical Infrastructure Protection Equipment and Training for First Responders, and Homeland Security Grants. More information:

<http://www.dhs.gov/dhspublic/>

FEMA, Hazard Mitigation Grant Program (HMGP). The HMGP provides grants to States, Indian Tribes, local governments, and private non-profit organizations to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.

More information: <http://www.fema.gov/government/grant/hmgrp/>

FEMA, Pre-Disaster Mitigation Competitive (PDMC) Grant Program. The PDM program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDMC grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.

More information: <http://www.fema.gov/government/grant/pdm/index.shtm>

National Fire Plan, State Fire Assistance Hazard Mitigation Program. These special state Fire Assistance funds are targeted at hazardous fuel treatments in the wildland-urban interface. Recipients include state forestry organization, local fire services, county emergency planning committees and private landowners. More information:

http://www.fs.fed.us/r1-r4/spf/coopfire_assistance.html

Fire Management Assistance Program is authorized under Section 420 of the Stafford Act. It allows for the mitigation, management, and control of fires burning on publicly or privately owned forest or grasslands that threaten destruction that would constitute a major disaster.

More information: <http://www.fema.gov/government/grant/fmagp/index.shtm>

U.S. Department of Agriculture, Community Facilities Loans and Grants. Provides grants (and loans) to cities, counties, states and other public entities to improve community facilities for essential services to rural residents. Projects can include fire and rescue services; funds have been provided to purchase fire-fighting equipment for rural areas. No match is required.

More information: http://www.rurdev.usda.gov/HCF_CF.html; or local Rural Development office.

General Services Administration, Sale of Federal Surplus Personal Property. This program sells property no longer needed by the federal government. The program provides individuals, businesses and organizations the opportunity to enter competitive bids for purchase of a wide variety of personal property and equipment. Normally, there are no restrictions on the property purchased. More information: <http://www.govsales.gov/html/index.htm>

FEMA, Readiness, Response and Recovery Directorate, Fire Management Assistance Grant Program. Program provides grants to states, tribal governments and local governments for the mitigation, management and control of any fire burning on publicly (non-federal) or privately owned forest or grassland that threatens such destruction as would constitute a major disaster. The grants are made in the form of cost sharing with the federal share being 75 percent of total eligible costs. Grant approvals are made within 1 to 72 hours from time of request.

More information: <http://www.fema.gov/government/grant/fmagp/index.shtm>

Hazardous Materials Emergency Preparedness Grants. Grant funds will be passed through to local emergency management offices and HazMat teams having functional and active LEPC groups. More information: <http://www.phmsa.dot.gov/hazmat/grants>

Renewable Resource Grant Program. Administered by the Montana Department of Natural Resources and Conservation, the Resource Grant and Loan Program provides both grant and loan funding for public facility and other renewable resource projects. Projects that conserve, manage, develop or protect Montana's renewable resources are eligible for funding. Numerous public facility projects including drinking water, wastewater and solid waste development and improvement projects have received funding through this program. Other renewable resource projects that have been funded include irrigation rehabilitation, dam repair, soil and water conservation and forest enhancement.

More information: http://dnrc.mt.gov/cardd/ResDevBureau/renewable_grant_program.asp

Bureau of Indian Affairs (BIA). The BIA provides services directly or through contracts, grants, or compacts to federally recognized Tribes. The BIA offers an extensive scope of programs that covers the entire range of Federal, State and local government services. Programs administered through the BIA include social services, natural resources management on trust lands, economic development programs, law enforcement and detention services, administration of tribal courts, implementation of land and water claim settlements, housing improvement, disaster relief, replacement and repair of schools, repair and maintenance of roads and bridges, and the repair of structural deficiencies on high hazard dams. Through BIA programs, Tribes improve their tribal government infrastructure, community infrastructure, education, job training, and employment opportunities along with other components of long term sustainable development that work to improve the quality of life for their members. More information: <http://www.bia.gov/>

7.0 PLAN MAINTENANCE PROCEDURES

The plan maintenance section of this document details the formal process that will ensure that the Lake County PDM Plan remains an active and relevant document. The maintenance process includes a schedule for monitoring and evaluating the plan and producing a plan revision every five years. The plan can be revised more frequently than five years if the conditions under which it was developed change significantly (e.g. a major disaster occurs and projects are accomplished and/or new projects need to be identified, or funding availability changes). This section also describes how the county will monitor the progress of mitigation activities and be incorporated into existing planning mechanisms. The final section describes how the county will integrate public participation throughout the plan maintenance process.

7.1 MONITORING, EVALUATING AND UPDATING THE PLAN

7.1.1 2005 PDM Plan

The 2005 PDM Plan was neither monitored nor evaluated since it was developed and adopted. Mitigation projects were completed during this period (as discussed in Section 7.2.1, below); however, the plan was not discussed for relevance since its inception. Lake County submitted a planning grant to FEMA in 2010 to update their PDM Plan and this funding was approved.

7.1.2 2012 PDM Plan

The PDM Plan should be reviewed annually at meetings of the TERC/LEPC. These reviews may be more or less frequent, as deemed necessary by the Lake County OEM Director, but there will be a minimum of one review per year. The review should determine whether a plan update is needed prior to the required five-year update. The plan review should consider any new hazards and vulnerabilities as well as document completed mitigation projects, identify new mitigation projects and evaluate mitigation priorities.

The Lake County OEM Director will be responsible for ensuring the PDM Plan review is on the agenda at the TERC/LEPC meetings so that applicability of the plan can be evaluated. The OEM Director should prepare a status report summarizing the outcome of the plan review and the minutes should be made available to interested stakeholders and kept in a permanent file designated for the next (2017) PDM Plan update.

Three years after adoption of the plan, the Lake County OEM Director may apply for a planning grant through FEMA to start the updating of the PDM Plan. Upon receipt of funding, the county may solicit bids in accordance with applicable contracting procedures and hire a contractor to assist with the project. The proposed schedule for completion of the plan update is one year from award of a contract, to coincide with the five-year adoption date of the original PDM Plan.

The Lake County OEM Director will be responsible for the plan update. Before the end of the five-year period, the updated plan will be submitted to FEMA for approval. When concurrence is received that the updated plan complies with FEMA requirements, it will be submitted to the Board of County Commissioners and Mayors for adoption. The OEM Director will send an e-mail to individuals and organizations on the stakeholder list to inform them that the updated plan is available on the County website.

7.2 MONITORING PROGRESS OF MITIGATION ACTIVITIES

7.2.1 2005 PDM Plan

Since development of the 2005 PDM Plan, several mitigation projects were completed in Lake County while a number of other projects are on-going and will continue through the next planning period. Completed and/or ongoing projects are listed below with a description of progress made:

- ALL HAZARD – In 2010, the Lake County Emergency Operations Plan was updated and hazard-specific annexes were reviewed and revised.
- ALL HAZARD – Project: Buy weather radios for various critical facilities. *Progress: State program provided weather radios to all the schools. Tribal council and chief elected officials also have them now.*
- ALL HAZARD – Project: Provide public broadcasting station with information on dangers or critical information. *Progress: This activity is ongoing through the Emergency Alert System.*
- COMMUNICABLE DISEASE – Project: Investigate mitigation options for West Nile Virus. *Progress: This is being done by the Lake County Health Department through public awareness.*
- FLOODING – Project: GPS all homes along waterways. *Progress: Rural addressing is up to date and can be intersected with the floodplain when DFIRMs are adopted.*
- FLOODING – Project: Educate homeowners on flood concerns. *Progress: Lake County Planning Department is doing this by consulting with developers and having FEMA brochures available.*
- FLOODING – Project: Publish and distribute floodplain maps to homeowners. *Progress: DFIRMs are being reviewed at this time and will be made available once adopted.*
- WILDFIRE – Project: Identify risk areas and homes to develop pre-attack plans. *Progress: Tribe finished a project mapping risk areas and evacuation at Rocky Point, Wilderness Valley, and Finley Point.*
- WILDFIRE – Project: Provide wildfire mitigation information to urban interface landowners. *Progress: Some door-to-door communication has been done with the Tribe and through the County's Fuel Reduction Program.*
- WILDFIRE – Project: Provide additional training to firefighters. *Progress: Various training opportunities have been made available to volunteer firefighters.*

The OEM Director has monitored completion of these activities; however, the 2005 PDM Plan did not outline a specific process to track the initiation, status, and completion of mitigation activities.

7.2.2 2012 PDM Plan

The process for monitoring and evaluating mitigation projects will be the responsibility of the TERC/LEPC. This group is comprised of dedicated individuals from county, city, and tribal departments, emergency response entities, local businesses, and non-profit organizations to engage in all aspects of emergency management. This group has accepted the responsibility for implementing mitigation projects on behalf of their jurisdiction and annual meetings will provide a venue for reporting and accountability. Minutes should be prepared from these meeting and should be distributed to interested stakeholders as well as kept in a permanent file for the next PDM Plan update (2017). Agencies and organizations “assigned” responsibility for various aspects of the mitigation strategy will have the opportunity to coordinate with other team members on challenges, success and opportunities.

Individual projects will be monitored by the department implementing the project or the grant. Generally, HMGP and PDMC projects will be monitored by the OEM Director and any National Fire Plan projects or Community Assessment Agreements will be monitored by the U.S. Forest Service and/or DNRC. Each organization will track projects through a central database and issue quarterly reports to federal agencies.

7.3 IMPLEMENTATION THROUGH EXISTING PROGRAMS

Lake County will have the opportunity to implement hazard mitigation projects through existing programs and procedures through plan revisions or amendments. The PDM Plan will be incorporated into the plans, regulations and ordinances as they are updated in the future or when new plans are developed. **Table 7.3-1** presents a summary of existing plans and ordinances and how integration of mitigation projects will occur.

TABLE 7.3-1 IMPLEMENTATION OF MITIGATION INTO EXISTING PLANS AND CODES		
Type	Name	Integration Technique
Plans		
Emergency Operations	Lake County Emergency Operations Plan	Integrated by reference in PDM Plan.
	Emergency Action Plan, Black Lake Dam	Dam safety projects addressed in EAPs. Integration through reference in PDM Plan.
	Emergency Action Plan, Jocko Dam	
	Emergency Action Plan, Kerr Dam	
	Emergency Action Plan, Kicking Horse Dam	
	Emergency Action Plan, Lower Crow Dam	
	Emergency Action Plan, McDonald Dam	
	Emergency Action Plan, Mission Dam	
	Emergency Action Plan, Ninepipe Dam	

TABLE 7.3-1 IMPLEMENTATION OF MITIGATION INTO EXISTING PLANS AND CODES		
Type	Name	Integration Technique
Plans		
Emergency Operations	Emergency Action Plan, Pablo Dam	Dam safety projects addressed in EAPs. Integration through reference in PDM Plan.
	Emergency Action Plan, Tabor Dam	
	Emergency Action Plan, Upper Dry Fork Dam (Sanders County)	
	Emergency Action Plan, Lower Dry Fork Dam (Sanders County)	
	Emergency Action Plan, Hungry Horse Dam (Flathead County)	
Growth Policies	Lake County Growth Policy, 2003	Integration will occur when these plans are revised.
	City of Polson Growth Policy, 2006	
	City of Ronan Growth Policy, 2008	
	St. Ignatius Growth Policy, 2001	
Wildfire Mitigation	Lake Community Wildfire Protection Plan, 2005	Integration will occur when CWPP is revised. Wildfire mitigation projects from PDM will be incorporated into CWPP mitigation strategy.
Codes, Regulations & Ordinances		
Zoning	City of Polson Zoning Ordinance	Integration will occur through revision. Hazard areas identified in PDM will be considered when these regulations are revised.
	City of Ronan Zoning Ordinance	
	St. Ignatius Zoning Ordinance	
Development	City of Polson Development Code	
Building	State of Montana Building Codes	
Subdivisions	Lake County Subdivision Regulations	
	City of Polson Subdivision Regulations	
	City of Ronan Subdivision Regulations	
Floodplain	Lake County Floodplain Regulations	
Lakeshore	Lake County Lakeshore Protection Regulations	

Lake County, the Cities of Polson and Ronan, and the Town of St. Ignatius all use a Growth Policy to guide development. Typically, a Growth Policy will address hazards; specifically, that life and property be protected from natural disasters and man-caused hazards. Mitigation goals in the PDM Plan will be recommended for incorporation into future revisions of these growth policies to ensure that high-hazard areas are being considered for low risk uses.

To ensure that the requirements of the PDM Plan are incorporated into other planning mechanisms and remain an on-going concern in Lake County, job descriptions of various staff will be enhanced to include a mitigation component. The job descriptions of County and City Planners will be augmented to include involvement in the LEPC. Participation in this group will provide an awareness of new and on-going mitigation initiatives for the purpose that they be integrated into plans, codes and regulations during revision. The job description of the County GIS Manager will include responsibilities for management and update of the spatial data compiled for the hazard analysis including coordinates of critical facilities and digital floodplain, inundation, and wildfire layers so this data can be integrated into other planning efforts. The job description of the OEM Director will include responsibilities for implementing outreach

activities for risk reduction in the County, coordinating with the Board of Commissioners to secure funding for mitigation projects, ensure mitigation projects are implemented, and updating the PDM Plan. The OEM Director will also be responsible for maintaining a permanent master file for the PDM planning process, which will include damage figures from hazard events, records of mitigation projects, and notes/minutes from relevant meetings.

Meetings of the Board of County Commissioners will provide an opportunity for the OEM Director to report back on the progress made on the integration of mitigation planning elements into County planning documents and procedures.

7.4 CONTINUED PUBLIC INVOLVEMENT

Lake County is dedicated to involving the public directly in review and updates of the PDM Plan. The public will have many opportunities to provide feedback about the plan. Hard copies of the plan will be kept at appropriate County offices. An electronic copy of the plan will be available on the County website. The existence and location of plan hard copies will be publicized on the county website. *Section 2.0* includes the address and the phone number of the OEM Director who will be responsible for keeping track of public comments on the plan.

The public will be invited to meetings of the LEPC when the PDM Plan is discussed. The meetings will provide the public a forum for which they can express concerns, opinions, or ideas about the plan. The OEM Director will be responsible for using county resources to publicize the public meetings and maintain public involvement through the newspapers, radio and Internet.

8.0 REFERENCES

Bureau of Labor Statistics, 2011. Consumer Price Index Inflation Calculator.

URL: http://www.bls.gov/data/inflation_calculator.htm

City of Polson, 2006. Growth Policy.

City of Polson, 2010. Development Code.

City of Ronan, 2008. Growth Policy.

Doser, D.I., 1989. Source Parameters of Montana Earthquakes (1925-1964) and Tectonic Deformation in the Northern Intermountain Belt: Bulletin of the Seismological Society of America, v. 79, no. 1

Environmental Protection Agency, 2011. Toxic Release Inventory Data, Envirofacts.

URL: http://www.epa.gov/enviro/html/tris/tris_query.html

FEMA, 2011. Wind Zones of the United States.

URL: http://www.fema.gov/plan/prevent/saferoom/tsfs02_wind_zones.shtm

FEMA, 1987. Flood Insurance Study, Lake County, Montana and incorporated areas. December 17, 1987.

Lake County, 2010. Subdivision Regulations. May 2010.

Lake County, 2003. Growth Policy. August, 2003.

Lake County, 2005. Community Wildfire Protection Plan.

Montana Bureau of Mines and Geology (MBMG). 2010. Earthquake Studies. Seismicity in Montana.

URL: <http://www.ncedc.org/anss/catalog-search.html>

Montana Bureau of Mines and Geology (MBMG). 2006. Montana Bureau of Mines and Geology.

Earthquake Studies Office. URL: <http://mbmgquake.mtech.edu/>.

Montana Census and Economic Information Center. 2011. URL: <http://ceic.mt.gov/>

Montana Department of Justice. Methamphetamine Laboratories.

URL: <http://svc.mt.gov/deq/methquery/>

Montana Department of Labor and Industry, 2010. Demographic and Economic Information for Lake County.

Montana Department of Labor and Industry, 2012. Structure fire statistics provided by State Fire Marshal, Allen Lorenz.

Montana Department of Revenue, 2011. Cadastral Mapping Program. URL: <http://gis.mt.gov/>

Montana Disaster and Emergency Services (DES), 2011. Database of declared disasters.

Montana Disaster and Emergency Services (DES), 2010. State of Montana Multi-Hazard Mitigation Plan and State-wide Hazard Assessment.

Montana Natural Resource Information System, 2011. Transportation GIS layer with bridge data.
URL: <http://nris.mt.gov/gis/gisdatalib/gisDataList.aspx>

National Climatic Data Center. (NCDC). 2011. Storm Events database. U.S. Department of Commerce.
URL: <http://www.ncdc.noaa.gov/oa/climateresearch.html>
URL: <http://www4.ncdc.noaa.gov/cgi-win/wwcgi.dll?wwEvent~Storms>

National Weather Service, 2011. Warnings and Advisories. URL: <http://www.weather.gov/>

Qamar, A.I., and Stickney, M.C. 1983. Montana Earthquakes, 1869-1979, Historical Seismicity and Earthquake Hazard. Memoir 51, Montana Bureau of Mines and Geology.

Qamar, Anthony. 2008. Earthquake Hazards in the Pacific Northwest. University of Washington. Cascadia Region Earthquake Workgroup. January 2008.
URL: <http://www.crew.org/ep/hazards.html>

SHELDUS. 2011. Spatial Hazard Events and Losses Database for the United States.
URL: www.sheldus.org

St. Ignatius, 2001. Growth Policy.

Stickney, M.C., Haller, K.M. and Machette, M.N. 2000. Quaternary faults and seismicity in western Montana: 1:750,000 scale map with text, MBMG Special Publication No. 114.

U.S. Census. 2000 and 2010. U.S. Bureau of the Census. American Fact Finder, Census 2000.
URL: http://factfinder.census.gov/home/saff/main.html?_lang=en

APPENDIX A

RESOLUTIONS ADOPTING PLAN

*Lake County, Montana
Pre-Disaster Mitigation Plan*

RESOLUTION 12-21
A RESOLUTION ADOPTING THE
LAKE COUNTY PRE-DISASTER MITIGATION PLAN

WHEREAS, In October of 2000 the President of the United States signed into law the "Disaster Mitigation Act of 2000" (PL 106-390) to amend the "Robert T. Stafford Disaster Relief and Emergency Act of 1988" which among other provisions requires local governments to adopt a Pre-Disaster Mitigation Plan in order to Be eligible for hazard mitigation funding; and

WHEREAS, Lake County, Montana has worked closely with the Lake County Office of Emergency Management to update the county-wide Pre-Disaster Mitigation Plan that will serve the needs of Lake County; and

WHEREAS, Lake County supports the Lake County Pre-Disaster Mitigation Plan as a logical means toward protecting people and property from the potential devastating effects of natural and man-made hazards.

NOW, THEREFORE, BE IT RESOLVED that the Lake County Board of Commissioners adopt, by way of this resolution, the "Lake County, Montana Pre-Disaster Mitigation Plan" as approved by the Montana Department of Emergency Services and the Federal Emergency Management Agency.

PASSED AND ADOPTED this 6th day of December, 2012.

BOARD OF LAKE COUNTY COMMISSIONERS


Paddy Trusler, Chairman


Ann Brower, Member


William D. Barron, Member

ATTEST:


Paula A. Holle, Clerk & Recorder

RESOLUTION NO. 1038

**CITY OF POLSON, MONTANA
RESOLUTION ADOPTING
LAKE COUNTY PRE-DISASTER MITIGATION PLAN**

WHEREAS, in October of 2000 the President of the United States signed into law the "Disaster Mitigation Act of 2000" (PL 106-390) to amend the "Robert T. Stafford Disaster Relief and Emergency Act of 1988" which among other provisions requires local governments to adopt a Pre-Disaster Mitigation Plan in order to be eligible for hazard mitigation funding;

WHEREAS, the City of Polson, Montana has worked closely with the Lake County Office of Emergency Management to update the county-wide Pre-Disaster Mitigation Plan that will serve the needs of Lake County;

WHEREAS, the City of Polson supports the Lake County Pre-Disaster Mitigation Plan as a logical means toward protecting people and property from the potential devastating effects of natural and man-made hazards;

NOW, THEREFORE, BE IT RESOLVED that the Polson City Council adopt, by way of this resolution, the "Lake County, Montana Pre-Disaster Mitigation Plan" as approved by the Montana Department of Emergency Services and the Federal Emergency Management Agency

DONE AND DATED this 24th day of February, 2013.


Pat DeVries, Mayor

ATTEST:


Cindy Dooley, Clerk

RESOLUTION NO 2013-01

**RESOLUTION OF THE CITY OF RONAN ADOPTING
THE LAKE COUNTY PRE-DISASTER MITIGATION PLAN**

WHEREAS, in October of 2000 the President of the United States signed into law the "Disaster Mitigation Act of 2000" (PL 106-390) to amend the "Robert T. Stafford Disaster Relief and Emergency Act of 1988" which among other provisions requires local governments to adopt a Pre-Disaster Mitigation Plan in order to be eligible for hazard mitigation funding;

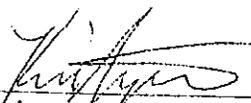
WHEREAS, the City of Ronan, Montana has worked closely with the Lake County Office of Emergency Management to update the county-wide Pre-Disaster Mitigation Plan that will serve the needs of Lake County;

WHEREAS, the City of Ronan supports the Lake County Pre-Disaster Mitigation Plan as a logical means toward protecting people and property from the potential devastating effects of natural and man-made hazards;

NOW, THEREFORE, BE IT RESOLVED that the Ronan City Council adopt, by way of this resolution, the "Lake County, Montana Pre-Disaster Mitigation Plan" as approved by the Montana Department of Emergency Services and the Federal Emergency Management Agency.

5 ayes 0 nays 1 absent

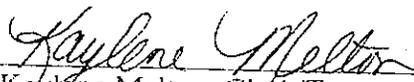
Passed and approved this 3rd day of January, 2013.



Kim Aipperspach, Mayor

Attest:

Approved as to form:



Kaylene Melton, Clerk/Treasurer



James Raymond, City Attorney

RESOLUTION NO. 396**TOWN OF ST. IGNATIUS, MONTANA
RESOLUTION ADOPTING
LAKE COUNTY PRE-DISASTER MITIGATION PLAN**

WHEREAS, in October of 2000 the President of the United States signed into law the "Disaster Mitigation Act of 2000" (PL 106-390) to amend the "Robert T. Stafford Disaster Relief and Emergency Act of 1988" which among other provisions requires local governments to adopt a Pre-Disaster Mitigation Plan in order to be eligible for hazard mitigation funding;

WHEREAS, the Town of St. Ignatius, Montana has worked closely with the Lake County Office of Emergency Management to update the county-wide Pre-Disaster Mitigation Plan that will serve the needs of Lake County;

WHEREAS, the Town of St. Ignatius supports the Lake County Pre-Disaster Mitigation Plan as a logical means toward protecting people and property from the potential devastating effects of natural and man-made hazards;

NOW, THEREFORE, BE IT RESOLVED that the St. Ignatius Town Council adopt, by way of this resolution, the "Lake County, Montana Pre-Disaster Mitigation Plan" as approved by the Montana Department of Emergency Services and the Federal Emergency Management Agency.

Passed on December 4, 2012, in regular session by a vote of 4 ayes; 0 noes; and 0 absent.


Charles J. Garjepy, Mayor

ATTEST: Lee Ann Gottfried
Lee Ann Gottfried, Clerk-Treasurer

APPENDIX B

PLANNING DOCUMENTATION

*Lake County, Montana
Pre-Disaster Mitigation Plan*

Planning Team & Stakeholders

*Lake County, Montana
Pre-Disaster Mitigation Plan*

**LAKE COUNTY
PDM PLANNING TEAM**

Type	First Name	Last Name	Affiliation
County	Bill	Barron	Lake County Commissioner
City - Ronan	Mark	Clary	Ronan Water Dept and Fire
County	Emily	Colomeda	Lake County Public Health
City - Polson	Terry	Gembala	City of Polson, Street Supervisor
Utility	Lisa	Kelly	Century Link
County	Sheena	Madsen	Lake County Public Health
Tribe	Dale	Nelson	CSKT DES Coordinator
County	Joel	Nelson	Lake County Planning Dept. & Floodplain Administrator
City - Polson	Bill	Smith	City of Polson, Street Supervisor
State	Martha	Smith	District 1 Representative
County	Steve	Stanley	Lake County OEM

LAKE COUNTY PDM STAKEHOLDERS

Type	First Name	Last Name	Affiliation
City - Polson	John	Campbell	City of Polson - Ward 1
City - Polson	Todd	Crossett	Polson City Manager
City - Polson	Pat	DeVries	Polson Mayor
City - Polson	Todd	Erickson	City of Polson - Ward 1
City - Polson	John	Fairchild	Polson Fire Chief
City - Polson	Fred	Funke	City of Polson - Ward 3
City - Polson	Terry	Gembala	Polson Street Dept.
City - Polson	Mike	Lies	City of Polson - Ward 2
City - Polson	Ron	Melvin	Polson Building Inspector
City - Polson	Dan	Morrison	City of Polson - Ward 3
City - Polson	Karla	Parker	Polson City Clerk
City - Polson	Tony	Porrazzo	Polson Water & Sewer Dept.
City - Polson	Cora	Pritt	Polson Building & Planning Assistant
City - Polson	John	Stevens	Polson City Police
City - Polson	Stephen	Turner	City of Polson - Ward 2
City - Polson	Joyce	Weaver	Polson Building & Planning Official
City - Ronan	Chris	Adler	Ronan City Council
City - Ronan	Kim	Aipperspach	Ronan Mayor
City - Ronan	Lorraine	Bourdon	Ronan Clerk
City - Ronan	Mark	Clary	Ronan Fire Chief
City - Ronan	Ellen	Kaphammer	Ronan City Council
City - Ronan	Calvin	Hardy	Ronan City Council
City - Ronan	Robert	McCrea	Ronan City Council
City - Ronan	Dan	Miller	Building Inspector/Planner
City - Ronan	Marlene	Melton	Ronan City Council
City - Ronan	Penny	Ross	Ronan City Council
City - Ronan	Kevin	Templer	Ronan Public Works Director
City/County	Jerry	d'Aquin	City/County Planning Board - Swan Valley
City/County	Lisa	Dumontier	City/County Planning Board - Arlee
City/County	John	Fleming	City/County Planning Board - St. Ignatius
City/County	Harlan	Gipe	City/County Planning Board - Valley View
City/County	Sigurd	Jensen	City/County Planning Board - Conservation District
County	Bill	Barron	Lake County Commissioner
County	Tim	Brester	Polson Ambulance
County	Ann	Brower	Lake County Commissioner
County	Emily	Colomeda	Lake County Public Health
County	Robert	Costa	Lake County Planning Dept
County	Jay	Doyle	Lake County Sheriff
County	Larry	Ehle	Lake County Roads
County	Lita	Fonda	County Planning Department
County	Victor	Gouge	Lake County Sheriff Dispatch
County	LaDana	Hintz	County Planning Department
County	Christine	Hughes	Lake County Environmental Health
County	Sheena	Madsen	Lake County Public Health
County	Denise	Michelson	Lake Co OEM
County	Joel	Nelson	Lake County Planning Dept. & Floodplain Administrator
County	Don	Salsbury	Lake Co Env Health
County	Karl E.	Smithback	Lake County Planning Dept
County	Steve	Stanley	Lake County OEM
County	Wendy	Thingelstad	Lake County GIS Coordinator
County	Paddy	Trusler	Lake County Commissioner

LAKE COUNTY PDM STAKEHOLDERS

Type	First Name	Last Name	Affiliation
Federal	Mike	Brown	BIA - Safety of Dams
Federal	Jim	Steele	BIA - Fire Management
Federal	Marty	Whitmore	National Weather Service
Media	Jeff	Smith	KERR Radio
Media			Lake County Leader
Non-Profit	Michal	Delgado	American Red Cross
Non-Profit	Valeda	Van Der Sande	American Red Cross
Non-Profit	Wayne	Van Der Sande	American Red Cross
Other	Scott	Sampey	Flathead County OES
Public	Lynn	Kelly	Citizen
State	Dave	Newburn	Montana Dept. of Transportation
State	Martha	Smith	District 1 Representative
State	Les	Thompson	DNRC, Fire
Town - St. Ignatius	Rod	Arlint	St. Ignatius Town Council
Town - St. Ignatius	Ray	Fry	St. Ignatius Town Council
Town - St. Ignatius	Charles	Garipy	St. Ignatius Mayor
Town - St. Ignatius	Marine	Johnson	St. Ignatius Town Council
Town - St. Ignatius	LeAnn	Godfried	St. Ignatius Clerk
Town - St. Ignatius	Mack	McConnell	St. Ignatius Town Council
Town - St. Ignatius	Scott	Morton	St. Ignatius Public Works Director
Town - St. Ignatius	Martin	Ralston	St. Ignatius Fire Chief
Tribal	Dale	Nelson	CSKT DES
Utility	Lisa	Kelly	Century Link
Utility	Gary	Jones	PPL
Utility	David	Whitlock	Mission Valley Power
Utility	Rex	Winebrenner	Mission Valley Power

Meeting Notices

***Lake County, Montana
Pre-Disaster Mitigation Plan***



Valley Journal

your homegrown newspaper

November 30, 2011

Vol. 8, No. 11

LAKE COUNTY PRE-DISASTER MITIGATION PLAN

Lake County is initiating the five year update to their Pre-Disaster Mitigation Plan. The Plan outlines a strategy to reduce the impact of natural and man-made hazards on our communities. The updated Plan, once adopted, will allow Lake County to remain eligible to receive FEMA grants for mitigation projects. You're invited to bring your local knowledge and ideas to the kick-off meeting for this project.

Wednesday, December 14th, 2011 ~ 1:00 p.m.
Fairgrounds Station, 25-B Regatta Road
Polson, Montana

For more information, please call Steve Stanley,
Lake County Office of Emergency Management at (406) 883-7253



Valley Journal

The forum held April 18 at Polson High School. Education and Polson Unified Education Association sponsored the event and district employees asked the questions. Bertsch, fifth grade teacher, mediated the event. Candidates Caryl Cox, Samuel Hamel, Bob Hanson, Michael Kelly, Michael Charge and Ashley Schweigert introduced themselves and answered questions. Former candidate Ivy Swanson dropped out of the race last week. Candidates have to wear their hats in the ring during the three-year posi-

to be received by a panel on Tuesday, May 8. Bertsch first called on Hanson, an incumbent, to give his answer to the opening question. "The best thing we can do as a board, as a faculty, as an administration," Hanson stated, "is put the past in the past, forget it and move on; focus on those areas we agree on." Hamel agreed, saying, "I think the No. 1 thing is not to place blame anywhere; the No. 1 thing should be our kids ... that they're getting the education they deserve." "Communication is the key when you want to establish or re-establish trust,"

among staff, the community and administrators." "I want an open-door policy," Schweigert said. "We should be able to communicate properly, (show) common sense in our actions and practicality in our decisions." Cox, an incumbent, said the board got started last year on long-term strategic planning. "I'm very, very interested in resurrecting that," Cox said. She added that conflict resolution techniques could be used to find common ground. "The school board is your board; we represent you and

Other questions asked about a learning environment that meets the needs of all students, how to tell if Polson schools are successful, the role of the school board and the role of a superintendent. Student Hannah Hobbs submitted a question about how everyone can affirm or support our great teachers. Communication, embracing and working with different learning styles of children, and board transparency were all themes throughout the answers. About 75 community members attended the forum.

program, scheduled for May 18 from 9 a.m. to 3 p.m., and give an overview of recycling at the Ronan Chamber of Commerce luncheon at noon May 3 at the Mission Mountain Golf Course. Some 13,000 pounds was collected at last year's event, more than twice as much in the inaugural year (5,000 pounds). Nelson anticipates because of additional publicity and a remaining backlog, even more computers, printers, stereos, copiers, speakers and virtually every other kind of electronics will make their way to the transfer stations this year where volun-

reusable computer chips. While the effort is not completely self-sustaining, it is partially financed by a long list of sponsors committed to the valuable effort. The first 500 pounds is free, while disposal of additional weight is charged 35 cents a pound. Household alkaline batteries and fluorescent tube/light bulbs will not be accepted. A complete list can be found at www.lakecountyclecycling.com. For more information about the Lake County effort, call 883-7323. And for more information about electronic waste recycling, visit yellowstone-waste.com.

Mother's Day Gift Registry
Open at The Merc!

Ladies - be sure to sign up.
Gentlemen - this is your ticket to stress free gift giving!

U.S.A. Made Imports

Games
Fair Trade Products
Handbags

215 Main St. ~ Polson, MT 59860
(406) 883-80-40

Baja Cove
-tacos and burritos-

Cove Fiesta!
Cinco De Mayo 5th of May
FREE T-SHIRT WITH PURCHASE OF ANY BURRITO & SODA. While supplies last

ONE DAY ONLY SPECIAL: Buy a gift certificate and get another one at half the price.

DOOR PRIZES ALL DAY LONG!

11 3rd. Ave. W. Downtown • Polson
www.CoveDeli.com **883-0434**

LAKE COUNTY PRE-DISASTER MITIGATION PLAN

Lake County is completing the five year update to its Pre-Disaster Mitigation Plan. The updated Plan, once adopted, will qualify Lake County to receive grant funds for mitigation projects. The draft risk assessment and mitigation strategy for the PDM Plan will be presented at this meeting.

Tuesday, May 15th, 2012
1:00 p.m.
Fairgrounds Station, 25-B Regatta Road
Polson, MT

For more information, please call Steve Stanley, Lake County Office of Emergency Management at (406) 883-7253

Meeting Sign-In Sheets

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY PRE-DISASTER MITIGATION PLAN PUBLIC MEETING

DATE: 12/14/2011

LOCATION: POLSON

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Daphne Dignindakis tetra tech	PDM Contractor Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		daphne.dignindakis@tetratech.com 406-843-5210
Edward J Persico	Citizen Circle One: Yes <input type="radio"/> No <input type="radio"/>		ed.persico@yahoo.com
Bill Barron Lake Co. Commissioner	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		
Lisa Kelly Century Link	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	100	lisa.kelly@centurylink.com 406 758-1502
Sheena Madsen Lake Co. Public Health	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		Smadsen@mt.gov (406) 883-7347
John Ed Fairchild Polson Fire Dept.	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		polsonfd@centurytel.net
Stephen Stanku Lake County OSEM	Circle One: Yes <input checked="" type="radio"/> No <input type="radio"/>		lak-osem@lakmt.gov 883-7253
Gary Jones PPL Montana	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	350	g.jones@pplweb.com 406-533-4315
MARTHA SMITH MT-DES	Circle One: Yes <input checked="" type="radio"/> No <input type="radio"/>		martha-j.o.smith@montanadma.org ←
Joel Nelson Lake County Planning Department	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	4	jnelson@lakemt.gov 406-883-7235
LaDana Hintz Lake County Planning Department	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	4	lhintz@lakemt.gov 406-883-7235
Meeting Start Time: <u>1pm</u>		Meeting End Time: <u>3pm</u>	

LAKE COUNTY PRE-DISASTER MITIGATION PLAN PUBLIC MEETING

DATE: 12-14-11

LOCATION: Polson

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Rex Winebrenner (Safety officer) Mission Valley Power	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	5	Winebrenner@MissionValleyPower.org 1-406-883-7946
VALEDA VAN DER SANDE AMERICAN RED CROSS	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	40	WVandersande@Centurytel.net 406-982-3132
WAYNE VAN DER SANDE AMERICAN RED CROSS	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		SAME AS ABOVE
Victor Gouge Lake County Sheriff's Dispatch	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	2	vgoerge@lakecountymtso.com 406-883-7229
Todd Crosssett City of Polson - Manager	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	2	Polson.manager@Centurytel.net 406-249-5637
Lynn Kelly	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	4	lconnor1@gmail.com 883-5797
John Stevens Polson PD	Circle One: Yes <input type="radio"/> No <input type="radio"/>		polsonasstchief@Centurytel.net 406-883-8229
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		
Meeting Start Time: <u>1pm</u>		Meeting End Time: <u>3pm</u>	

**LAKE COUNTY PRE-DISASTER MITIGATION PLAN
PUBLIC MEETING**

DATE: TUES MAY 15, 2012

LOCATION: POLSON

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Daphne Digrindakis Tetra Tech	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		daphne.digrindakis@tetratech.com 406-443-5210
Joel Nelson Lake County Planning Department	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	5	jnelson@lakemt.gov 406-883-7235
LaDena Hintz Lake City Planning Dept.	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	5	lhintz@lakemt.gov 406-883-7235
John A. Stevens Polson PD	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		polsonasstchief@centurytel.net 887-8229
Dale S. Nelson CSKT DES	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		dalen@cskt.org 406-690-2880
Stephen Starke Lake County O&M	Circle One: Yes <input checked="" type="radio"/> No <input type="radio"/>		
Sheena Madsen Lake Co. Public Health	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		Smadsen@mt.gov (406) 883-7347
Brenda Bawner Femer	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		bawner@femer.com
KARRY C. EHLER 	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		lehler@lakemt.gov
Bill Barron Lake Co. Commissioner	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		
Meeting Start Time: <u>1 PM</u>		Meeting End Time: <u>3 PM</u>	

**LAKE COUNTY PRE-DISASTER MITIGATION PLAN
PUBLIC MEETING**

DATE: 9-26-12

LOCATION: Mission RFD

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
Charles Gariepy Town of St. Ignatius	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		(406) - 360 - 8797
Suzie Q Green St. Ignatius Volunteer Fire Department	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	2	Green.sq6257@yahoo.com (406) 210-1260
Kelly Koddam St. Ignatius Fire Dept	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	1	406 - 745 - 3277
Bobby Jensen St. Ignatius Vol. Fire Dept	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	1	406 - 745 - 2701
Iana Couture St. Ignatius Fire Dept	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	4	Fire332009@hotmail.com 406-210-0163
Mark Couture St. Ignatius Fire Dept	Circle One: Yes <input checked="" type="radio"/> No <input type="radio"/>	4	MJ-Couture@hotmail.com 406-210-0165
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		250-250-7018
Jeremiah Morigan St. Ignatius Fire Dept.	Circle One: Yes <input type="radio"/> No <input type="radio"/>		406-240-1810
Jack Gendts MFD	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	8	N/A
Steve McCallum MFD	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	1	SPCCollum@StIgnatius Schools.org
Fred Gariepy MFD	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	2	fgariepy@LakeCountyBank.com

LAKE COUNTY PRE-DISASTER MITIGATION PLAN PUBLIC MEETING

DATE: 10-2-12

LOCATION: City Hall St Ignace
7:00 pm to 7:30 pm

Name: (Please Print) Organization:	Affiliation or Title: Federally Salaried? (Yes or No)	Miles Traveled Round Trip to Attend Meeting	E-mail Address: Phone No.
LEE ANN BOTTIERED TOWN OF ST IGNATIUS	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	1.2	745-3791
LYNN DeleCARIS St. Ignace resident	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>		745-3622 ochse@blackfoot.net
Daniel Martynowicz St. Ignace	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	60	676 745-8989
Julie Hesse - St. Ignace Bernadine Lovell	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	3 blocks	214-0095
Bernadine Lovell - St. Ignace	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	1 1/2	745-2545 bernie@blackfoot.net
Paul Asht Councilman St. Ignace	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	3 blocks	redant@qmail.com 745-7770
Clarence Mack M'Connell Councilman - St. Ignace	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	6 blocks	mackm@blackfoot.net 745-4151
Kay FREY Councilman - St. Ignace	Circle One: Yes <input type="radio"/> No <input checked="" type="radio"/>	4 Blocks	745-4266
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		
	Circle One: Yes <input type="radio"/> No <input type="radio"/>		

Meeting Notes & Presentations

*Lake County, Montana
Pre-Disaster Mitigation Plan*

**LAKE COUNTY
PRE-DISASTER
MITIGATION PLAN
2012 UPDATE**

Contractor: Tetra Tech, Inc.
Daphne Digrindakis
406-443-5210

PROJECT BACKGROUND

- Lake County first completed a Pre-Disaster Mitigation (PDM) Plan in 2005.
- PDM Plans must be updated every 5 years.
- County submitted a planning grant (together with Sanders Co. & CSKT) to FEMA to update their plan.
- Grant awarded; 75% federal/25% local match
- Tetra Tech contracted to develop Plan
- 12 month project schedule

WHAT IS MITIGATION?

Mitigation is a sustainable action that will reduce or eliminate injury to citizens, damages to structures and allow continuity of critical society function.

**WHY HAVE A
PRE-DISASTER MITIGATION PLAN?**

- Required by FEMA in order to receive mitigation funds after a declared disaster.
- \$100 million available annually through competitive grants for hazard mitigation projects (PDM-C Program).

**APPROACH FOR
2012 PDM PLAN UPDATE**

- Review each section of the 2005 PDM Plan
- Implement planning process for public involvement
- Review plans and studies
- Update existing hazards and identify any new hazards to include in updated Plan
- Update list of critical facilities
- Complete a new risk assessment
- Update mitigation goals, objectives & projects
- Review plan maintenance procedures
- Formally adopt plan

**2005 PLAN REVIEW - CHAPTER 1
INTRODUCTION**

- 1.1 - Authority
 - The Disaster Mitigation Act (DMA) of 2000 amends the Robert T. Stafford Disaster relief and emergency assistance act by adding a new section, 322 – Mitigation Planning, FEMA Interim Final Rule 44 CFR Part 201.
 - Lake County Commission and the incorporated communities of Poison, Ronan and St. Ignatius adopted the 2005 PDM Plan.
- 1.2 - Acknowledgements
 - DES Coordinators from Lake & Sanders Counties and CSKT, Montana DES, National Weather Service, Local Communities
- 1.3 - Project Area Location
- 1.4 - Regional Economy
- 1.5 - Scope and Organization of Plan
 - Identify and prioritize disaster events that are most probable and destructive
 - Identify critical facilities
 - Identify areas within the community that are most vulnerable
 - Develop goals for reducing the effects of a disaster event
 - Develop specific projects to be implemented for each goal
 - Outline process for official adoption of the Plan.

**2005 PLAN REVIEW - CHAPTER 2
PLANNING PROCESS**

2.1 - Contact List

- County – elected officials, DES Coordinator
- Towns – Councilpersons, Mayors, fire, public works
- Federal & State agencies – USFS, NWS, FWP, DNRC
- Public & Private entities – MRL, YPL, BPA, MVP

2.2 - Stakeholder Interviews & Meetings

- Local government, water providers, fire dept., utilities

2.3 - Formal Public Meetings

- One meeting held in 3 locations to kick-off project

2.4 - Other Project Meetings

- One-on-one meetings with LEPC/TERC

2.5 - Plan Review

- 30-day review period

**PDM PLAN UPDATE 2012
PLANNING PROCESS**

- Kick-off Meeting
- Identify Project Stakeholders
- Establish Planning Committee – Do this today
 - County and city government (planning, public works, fire)
 - At least one person from each jurisdiction wishing to adopt plan
- Review Existing Plans, Studies, Regulations
- Hold Public Meetings to Review Draft Plan
- Establish Project Website to keep public informed
 - www.lake-sanders-csakt-pdm.com
- Adoption by County and incorporated communities of Polson, Ronan and St. Ignatius

**2012 PDM PLAN UPDATE
COMMUNITY PROFILE**

- Physical Setting
- Climate
- Population Trends
- Critical Facilities and Infrastructure
- Housing Stock
- Economics and Socioeconomics
- Land Use Patterns and Future Development

2012 PDM PLAN UPDATE REVIEW PLANS & STUDIES

- Plans with Mitigation Considerations
 - County, City of Polson, City of Ronan Growth Policies
 - Does St. Ignatius have Growth Policy?
 - Subdivision Regulations
 - Zoning Ordinances
 - Building Codes
 - Floodplain Ordinances
- Analyze Development Trends

2005 PLAN REVIEW - CHAPTER 3 HAZARD EVALUATION & RISK ASSESSMENT

3.1 - Historical Hazards

- Floods
 - 1908, 1916, 1927, 1928, 1948, 1964, 1997
- Winter Storms
 - 1996/97 – economic impact on livestock producers
- Wildfire
 - 1994: Niarda One Fire(4,268 ac), Henry Peak Fire (8,075 ac), McDonald (7,494 ac)
 - 1998: Boyer Fire (7,100 ac)
 - 1999: Cat Bay Fire (23 ac)
 - 2000: Clear Creek (11,884 ac), Vanderburg (6,393 ac), Schley 2 (438 ac)
- Rain, Hail and Wind
 - June 1996 – golf ball-sized hail, snapped power poles, roof torn off barn
 - July 1998 – 60-70 mph wind, roofs torn off roofs, 30-40 boats damaged
 - June 2002 – heavy rain, flooded basements, golf ball-sized hail
- Human-Caused and Technological Hazards
 - Hazardous material incidents
 - Bomb threats
 - Terrorism

2005 PLAN REVIEW - CHAPTER 3 HAZARD EVALUATION & RISK ASSESSMENT

3.1 - Historical Hazards

- Dam Failure
 - 17 dams in county in BIA's Irrigation project; 12 are high hazard; 15 rated as unsafe
 - Upper Jocko Dam failed in 1956,
- Drought
 - Occurs every decade but not every year
- Vector-Borne Diseases
 - Tick, mosquito, rodent diseases spread to humans and livestock
- Food-Borne Diseases
 - Salmonella, e-coli
- Earthquake
 - 1952 – quake struck beneath Mission Mtns and caused minor damage along the east shore of Flathead Lake
 - 1969 – 4.7 magnitude quake shook Big Arm, Dayton, Polson, Proctor
 - 2004 – 3.8 magnitude quake shook south end of Flathead Lake & no. Mission Valley
- Civil Unrest

**2005 PLAN REVIEW - CHAPTER 3
HAZARD EVALUATION & RISK ASSESSMENT**

3.2 - Hazard Prioritization

- Top Hazards in Lake County
 - Wildfire
 - Severe Winter Storms
 - Rain/Hail/Wind Events
 - Hazardous Material Incidents

**2012 PDM UPDATE
IDENTIFY & RANK HAZARDS**

- Hazards most likely to cause a disaster in the County.
- Hazards that have the potential to cause fatalities/injuries or property damage.
- Focus on hazards that can be mitigated.
- Use Calculated Priority Risk Index (CPRI) to Prioritize Hazards.
 - Probability – Highly likely to unlikely
 - Severity/Magnitude – catastrophic to negligible
 - Warning Time - < 6 hours to > 24 hours
 - Duration - < 6 hours to > one week

**2005 PLAN REVIEW - CHAPTER 3
HAZARD EVALUATION & RISK ASSESSMENT**

3.3 Assessing Vulnerability: Identifying Assets

- Building Values
 - Data from FEMA HAZUS software
 - Structure values assigned by percentage of population to census blocks
- Critical Facilities and Infrastructure
 - Identified fire halls, schools, local government
- Future Growth and Land Use Trends
 - No future buildings, infrastructure of critical facilities identified
- Vulnerable Populations
 - Societal risk – scored by formula considering population density, age > 65, age <18, income < poverty level; no high school; population with disabilities; population on public assistance

**2005 PLAN REVIEW - CHAPTER 3
HAZARD EVALUATION & RISK ASSESSMENT**

3.4 - Hazard Profiles

- Hazard Frequency
 - Number of events/period of record
- Hazard Impact Areas
 - Flooding
 - Buffered rivers by 2,500 feet; streams by 1,750 feet; Intermittent by 750 feet
 - Intersected with census blocks; percentage of area impacted
 - Fairly general; doesn't address known flood prone areas
 - Winter Storms – uniform across county
 - Wildfire –
 - Communities at Risk Rating
 - Thunderstorms and Hail– uniform across county
 - Human-Caused and Technological Hazards
 - Buffered highways/railroads by 0.25 mile
 - Earthquake
 - Mission Fault; Liquefaction; Dam failure
 - Cumulative Hazard Areas
 - Summed percent of census block containing the hazards

2005 HAZARD PRIORITIZATION

3.5 Assessing Vulnerability: Estimating Potential Losses

- Hazard Magnitudes
 - Estimates developed through research of historic disasters
 - Expressed as percent of structures or people impacted
- Risk Calculations
 - Exposure x Frequency x Magnitude
 - Table presented for County and incorporated communities

2012 RISK ASSESSMENT

- Map Hazard Risk Zones
 - Some hazards affect the county uniformly
 - Severe Summer weather
 - Severe Winter weather
 - Structure Fire
 - Other hazards are specific to an area
 - WUI for Wildfire Risk
 - HAZUS flood model for Flooding Risk
 - Inundation areas for Dam Failure Risk
 - Steep slopes for Landslide Risk
 - Peak Ground Acceleration for Earthquake Risk
 - Buffer Highways/Railroads for Hazardous Material Risk
- Identify Critical Facility Coordinates and Replacement Values
 - Expand list from 2005 plan
 - County to provide to Tetra Tech; Soft-match

2012 VULNERABILITY ANALYSIS

- Determine value and number of structures at risk for each hazard
 - Data from Montana Dept. Revenue Cadastral Mapping Program for residential and commercial/agricultural/industrial properties
 - County data on Critical facilities
- Determine annual loss for hazards with documented damages
 - Frequency = # events/period of record
 - Magnitude = (\$ damages/# events)/ value of building stock
- Population at Risk (<18, >65, below poverty level)
 - Percent of census block in hazard area

2012 - UPDATE MITIGATION STRATEGY

- Goals – 1 per hazard plus “all hazard” goal
- Objectives
 - Property Protection
 - Structural
 - Prevention
 - Emergency Services
 - Natural Resource Protection
 - Public Education and Awareness
- Identify Completed Mitigation Projects
- Determine Status of Projects from 2005 Plan
- Identify New/Ongoing Projects
 - Focus on mitigation – not response
 - Consider Development Trends
- Determine responsible entity, county priority, schedule to complete

2005 PLAN REVIEW - CHAPTER 4 MITIGATION STRATEGY

4.1 Local Hazard Mitigation Goals

- Enhance Early Warning Systems
- Minimize Risk of Wildfire at Urban Interface
- Improve Fire Fighting Capabilities
- Reduce Risk of Hazardous Material Incidents
- Reduce Risk of Biological Hazards
- Secure Integrity of Utilities and Infrastructure
- Enhance Emergency Response Systems through E-9-1-1
- Reduce Impacts from Wildfire
- Reduce Impacts from Flooding

**2005 PLAN REVIEW - CHAPTER 4
MITIGATION STRATEGY**

Mitigation Objectives and Actions

- **Reduce Impacts from Flooding**
 - Move homeowners from floodplains through the mitigation process
 - GPS all homes along waterways, establish a buyout program
 - Educate homeowners on flood concerns
 - Publish and distribute floodplain maps to homeowners
- **Enhance Early Warning Capabilities**
 - Buy weather radios for various critical facilities
 - Provide public broadcasting station's information on dangers or critical information
 - Upgrade siren systems in all communities
- **Minimize Risk of Wildfire at Urban Interface**
 - ID risk areas and homes
 - Provide information to urban interface landowners
 - Identify crews to help clean up homeowners backyards
- **Improve Fire Fighting Capabilities**
 - Provide additional training to firefighters
 - Purchase turn-out gear through available grants
 - Assist departments in grant writing

**2005 PLAN REVIEW - CHAPTER 4
MITIGATION STRATEGY**

Mitigation Objectives and Actions

- **Enhance Emergency Response Systems**
 - Recruit EMT volunteers through public outreach
 - Provide training to first responders
 - Continue to provide training and software on hazardous materials to emergency managers
 - Coordinate emergency response activities between railroad, Tribes, counties and municipalities
 - Ensure generators have been provided for nursing homes/schools
 - Provide water treatment plants, lift stations and pumping stations are equipped with generators
- **Secure Integrity of Utilities and Infrastructure**
 - Secure bulk petroleum, propane, and anhydrous ammonia tanks with fencing and security systems (motion detectors and cameras)
 - Continue providing awareness training on meth labs
 - Network with FEMA, EPA and USDOT on hazmat preparedness planning
- **Reduce Risk of Biological Hazards**
 - Investigate mitigation options for West Nile Virus
 - Write mitigation and surveillance plan for West Nile Virus
 - Anthrax

**2005 PLAN REVIEW - CHAPTER 4
MITIGATION STRATEGY**

4.3 - Project Ranking and Prioritization

- Cost
- Population Impacted
- Property Impacted

4.4 - Project Implementation and Legal Framework

- PDM Plan,
- Floodplain Regulations
- Growth Policy
- Economic Development Strategy Plan
- Resource and Land Use Plan
- Transportation Development Plan
- Subdivision Regulations
- Road Encroachment Regulations
- Septic/Sewer Permits

**2005 PLAN REVIEW - CHAPTER 4
MITIGATION STRATEGY**

4.4 - Project Implementation and Legal Framework

- Use PDM Plan to help Growth Plan meet goal of protecting public health & property from natural hazards
- Integrate floodplain hazard mitigation plan and floodplain ordinances into PDM Plan to minimize impacts from flooding
- Initiate zoning ordinance in conjunction with flood mitigation projects to prevent development in flood-prone areas.
- Partner with other entities with similar goals to promote building codes that are more disaster resistant.
- Develop incentives for local governments, citizens & businesses to pursue hazard mitigation projects.
- Allocate county resources and assistance for mitigation projects
- Partner with other organizations in northwest Montana to support hazard mitigation activities.

**2005 PLAN REVIEW - CHAPTER 5
PLAN MAINTENANCE PROCEDURES**

5.1 Monitoring, Evaluating and Updating the Plan

- Evaluated annually
- 5-Year updates

5.2 Implementation Through Existing Programs

- Integrate PDM goals into growth policy
- County Building Dept. to adopt/enforce State building codes

5.3 Continued Public Involvement

- Copies of Plan at appropriate agencies and public libraries
- Public meetings when Plan is updated

2012 PDM PLAN UPDATE SCHEDULE

- Planning Team Conference Calls – monthly starting Dec/Jan
- Stakeholder review of draft plan – 30 days (June 2011)
- Revision to address stakeholder comments
- Submit to Montana DES & FEMA for compliance with Region 8 Crosswalk – 60 days (Jul/Aug 2011)
- Additional revision if necessary
- Submit to County and incorporated communities for adoption (Sep 2011)

**LAKE COUNTY PRE-DISASTER MITIGATION PLAN
KICK-OFF MEETING NOTES
DECEMBER 14, 2011**

PLANNING TEAM VOLUNTEERS:

Type	First Name	Last Name	Affiliation
Public	Edward	Persico	Citizen
County	Bill	Barron	Lake County Commissioner
County	Joel	Nelson	Lake County Planning Dept./Floodplain Administrator
County	Steve	Stanley	Lake County OEM
City - Polson	John	Fairchild	Polson Fire Chief
Utility	Lisa	Kelly	Century Link
State	Martha	Smith	District 1 Representative
County	Sheena	Madsen	Lake County Public Health
Tribal	Dale	Nelson	CSKT DES
City - Ronan	TBD		
Town - St. Ignatius	TBD		

COMMENTS:

- St. Ignatius has a Growth Policy but it is old. Contact County Planning Office to get a copy. Contact Steve Stanley for local phone numbers for Town of St. Ignatius.
- Lake County has the highest incidence of hanta virus

SEVERE WEATHER/DISASTER EVENTS SINCE LAST PDM PLAN:

- 6/17/2007 – Tornado
- 2007 - East Shore wind event caused one fatality.
- 4/2/2008 – Haz-Mat Incident caused \$5 million in damages
- Several landslides have caused property damage in recent years. Ronan water system.

LAKE COUNTY PDM PLAN UPDATE
 PLANNING TEAM CONFERENCE CALL
 WEDNESDAY, JANUARY 11, 2012
 11am – 12:30pm

Planning Team Roll Call:

Yes	Bill	Barron	Lake County Commissioner
No	John	Fairchild	Polson Fire Chief
Yes	Lisa	Kelly	Century Link
Yes	Sheena	Madsen	Lake County Public Health
Yes	Joel	Nelson	Lake County Planning Dept. & Floodplain Administrator
Yes	Dale	Nelson	CSKT DES
No	Edward	Persico	Citizen
No	Martha	Smith	District 1 Representative
Yes	Steve	Stanley	Lake County OEM
Yes	Emily	Colomeda	Lake County Health Dept.
Yes	Terry	Gembala	City of Polson, Street Supervisor
Yes	Bill	Smith	City of Polson, Street Supervisor

Handouts:

- CPRI Worksheet
- Hazards to Consider
- Draft List of Critical Facilities

Review of CPRI Hazard Scoring from Kick-off Meeting:

	PROBABILITY				SEVERITY/MAGNITUDE				WARNING TIME				DURATION				Score
	Unlikely	Possibly	Likely	Highly Likely	Negligible	Limited	Critical	Catastrophic	<6 hours	6-12 hours	12-24 hours	>24 hours	<6 hours	<24 hours	<1 week	>1 week	
Wildfires				x			x		x							x	3.70
Highway Accident				x		x			x					x			3.20
Landslides			x			x			x							x	2.95
Structure Fire			x			x			x					x			2.75
Severe Winter Weather			x			x				x					x		2.70
Severe Summer Weather			x			x				x				x			2.60
Communicable Disease - Public Health		x				x			x							x	2.50
Earthquake			x		x				x				x				2.35
Dam Failure	x						x		x							x	2.35
Railroad Accident	x						x		x							x	2.35
Hazardous Materials Incidents		x				x			x					x			2.30
Volcanic Ash	x						x			x						x	2.20
Flooding		x			x							x				x	1.75
Aircraft Accident	x					x			x				x				1.75
Terrorism/Violence	x				x				x						x		1.65
Communicable Disease - Livestock/Ag	x					x						x				x	1.60
Drought	x					x						x				x	1.60

Discussion on Hazards:

Wildfire – Fire Management will provide list. Carey Cooley fuel reduction coordinator knows about WUI mapping.

LAKE COUNTY PDM PLAN UPDATE
PLANNING TEAM CONFERENCE CALL
WEDNESDAY, JANUARY 11, 2012
11am – 12:30pm

Severe Winter Weather – 2002, 1996 lots of snow and cold

Severe Summer Weather – There have been several microbursts including one at Melita Island which was reported as a tornado warning.

Hazardous Material Incidents – There was a 3,000-gallon spill on the east shore in 2009. October 11, 1996 an agricultural tanker and car crashed in the Post Creek area. Products mixed together and resulted in a closure on Hwy 93 for 24 hours.

Earthquakes – Small earthquakes happen frequently. The 1959 Hebgen Lake quake caused damage in Lake County. The Mission fault runs through most of Lake County at the base of the mountains. In 2011 there were several earthquakes over 3.0 in magnitude. Talk to Mike Stickney at MBMG on vulnerability of Lake County to earthquakes.

Floods – Lake County is fairly flood resistant. Every year there are areas that have problems especially Post Creek. Last year there were areas impacted in Swan Lake.

Drought – Not a significant hazard in Lake County.

Landslide – Kerr Dam was impacted by a landslide in the past. Last year a landslide on the east shore occurred.

Volcanic Ash – Mount St. Helens was bad in Lake County.

Structure Fire – Not a significant hazard in Lake County.

Dam Failure – Several dams have restriction because of maintenance issues. Pablo Dam was on the list for three years. Crow Dam has a broken outtake works. There is no history of dam failure in Lake County.

Highway Accidents – There have been no mass casualty events with busses but several car accidents resulted in 4 or more being killed.

Railroad – Trains run daily carrying gasoline. There have been no incidents to date on the 14 miles of railroad in Lake County. The CSKT has 28 miles of railroad. The railroad spur will be shut down between Dixon to Polson.

Aircraft Accidents – There have been several small incidents in Lake County.

Communicable Disease Hazard as Public Health Emergency – There was a salmonella outbreak at the Amish community which was caused by raw eggs in ice cream. Sanitation issues with the Mission water system have caused restrictions. Temporary chlorination is required because a shallow well became contaminated.

LAKE COUNTY PDM PLAN UPDATE
PLANNING TEAM CONFERENCE CALL
WEDNESDAY, JANUARY 11, 2012
11am – 12:30pm

Communicable Disease Hazard in Agriculture and Livestock - Not a real problem in Lake County. There have been a couple of cases of West Nile virus in horses.

Terrorism/Violence – No incidents of significance have occurred.

Review of Critical Facility List:

Send maps to Commissioners

Send Polson maps to John Fairchild

Tribal facilities should be included in County PDM plan and visa versa.

Steve will send list of fire stations w/ addresses

Other Items:

Joel to send shape files of draft DFIRMS

CSKT PDM contract to be signed this week.

Next Meeting:

Wednesday, February 8th at 10am.

LAKE COUNTY PDM PLAN UPDATE
 PLANNING TEAM CONFERENCE CALL
 WEDNESDAY, FEBRUARY 8, 2012
 10am – 12 noon

Planning Team Roll Call:

Yes	Bill	Barron	Lake County Commissioner
No	John	Fairchild	Polson Fire Chief
Yes	Lisa	Kelly	Century Link
Yes	Sheena	Madsen	Lake County Public Health
Yes	Joel	Nelson	Lake County Planning Dept. & Floodplain Administrator
No	Dale	Nelson	CSKT DES
No	Edward	Persico	Citizen
Yes	Martha	Smith	District 1 Representative
Yes	Steve	Stanley	Lake County OEM
Yes	Emily	Colomeda	Lake County Health Dept.
No	Terry	Gembala	City of Polson, Street Supervisor
No	Bill	Smith	City of Polson, Street Supervisor

Handouts:

PowerPoint Webcast of PDM Maps

Review of CPRI Hazard Scoring:

Wildfires	3.70
Highway Accident	3.20
Landslides	2.95
Structure Fire	2.75
Severe Winter Weather	2.70
Severe Summer Weather	2.60
Communicable Disease - Public Health	2.50
Earthquake	2.35
Dam Failure	2.35
Railroad Accident	2.35
Hazardous Materials Incidents	2.30
Volcanic Ash	2.20
Flooding	1.75
Aircraft Accident	1.75
Terrorism/Violence	1.65
Communicable Disease - Livestock/Ag	1.60
Drought	1.60

County Prioritized Hazards:

- #1 – Wildfire
- #2 – Transportation Accidents (including Hazardous Material Incidents)
- #3 – Landslide

LAKE COUNTY PDM PLAN UPDATE
PLANNING TEAM CONFERENCE CALL
WEDNESDAY, FEBRUARY 8, 2012
10am – 12 noon

- #4 – Structure Fire
- #5 – Severe Winter Weather
- #6 – Flooding
- #7 – Communicable Disease
- #8 – Severe Summer Weather
- #9 – Earthquakes
- #10 – Dam Failure

The remaining hazards will be in the appendix of the PDM Plan

Map Review:

Location Map:

No comments

Land Use & Population Density Map:

No comments

Bridge Inventory Map:

- South Valley Creek Bridge south of Ravalli is being replaced with summer at a cost of \$1 million. The new bridge will have a 160 foot span length.
- Missing bridge. Check Flathead County bridge inventory for a bridge which is both Lake and Flathead County. Located on Highway 209, 1/8 mile west of the junction of Highway 83.

Census Designation Map:

- The name is incorrect on this figure (should be Figure 4 – Bridge Inventory)
- Instead of county census divisions (which don't make sense – northern green area is part of Flathead and should not be associated with the Swan) use County Commissioner District. This data is available digitally (check with Wendy in GIS) and includes population data from census 2010.

Wildfire Map:

- Check page 68 of CWPP which shows the Lake County WUI. Steve thinks this data is available digitally. Martha made an inquiry to DNRC who has compiled a WUI layer from the CWPPs.
- The HFRA WUI layer may not be appropriate for Lake County since the USFS has different criteria than local government regarding structure protection.

Flooding Map:

No comments

Hazardous Material Map:

- Change color of Tier 2 facilities – gold is too hard to read
- Need close-up map of Pablo
- Buffer additional highway – Highway 209 from Woods Bay into Flathead County (north end of county on east side of Flathead Lake)

LAKE COUNTY PDM PLAN UPDATE
PLANNING TEAM CONFERENCE CALL
WEDNESDAY, FEBRUARY 8, 2012
10am – 12 noon

- Add – location of asphalt plant south of Polson on the east side of Pablo Reservoir along railroad. Steve will send location.
- Change location of Northern Energy in Polson to their new site at triangle area west of Hwy 93 in the northeast corner of the map.
- On Polson map - Change name to just CHS, Inc. and leave off “Mountain West Co-op Polson Bulk”.
- On Ronan map – Change name to just CHS, Inc. and leave off “Energy Partners”
- On Ronan map – Take off CHS, Inc. Hot Springs. There should only be one dot at this location.

Dam Failure Map:

- Move dam label from middle of Flathead Lake to top edge of map. Should be Hungry Horse Dam – not Kicking Horse Dam.
- Check inundation area for Nine Pipe Dam
- Label dam inundation area on west end of county. Could be from Upper and Lower Dry Fork Dams or Little Bitterroot Dam in Sanders County or Hubbard Dam in Flathead County.

Landslide Map:

- Add – Finley Point to Woods Bay along Highway 35

Earthquake Map:

No comments

Critical Facilities:

- Add – Polson Tribal Health (across street from courthouse)
- Change – Courthouse in wrong location. Move 2.5 blocks to the east on the south side of the street. 106-4th Avenue East.
- Change – Polson County Health to Lake County Health Dept.
- Add – Ronan wastewater lagoons
- Need to add lift stations in Ronan. Steve will ask Mark Clarey for this data.
- Add – Lake County Community Center in Ronan – north of High School parking lot
- Commissioner Barron will ask someone to look over critical facility maps to see if there are other incorrect locations.
- Steve faxed the Valuation Worksheet for Polson. Still need replacement data for St. Ignatius
- Need locations of county road shops, water/waste water locations for some of the towns.

Next Meeting:

Wednesday, March 7th at 10AM

Review 2006 Mitigation Strategy and Determine Project Status
Develop 2012 Mitigation Strategy
Mitigation Atlas of Example Projects- Handout
PDMC Grant Eligible/Ineligible Projects - Handout

LAKE COUNTY PDM PLAN UPDATE
 PLANNING TEAM CONFERENCE CALL
 WEDNESDAY, MARCH 7, 2012
 10am – 12 noon

Planning Team Roll Call:

Yes	Lisa	Kelly	Century Link
Yes	LaDana	Hintz	Lake County Planning Dept. & Floodplain Administrator
Yes	Martha	Smith	District 1 Representative
Yes	Steve	Stanley	Lake County OEM

Handouts:

- 2005 Mitigation Strategy
- Types of Mitigation Projects
- Example Mitigation Projects
- FEMA PDMC Eligible/Ineligible Projects

Review 2005 Mitigation Strategy

Which projects have been completed, are on-going, or should be carried forward in 2012 strategy? Which projects should be deleted – and why? Focus on mitigation instead of preparedness or response projects.

2012 Mitigation Strategy

Reorganize strategy by having one goal for each hazard and an “all hazard” goal. Projects to be organized under objectives based on “type of mitigation project”.

Goal 1 – Reduce Impacts from Wildfire

Objective 1.1 - Enhance Emergency Services to Mitigate Impacts from Wildfire	1.1.1 - Identify and facilitate additional training to firefighters	4.1.1
Objective 1.2 - Protect Property from Wildfire	1.2.1 - Encourage contiguity in fuel management projects so there will be no gaps in treatment.	NEW
	1.2.2 - Support interagency collaboration on fuel management projects.	NEW
	1.2.3 - Continue to support and enhance County fuel reduction program	NEW
Objective 1.3 - Provide Public Education and Awareness on Wildfire	1.3.1 - Provide information to urban interface landowners	3.1.2

Goal 2 – Reduce Impacts from Transportation Accidents (including Hazardous Material Incidents)

Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents	2.1.1 - Coordinate emergency response activities between railroad, Tribes, counties and municipalities	5.1.4
	2.1.2 - Encourage local emergency responders have adequate training to respond to hazardous material events consistent with local capabilities	NEW
	2.1.3 - Work with MDT to enhance chain-up areas along Highway 93.	NEW
	2.1.4 - Continue to work with MRL and encourage ongoing training with local responders	NEW

LAKE COUNTY PDM PLAN UPDATE
 PLANNING TEAM CONFERENCE CALL
 WEDNESDAY, MARCH 7, 2012
 10am – 12 noon

Objective 2.2 - Implement Actions to Prevent Impacts from Transportation Accidents	2.2.1 - Explore the possibility of a Polson Bypass for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population center.	NEW
	2.2.2 - Encourage truck traffic to use Highway 93 instead of Highway 35 around Flathead Lake.	NEW
Objective 2.3 - Provide Public Education and Awareness on Transportation Accidents	2.3.1 - Increase public awareness of common hazardous materials either stored, used or transported through the area	NEW

Goal 3 – Reduce Impacts from Landslide

Objective 3.1 - Protect Property from Landslides	3.1.1 - Encourage MDT and private landowners to identify landslide prone areas.	NEW
	3.1.2 - Implement preservation/stabilization measures of slide-prone areas	NEW

Goal 4 – Reduce Impacts from Structure Fire

Objective 4.1 - Protect Property from Structure Fire	4.1.1 - Encourage fire sprinkler systems in residential and older commercial buildings.	NEW
	4.1.2 - Provide adequate water supply to create water sources for fighting fires in new housing developments.	NEW
Objective 4.2 - Enhance Emergency Services to Mitigate Impacts from Structure Fire	4.2.1 - Encourage volunteer fire departments to recruit and train volunteers	NEW
Objective 4.3 - Provide Public Education and Awareness on Structure Fire	4.3.1 - Support volunteer fire department fire prevention activities	NEW

Goal 5 – Reduce Impacts from Severe Winter Weather

Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather	5.1.1 - Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property	NEW
	5.1.2 - Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems	NEW
	5.1.3 - Develop partnerships between utility providers and county and local public works agencies to document known hazard areas	NEW
	5.1.4 - Continue to aggressively address rural locations within the county so people's residences can be found for rescue purposes.	NEW
	5.1.5 - Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.	NEW
Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather	5.2.1 - Continue to distribute educational material on how to prepare for winter.	NEW
	5.2.2 - Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow County to develop and maintain database with this information.	NEW

LAKE COUNTY PDM PLAN UPDATE
 PLANNING TEAM CONFERENCE CALL
 WEDNESDAY, MARCH 7, 2012
 10am – 12 noon

	5.2.3 - Promote the National Weather Service's Winter Weather Awareness Week	NEW
--	--	-----

Goal 6 – Reduce Impacts from Flooding

Objective 6.1 - Implement Actions to Prevent Impacts from Flooding	6.1.1 - Continue to update floodplain mapping (DFIRMS).	NEW
	6.1.2 - Update flood regulations when DFIRMS are adopted to protect future development	NEW
Objective 6.2 - Implement Actions to Protect Natural Resources from Flooding	6.2.1 - Work with partner agencies to identify erosion and sediment control issues.	NEW
Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding	6.3.1 - Continue to resize and upgrade culverts in various locations throughout the county.	NEW
	6.3.2 - Identify locations throughout the county where culverts are needed	NEW
Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding	6.4.1 - Continue to work with landowners, ranchers, and response agencies on flood response activities	NEW
	6.4.2 - GPS all homes along waterways.	1.1.2
Objective 6.5 - Provide Public Education and Awareness on Flooding	6.5.1 - Continue to educate homeowners on the advantages of purchasing flood insurance through the National Flood Insurance Program through availability of information.	NEW
	6.5.2 - Promote participation in National Flood Awareness week	NEW
	6.5.3 - Educate homeowners on flood concerns	1.1.3
	6.5.4 - Publish and distribute floodplain maps to homeowners	1.1.4

Goal 7 – Reduce Impacts from Communicable Disease

Objective 7.1 - Provide Public Education and Awareness on Communicable Disease	7.1.1 - Encourage and support local public health in preparing plans for biological hazards.	NEW
	7.1.2 - Provide public awareness on communicable disease prevention.	NEW

Goal 8 – Reduce Impacts from Severe Summer Weather

Objective 8.1 - Protect Property from Severe Summer Weather	8.1.1 - Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms	NEW
	8.1.2 - Continue to encourage landowners to thin trees to reduce wind damages	NEW
	8.1.3 - Develop strategies for clearing roads of fallen trees, and clearing debris from public and private property	NEW
Objective 8.2 - Provide Public Education and Awareness on Severe Summer Weather	8.2.1 - Continue participation in National Weather Service Storm Ready Community Program	NEW
	8.2.2 - Promote National Weather Service's severe weather spotter training program	NEW

Goal 9 – Reduce Impacts from Earthquakes

LAKE COUNTY PDM PLAN UPDATE
 PLANNING TEAM CONFERENCE CALL
 WEDNESDAY, MARCH 7, 2012
 10am – 12 noon

Objective 9.1 - Protect Property from Earthquakes	9.1.1 - Encourage non-structural projects in schools and critical facilities	NEW
	9.1.2 - Encourage schools and critical facilities to identify the need for structural retrofits	NEW
	9.1.3 - Encourage homeowners to perform structural and non-structural retrofits on their homes.	NEW
Objective 9.2 - Provide Public Education and Awareness on Earthquakes	9.2.1 - Conduct educational earthquake awareness and preparedness in schools and for the general public	NEW

Goal 10 – Reduce Impacts from Dam Failure

Objective 10.1 - Implement Actions to Prevent Impacts from Dam Failure	10.1.1 - Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.	NEW
Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam Failure	10.2.1 - Coordinate with dam owners to exercise EAPs with responders.	NEW
	10.2.2 - Maintain Emergency Action Plans of high hazard dams and work with owners to keeps plans current.	NEW
Objective 10.3 - Provide Public Education and Awareness on Dam Failure	10.3.1 - Conduct public outreach / education with residents living in inundation areas.	NEW

Goal 11 – Reduce Impacts from All Hazard

Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards	11.1.1 - Buy weather radios for various critical facilities	2.1.1
	11.1.2 - Continue coordinating with public broadcasting stations with Early Alert System information.	2.1.2
	11.1.3 - Continue to encourage that public facilities and schools obtain generators for backup power	5.1.5
	11.1.4 - Obtain generators for emergency shelters.	NEW
	11.1.5 - Continue to enhance and improve back-up location for dispatch center	NEW
	11.1.6 - Continue to enhance and improve Reverse 911 capabilities through exercise and software development.	NEW
Objective 11.2 - Provide Public Education and Awareness on All Hazards	11.2.1 - Encourage public to volunteer during disasters.	NEW
	11.2.2 - Promote the need for emergency action plans for special needs populations.	NEW
	11.2.3 - Encourage preparation of Family Emergency Plans.	NEW
	11.2.4 - Promote disaster-related educational programs through the school system.	NEW
Objective 11.3 - Implement Actions to Prevent Impacts from All Hazards	11.3.1 - Continue to work with cell phone companies to get a tower in towns, as needed	NEW

Notes

Transportation Accidents - Loosing Polson Spur took out 80% of the railroad crossings

Landslide prone areas are addressed in zoning regulations

Structure fire - New Commercial requires automatic sprinklers

Structure fire - Newer subdivisions require water supplies for fire fighting

LAKE COUNTY PDM PLAN UPDATE
PLANNING TEAM CONFERENCE CALL
WEDNESDAY, MARCH 7, 2012
10am – 12 noon

Flooding - No dikes or levees

Flooding - Write a new project to include acquisition, elevation, etc.

Communicable Disease - Public health needs to provide input

STEVE - Really needs to work w/ St. Ignatius and Ronan.

Next Meeting:

2012 Mitigation Strategy – Complete Action Plans

Future Development Projects

MONDAY, APRIL 16th at 10:00AM

LAKE COUNTY PDM PLAN UPDATE
PLANNING TEAM CONFERENCE CALL
MONDAY, APRIL 16, 2012
10am – 12 noon

Planning Team Roll Call:

Yes	Bill	Barron	Lake County Commissioner
Yes	Lisa	Kelly	Century Link
Yes	Joel	Nelson	Lake County Planning Dept. & Floodplain Administrator
Yes	Martha	Smith	District 1 Representative
Yes	Steve	Stanley	Lake County OEM
Yes	Mark	Clary	Ronan Water Dept and Fire

Handouts:

Mitigation Action Plan

Working through draft mitigation strategy assigning responsible dept., potential funding, schedule, and county priority.

Future Development Projects:

Ronan Lagoon System

Ronan Stormwater Treatment Facility – along Spring Creek in the middle of Ronan

Polson Stormwater Treatment Facility – filter point Riverside Park area

Subdivisions – all over the place/check w/ Joel

Core Motion building facility – south of Ronan, east of current location of Jore

Search & Rescue building - south of river on Kerr Dam Road. ¼ mile down road, east of landfill
St. Ignatius – update city water system

Notes:

Lake County Fire Association

All volunteer dept. – 13 districts each has their own boards, county collects tax dollars and redistributes. Also both city and rural combined for Ronan, Polson, and St. Ignatius

Lake County Fuel Reduction Program - \$500K available through grants program for county landowners. Same allocation for tribe.

MRL shut down rail service in most of Lake County. Only in southern portion of county now.
Arlee & St. Ignatius

Transportation Plan just completed. Single bridge – have to come through Polson so bypass isn't feasible.

Zoning looks at suitability of slopes. Also subdivision regulations address slope stability.
New subdivisions are required to have power underground.

LAKE COUNTY PDM PLAN UPDATE
PLANNING TEAM CONFERENCE CALL
MONDAY, APRIL 16, 2012
10am – 12 noon

Public Meeting:

May 15/16
Fairgrounds Station

APPENDIX C

RISK ASSESSMENT DOCUMENTATION

*Lake County, Montana
Pre-Disaster Mitigation Plan*

Calculated Priority Ranking Index Summary

*Lake County, Montana
Pre-Disaster Mitigation Plan*

LAKE COUNTY PRE-DISASTER MITIGATION PLAN
CALCULATED PRIORITY RANKING INDEX

Hazard	Probability				Magnitude/Severity				Warning Time				Duration				CPRI Score
	Unlikely	Possibly	Likely	Highly Likely	Negligible	Limited	Critical	Catastrophic	< 6 hours	6 - 12 hours	12 - 24 hours	> 24 hours	< 6 hours	< 24 hours	< 1 week	> 1 week	
NATURAL																	
Wildfires				x			x		x							x	3.70
Severe Summer Weather			x			x				x				x			2.60
Severe Winter Weather			x			x				x					x		2.70
Flooding		x			x							x				x	1.75
Drought	x					x						x					1.60
Landslide			x			x			x							x	2.95
Volcanic Ash	x							x		x						x	2.20
Earthquake			x		x				x				x				2.35
HUMAN CAUSED																	
Structure Fire			x			x			x					x			2.75
Hazardous Materials Incidents		x				x			x					x			2.30
Communicable Disease - Public Health		x				x			x							x	2.50
Communicable Disease - Livestock/Ag	x					x						x				x	1.60
Dam Failure	x							x								x	2.35
Highway Accident				x		x			x								3.20
Terrorism/Violence	x				x				x					x			1.65
Aircraft Accident	x					x			x				x				1.75
Railroad Accident	x							x	x							x	2.35

Critical Facilities

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY CRITICAL FACILITIES							
#	Critical Infrastructure	Address	Town	Jurisdiction	Latitude	Longitude	Replacement Value
1	Arlee School	123 Fyant St.	Arlee	County	47.165616	-114.083534	\$0
2	Arlee Fire Hall	200 Culloyah	Arlee	County	47.162627	-114.084647	\$0
3	Arlee Tribal Health	11 Bitterroot Jim	Arlee	County	47.167581	-114.089163	\$5,217,074
4	Arlee Senior Center	106 Wessinger	Arlee	County	47.161751	-114.086398	\$361,717
5	Arlee Fire Department		Arlee	County	47.159597	-114.081001	\$0
6	Big Arm Fire Department		Big Arm	County	47.797697	-114.295121	\$0
7	Charlo School	404-1st Ave. W	Charlo	County	47.440101	-114.174413	\$0
8	Charlo Fire Department	39249 Dellwo Rd.	Charlo	County	47.429927	-114.174994	\$0
9	Charlo Sewage Lagoons		Charlo	County	47.431043	-114.175764	\$0
10	Dayton School	506 B Street	Dayton	County	47.865683	-114.279773	\$0
11	Kootenai Culture Building	77406 Hwy 93	Elmo	County	47.830664	-114.352271	\$2,136,392
12	Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	\$9,274,798
13	Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	\$7,303,903
14	Salish Kootenai College	52000 Hwy 93	Pablo	County	47.596812	-114.107108	\$32,700,008
15	Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	\$9,592,557
16	Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	\$3,513,989
17	Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	\$182,288
18	Lake County Courthouse	106-4th Ave. E.	Polson	Polson	47.691833	-114.161106	\$18,340,913
19	Polson City Hall/Fire Hall/Police Dept	106-1st St. E.	Polson	Polson	47.695191	-114.162218	\$1,825,976
20	Cherry Valley School	107-8th Ave. W.	Polson	Polson	47.687818	-114.165747	\$72,900
21	Linderman School	312-4th Ave. E.	Polson	Polson	47.692006	-114.158202	\$6,540,418
22	Polson Middle School	1602-2nd St. W	Polson	Polson	47.680081	-114.168511	\$16,880,132
23	Polson High School	1712-2nd St. W.	Polson	Polson	47.678666	-114.168232	\$24,440,954
24	Valley View School	7000 Valley View Rd.	Polson	County	47.631415	-114.284548	\$452,146
25	Tribal Natural Resources	301 Main Street	Polson	Polson	47.693201	-114.162938	\$3,246,179
26	St. Joseph Medical Center	6-13th Ave. E.	Polson	Polson	47.683269	-114.161468	\$8,088,058
27	Polson Airport		Polson	Polson	47.693735	-114.183833	\$644,248
28	Polson Fire Department / OEM / Sheriff		Polson	Polson	47.696241	-114.178357	\$391,539
29	Polson Wastewater Treatment		Polson	Polson	47.687077	-114.178165	\$0
30	Lake County Health Department		Polson	Polson	47.687955	-114.163697	\$0
31	Monteacato RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	\$0
32	Rollins Volunteer Fire Department	56 Big Lodge RD	Rollins	County	47.903233	-114.219061	\$0
33	Ronan Tribal Health	26 Round Butte Rd.	Ronan	Ronan	47.530104	-114.098327	\$506,404
34	Tribal Forestry	104 Main SE	Ronan	Ronan	47.529016	-114.095513	\$11,956,663
35	St. Luke Hospital	107-6th Ave. SW	Ronan	Ronan	47.528647	-114.106796	\$37,099,191
36	Ronan High School	103-3rd Ave. NW	Ronan	Ronan	47.530328	-114.100894	\$5,257,651
37	Ronan Middle School	220 Round Butte Rd.	Ronan	Ronan	47.532055	-114.104446	\$2,195,808
38	Glacier View Christian School	118 Mud Creek Lane	Ronan	County	47.570326	-114.120433	\$0
39	Ronan Fire Hall	210 Adams SW	Ronan	Ronan	47.528032	-114.100768	\$1,040,755
40	Ronan Police Dept	206 Adams St SW	Ronan	Ronan	47.528028	-114.100759	\$152,250
41	Safety of Dams	711-3rd Ave. NW	Ronan	Ronan	47.536359	-114.101845	\$417,366
42	Ronan Airport		Ronan	County	47.567595	-114.105229	\$0
43	Pine Haven Christian High School	PO 940	St Ignatius	St Ignatius	47.313354	-114.096492	\$0
44	St. Ignatius City Hall	12-1st Ave.	St. Ignatius	St. Ignatius	47.318158	-114.094546	\$285,332
45	St. Ignatius Fire Hall	8-1st Ave.	St. Ignatius	St. Ignatius	47.318346	-114.095369	\$655,033
46	St Ignatius Police Dept	308 Crystal St	St Ignatius	St Ignatius	47.319591	-114.094681	\$0
47	St. Ignatius Tribal Health	880 Mission Drive	St. Ignatius	St. Ignatius	47.316647	-114.104431	\$7,790,830
48	Salish Culture Building	88 Blind Barnaby	St. Ignatius	St. Ignatius	47.313273	-114.103567	\$1,402,813
49	St. Ignatius High School	4th & Blaine Rd.	St. Ignatius	St. Ignatius	47.318861	-114.091228	\$0
50	St. Ignatius Airport		St. Ignatius	County	47.326357	-114.084045	\$75,402
51	St. Ignatius Sewage Lagoons		St. Ignatius	County	47.317427	-114.110697	\$0
52	Kicking Horse Job Corp.		Ronan	County	47.477081	-114.057749	\$0
53	Proctor Fire Hall / Shop	44458 Brubaker lane	Proctor	County	47.890686	-114.298728	\$15,000
54	Swan Lake VFD	40942 Swan Hwy	Swan Lake	County	47.930754	-113.846561	\$243,360
55	Salmon Prairie School	744 Salmon Prairie Road	Swan Lake	County	47.630818	-113.785325	\$0
56	DNRC Polson Office	410 1st St East	Polson	Polson	47.691732	-114.162146	\$0
57	County Road Shop		Charlo	County	47.438830	-114.172786	\$53,611
58	Elmo Fire Station		Elmo	County	47.830657	-114.350961	\$0
59	Elmo Substation		Elmo	County	47.833521	-114.353884	\$0
60	Big Arm Water System		Big Arm	County	47.797178	-114.292105	\$0
61	Polson Road Shop / Pump House	54827 Hwy 93	Pablo	County	47.635944	-114.112695	\$618,647
62	Ronan Municipal Garage	1010 Main St. SW	Ronan	Ronan	47.528967	-114.112876	\$314,136
63	Ronan Municipal Offices	207 Main St.	Ronan	Ronan	47.528497	-114.101056	\$407,650
64	Water Treatment Plant	Michel Road	Ronan	County	47.537177	-114.038806	\$310,225
65	City Park Well		Ronan	Ronan	47.524641	-114.101747	\$67,514
66	Wastewater Lagoons		Ronan	County	47.520556	-114.114975	\$129,476
67	Lift Station #1		Ronan	Ronan	47.530039	-114.108000	\$80,000
68	Lift Station #2		Ronan	Ronan	47.528441	-114.107985	\$80,000
69	Lift Station #3		Ronan	Ronan	47.530039	-114.102197	\$80,000
70	Lift Station #4		Ronan	Ronan	47.522677	-114.103904	\$250,000
71	Lift Station #5		Ronan	County	47.510437	-114.082109	\$10,000
72	Water Tower		Ronan	County	47.533602	-114.057531	\$648,750
73	Tribal Health	5 4th Ave. East	Polson	Polson	47.692563	-114.161137	\$0
74	Lake County Community Center	3rd Ave NW	Ronan	Ronan	47.532747	-114.102003	\$0

LAKE COUNTY BRIDGE INVENTORY

MAP ID #	BRIDGE_NO	FEAT_CROSS	LENGTH	WIDTH	CLEARANCE	CAPACITY	UNIQUEID	COUNTY	COST
1	S00354006+06001	IRRIGATION CANAL	22	6	100	57,981	305401000.BRG.4371	Lake	\$86,560
2	M24100000+00101	MISSION CREEK 052	10	7	100	45,856	305401000.BRG.2903	Lake	\$40,232
3	L24303005+06001	POST CREEK 042	10	6	100	49,383	305401000.BRG.1714	Lake	\$39,360
4	P00005018+09461	JOCKO RIVER	32	9	100	71,429	305401000.BRG.3155	Lake	\$126,800
5	P00005040+09851	NINE PIPE RESERVOIR	24	9	100	53,792	305401000.BRG.3157	Lake	\$94,400
6	P00005057+00641	PABLO FEEDER CANAL	25	24	100	71,429	305401000.BRG.3158	Lake	\$99,972
7	P00005082+03541	DAYTON CREEK	22	12	100	71,429	305401000.BRG.3160	Lake	\$86,560
8	P00006115+08931	JOCKO RIVER, MRL	150	12	100	87,964	305401000.BRG.3183	Lake	\$752,100
9	S00212005+00991	MISSION CREEK	23	9	100	53,792	305401000.BRG.4071	Lake	\$92,656
10	L24366000+06001	JOCKO RIVER 057	14	7	100	71,429	305401000.BRG.1731	Lake	\$54,880
11	L24368000+02001	MISSION CREEK 047	12	6	100	47,399	305401000.BRG.1732	Lake	\$46,680
12	L24380000+01001	JOCKO RIVER 054	24	5	100	71,429	305401000.BRG.1734	Lake	\$97,536
13	L24380002+00001	VALLEY CREEK 055	160	6	100	51,147	305401000.BRG.1735	Lake	\$1,000,000
14	L24393000+06001	SO MISSION RES INLET 051	10	6	100	37,699	305401000.BRG.1737	Lake	\$41,000
15	L24397000+04001	JOCKO RIVER 056	28	5	3	20,944	305401000.BRG.1738	Lake	\$110,944
16	L24418000+07001	CROW CREEK 071	16	6	100	11,023	305401000.BRG.1740	Lake	\$64,600
17	L24612002+07001	PABLO FEEDER CANAL 001	10	6	100	57,981	305401000.BRG.1743	Lake	\$40,240
18	L24617004+00001	PABLO FEEDER CANAL 004	9	6	100	51,808	305401000.BRG.1744	Lake	\$36,576
19	L24359003+08001	PABLO FEEDER CANAL 045	9	6	100	48,060	305401000.BRG.1729	Lake	\$36,680
20			0	0	0	0	305401000.BRG.4858	Lake	\$0
21	L24025001+01001	PABLO 3A CANAL 035	12	6	100	36,817	305401000.BRG.1698	Lake	\$49,984
22	L24029001+08001	PABLO 31A CANAL 036	14	6	100	23,810	305401000.BRG.1699	Lake	\$55,200
23	L24030002+02001	PABLO CANAL 031	16	6	100	50,926	305401000.BRG.1701	Lake	\$62,800
24	L24064000+08001	PABLO 3A CANAL 037	9	6	100	50,044	305401000.BRG.1702	Lake	\$36,576
25	L24065002+02001	PABLO 3A CANAL 038	9	6	100	39,903	305401000.BRG.1704	Lake	\$37,800
26	L24086000+02001	LITTLE BITTERROOT RV 064	7	5	100	21,826	305401000.BRG.1705	Lake	\$29,260
27	L24127000+03001	PABLO FEEDER CANAL 086	10	5	100	53,792	305401000.BRG.1707	Lake	\$38,800
28	L24132000+09001	LITTLE BITTERROOT RV 062	12	6	100	23,810	305401000.BRG.1708	Lake	\$46,328
29	L24302008+05001	MISSION CREEK 044	9	0	100	71,429	305401000.BRG.1710	Lake	\$36,576
30	L24302010+00001	MISSION RES INLET 043	9	5	100	45,856	305401000.BRG.1711	Lake	\$37,000
31	L24303005+03001	SO KICKING HORSE RES 041	10	6	100	27,998	305401000.BRG.1713	Lake	\$40,400
32	L24455000+01001	POST CREEK 074	9	6	100	31,967	305401000.BRG.1741	Lake	\$37,400
33	L24727000+05001	PABLO FEEDER CANAL 007	14	7	100	71,429	305401000.BRG.1753	Lake	\$54,864
34	L24623002+03001	PABLO FEEDER CANAL 008	12	6	100	39,242	305401000.BRG.1746	Lake	\$49,200
35	L24624000+07001	PABLO FEEDER CANAL 025	9	7	100	43,872	305401000.BRG.1747	Lake	\$35,600
36	L24630000+06001	SWAN RIVER 102	86	5	3	25,794	305401000.BRG.1749	Lake	\$343,812
37	L24667000+01001	PABLO FEEDER CANAL 072	12	6	100	57,981	305401000.BRG.1750	Lake	\$49,984
38	L24701000+09001	SWAN RIVER 091	47	7	100	71,429	305401000.BRG.1752	Lake	\$189,600
39	L24742002+08501	DAYTON CREEK	20	7	100	51,808	305401000.BRG.1755	Lake	\$78,028
40	L24352000+02001	PABLO A CANAL 034	14	6	100	20,282	305401000.BRG.1722	Lake	\$56,120
41	L24352001+01001	POST CREEK 078	7	6	100	23,810	305401000.BRG.1723	Lake	\$29,260
42	L24356000+06001	POST CREEK 080	11	6	100	26,676	305401000.BRG.1725	Lake	\$44,800
43	L24357001+09001	SO KICKING HORSE RES 010	7	0	100	71,429	305401000.BRG.1726	Lake	\$26,840
44	L24358003+02001	PABLO FEEDER CANAL 046	8	6	100	50,485	305401000.BRG.1728	Lake	\$33,800
45	P00083058+06641	GOAT CREEK	18	9	100	53,792	305401000.BRG.3993	Lake	\$70,712
46	P00083070+06501	BOND CREEK	6	8	100	71,870	305401000.BRG.3995	Lake	\$25,600
47	P00083070+09001	NORTH FK BOND CREEK	6	12	100	71,870	305401000.BRG.3996	Lake	\$25,600
48	L24308002+03001	PABLO FEEDER CANAL 022	14	6	100	23,810	305401000.BRG.1716	Lake	\$55,400
49	L24309001+08001	NORTH CROW CREEK 002	10	7	100	45,856	305401000.BRG.1717	Lake	\$38,200
50	L24339003+07001	JOCKO RIVER 012	18	7	100	35,935	305401000.BRG.1719	Lake	\$70,800
51	L24339005+07001	JOCKO RIVER 013	24	7	100	53,572	305401000.BRG.1720	Lake	\$95,920
52	P00083071+07001	HALL CREEK	6	12	100	71,870	305401000.BRG.3998	Lake	\$25,600
53	P00083077+02001	SIX MILE CREEK	6	8	100	71,870	305401000.BRG.3999	Lake	\$25,600
54	P00005037+07681	POST CREEK	16	9	100	49,824	305401000.BRG.3156	Lake	\$63,396
55	P00005061+01811	FLATHEAD RIVER	468	9	100	71,870	305401000.BRG.3159	Lake	\$3,277,204
56	L24065000+05001	PABLO 3A CANAL 039	12	6	100	24,912	305401000.BRG.1703	Lake	\$47,000
57	L24124005+05001	PABLO A CANAL 083	12	5	100	39,903	305401000.BRG.1706	Lake	\$47,548
58	L24301010+07001	CROW CREEK 066	12	7	100	49,824	305401000.BRG.1709	Lake	\$47,548
59	L24303001+07001	NO KICKING HORSE RES 009	6	0	100	71,429	305401000.BRG.1712	Lake	\$25,600
60	L24308001+01001	NORTH CROW CREEK 021	9	6	100	39,903	305401000.BRG.1715	Lake	\$35,360
61	L24339000+06001	JOCKO RIVER 011	13	7	100	71,429	305401000.BRG.1718	Lake	\$53,644
62	L24340005+00001	POST CREEK 053	19	6	100	34,833	305401000.BRG.1721	Lake	\$74,368

LAKE COUNTY BRIDGE INVENTORY									
MAP ID #	BRIDGE_NO	FEAT_CROSS	LENGTH	WIDTH	CLEARANCE	CAPACITY	UNIQUEID	COUNTY	COST
63	L24352003+09001	PABLO FEEDER CANAL 077	8	5	100	35,935	305401000.BRG.1724	Lake	\$31,680
64	L24357004+00001	PABLO FEEDER CANAL 104	9	6	100	41,887	305401000.BRG.1727	Lake	\$37,800
65	L24024003+07001	PABLO CANAL 027	9	6	100	33,951	305401000.BRG.1696	Lake	\$34,800
66	L24024004+05001	PABLO CANAL 026	9	6	100	45,856	305401000.BRG.1697	Lake	\$36,576
67	S00354002+09501	IRRIGATION CANAL	11	10	100	71,429	305401000.BRG.4370	Lake	\$44,400
68	L24363003+01001	POST CREEK 075	12	6	100	39,903	305401000.BRG.1730	Lake	\$46,800
69	L24370002+09001	CROW CREEK 070	9	7	100	41,887	305401000.BRG.1733	Lake	\$36,800
70	L24381000+07001	CROW CREEK 079	9	6	100	35,935	305401000.BRG.1736	Lake	\$37,600
71	L24398000+04001	MIDDLE FORK JOCKO RV 015	7	4	100	54,233	305401000.BRG.1739	Lake	\$28,400
72	L24601002+04001	PABLO FEEDER CANAL 003	20	7	100	71,429	305401000.BRG.1742	Lake	\$79,248
73	L24622000+09001	PABLO FEEDER CANAL 006	14	7	100	71,429	305401000.BRG.1745	Lake	\$54,864
74	L24628000+07001	DRAIN TO WOODS BAY 103	9	6	100	55,997	305401000.BRG.1748	Lake	\$34,400
75	L24729000+01001	JOCKO RIVER 105	28	6	100	21,826	305401000.BRG.1754	Lake	\$113,384
76	L24691000+08001	PABLO FEEDER CANAL 024	12	5	100	39,903	305401000.BRG.1751	Lake	\$46,328
77	L24001034+00001	LITTLE BITTERROOT 063	12	6	100	11,243	305401000.BRG.1690	Lake	\$47,548
78	L24002008+00001	FLATHEAD RIVER 084	161	5	100	71,429	305401000.BRG.1691	Lake	\$804,670
79	L24009003+08001	MUD CREEK 097	7	7	100	53,792	305401000.BRG.1693	Lake	\$26,820
80	L24017001+08001	PABLO FEEDER CANAL 040	10	6	100	43,872	305401000.BRG.1694	Lake	\$38,400
81	L24001028+06001	LITTLE BITTERROOT 059	16	6	100	52,469	305401000.BRG.1688	Lake	\$65,836
82	L24001032+09001	LITTLE BITTERROOT 061	12	6	100	50,044	305401000.BRG.1689	Lake	\$48,768
83	L24005002+09001	PABLO FEEDER CANAL 085	19	7	100	49,824	305401000.BRG.1692	Lake	\$77,200
84	L24022006+00001	PABLO CANAL 032	12	6	100	27,998	305401000.BRG.1695	Lake	\$47,200
85	P00036031+02181	STOCKPASS	4	9	100	53,792	305401000.BRG.3603	Lake	\$14,628
86	P00083053+09801	LION CREEK	25	12	100	53,792	305401000.BRG.3992	Lake	\$98,600
87	P00083067+02881	LOST CREEK	18	8	100	71,870	305401000.BRG.3994	Lake	\$70,712
88	P00083071+04501	GROOM CREEK	6	12	100	71,870	305401000.BRG.3997	Lake	\$25,600
89	L24030001+08001	PABLO CANAL 030	12	6	100	35,935	305401000.BRG.1700	Lake	\$47,548
90	S00209004+09861	SWAN RIVER	225	0	0	0	305401000.BRG.4067	Lake	\$1,125,000

**Dam Failure Risk Assessment
Documentation**

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY RISK ASSESSMENT SUMMARY - DAM FAILURE

CENSUS DESIGNATION	AREA SQ MI	DAM AREA SQ MI	PERCENT DAM INUNDATION	DAM AREA ACRES	# OF RESIDENTIAL BUILDINGS AT RISK	RESIDENTIAL BUILDING EXPOSURE \$	# OF COMMERCIAL BUILDINGS AT RISK	COMMERCIAL BUILDING EXPOSURE \$	CRIT FAC # AT RISK	CRIT FAC EXPOSURE \$	BRIDGE # AT RISK	BRIDGE EXPOSURE RISK \$	AT RISK POPULATION TOTAL	AT RISK PERSONS UNDER 18
CENSUS Incorporated Towns														
Polson city	4.17	0.30	7%	190	139	\$27,392,343	74	\$31,785,452	0	\$0	1	\$3,277,204	543	71
Ronan city	1.19	0.00	0%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
St. Ignatius city	0.56	0.10	18%	67	35	\$4,577,891	11	\$480,338	0	\$0	1	\$40,232	149	43
COUNTY	1,646	186		118,836	2,832	\$603,058,548	574	\$58,782,990	7	\$29,867,535	29	\$3,131,634	7,422	1,847
CENSUS Designated Places														
Arlee CDP	6.46	0.90	14%	579	18	\$4,086,587	4	\$394,668	0	\$0	1	\$126,800	203	64
Bear Dance CDP	2.77	0.21	8%	131	102	\$43,146,186	8	\$881,450	0	\$0	0	\$0	102	17
Big Arm CDP	5.41	0.08	1%	54	64	\$10,332,194	22	\$2,999,894	0	\$0	0	\$0	49	5
Charlo CDP	2.00	0.78	39%	496	103	\$8,638,650	23	\$816,760	1	\$0	0	\$0	280	75
Dayton CDP	0.55	0.27	49%	175	128	\$16,904,379	151	\$29,745,843	1	\$0	1	\$78,028	83	11
Elmo CDP	0.31	0.17	55%	109	42	\$6,632,461	35	\$646,874	0	\$0	0	\$0	138	34
Finley Point CDP	4.27	0.59	14%	377	711	\$193,168,628	67	\$995,192	0	\$0	0	\$0	346	50
Jette CDP	0.62	0.06	10%	38	55	\$9,150,542	6	\$166,620	0	\$0	0	\$0	79	7
Kerr CDP	1.02	0.15	15%	94	13	\$4,369,129	2	\$61,891	0	\$0	0	\$0	48	12
Kicking Horse CDP	3.55	0.41	12%	260	0	\$0	0	\$0	0	\$0	0	\$0	6	1
Kings Point CDP	1.35	0.25	19%	157	187	\$38,764,343	13	\$29,672	0	\$0	0	\$0	110	17
Lake Mary Ronan CDP	1.05	0.00	0%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Lindisfarne CDP	2.62	0.24	9%	152	235	\$48,498,948	20	\$478,624	0	\$0	0	\$0	196	30
Pablo CDP	4.84	1.55	32%	994	283	\$24,177,458	106	\$9,681,452	5	\$29,867,535	0	\$0	2,071	683
Ravalli CDP	2.64	0.25	9%	160	12	\$1,137,479	0	\$0	0	\$0	0	\$0	14	0
Rocky Point CDP	0.61	0.05	8%	32	38	\$9,702,350	4	\$29,064	0	\$0	0	\$0	88	17
Rollins CDP	2.87	0.19	7%	125	160	\$35,571,906	16	\$274,013	0	\$0	0	\$0	132	18
Swan Lake CDP	7.60	0.00	0%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Turtle Lake CDP	0.66	0.02	3%	12	0	\$0	0	\$0	0	\$0	0	\$0	60	12
Woods Bay CDP	1.38	0.00	0%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
County Commissioner Districts														
District 1	1,012.00	153.68	15%	98,358	2,242	\$541,023,628	471	\$69,802,534	1	\$0	9	\$4,484,202	2,518	383
District 2	477.42	24.73	5%	15,830	414	\$58,732,720	62	\$3,949,993	5	\$29,867,535	20	\$1,891,048	2,506	648
District 3	162.49	7.66	5%	4,905	350	\$35,272,434	126	\$17,296,253	1	\$0	2	\$73,820	3,090	930
	1,651.92	186.08		\$119,093	3,006	\$635,028,782	\$659	91048780	7	\$29,867,535	31	\$6,449,070	8,114	1,961

LAKE COUNTY CRITICAL FACILTIES - DAM INUNDATION						
Name	Address	Town	Jurisdiction	LAT	LONG	Replacement Value
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	\$9,592,557
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	\$9,274,798
Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	\$7,303,903
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	\$3,513,989
Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	\$182,288
Charlo School	404-1st Ave. W	Charlo	County	47.440101	-114.174413	\$0
Dayton School	506 B Street	Dayton	County	47.865683	-114.279773	\$0

Earthquake Risk Assessment Documentation

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY RISK ASSESSMENT SUMMARY - EARTHQUAKE HAZARD (40-50 PERCENT G)

CENSUS DESIGNATION	AREA SQ MI	EARTHQUAKE HAZARD AREA SQ MI	PERCENT HAZARD	ACRES IN HAZARD AREA	# OF RESIDENTIAL BUILDINGS AT RISK	RESIDENTIAL BUILDING EXPOSURE \$	# OF COMMERCIAL BUILDINGS AT RISK	COMMERCIAL BUILDING EXPOSURE \$	CRIT FAC # AT RISK	CRIT FAC EXPOSURE RISK \$	BRIDGE # AT RISK	BRIDGE EXPOSURE RISK \$	AT RISK POP TOTAL	AT RISK PERSONS UNDER 18
CENSUS Incorporated Towns														
Polson city	4.17	3.82	91.61%	2,442	2,002	\$262,630,066	640	\$186,321,779	14	\$79,827,069	1	\$3,277,204	4,471	1,084
Ronan city	1.19	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
St. Ignatius city	0.56	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
COUNTY	1,646	231		147,984	3,215	\$623,671,365	470	\$40,303,575	9	\$63,186,190	15	\$725,944	8,346	2,083
CENSUS Designated Places														
Arlene CDP	6.46	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Bear Dance CDP	2.77	2.74	98.92%	1,752	244	\$66,399,442	25	\$1,948,114	0	\$0	0	\$0	275	54
Big Arm CDP	5.41	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Charlo CDP	2.00	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Dayton CDP	0.55	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Elmo CDP	0.31	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Finley Point CDP	4.27	4.27	100.00%	2,734	568	\$139,101,581	71	\$2,204,591	0	\$0	0	\$0	480	76
Jette CDP	0.62	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Kerr CDP	1.02	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Kicking Horse CDP	3.55	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Kings Point CDP	1.35	1.35	100.00%	866	311	\$55,981,199	19	\$109,662	0	\$0	0	\$0	151	24
Lake Mary Ronan CDP	1.05	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Lindisfarne CDP	2.62	0.62	23.66%	396	156	\$32,886,119	23	\$548,197	0	\$0	0	\$0	100	19
Pablo CDP	4.84	4.83	99.79%	3,093	388	\$37,391,847	120	\$10,588,590	6	\$62,567,543	0	\$0	2,254	744
Ravalli CDP	2.64	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Rocky Point CDP	0.61	0.29	47.54%	183	46	\$9,224,677	6	\$58,498	0	\$0	0	\$0	88	17
Rollins CDP	2.87	0.95	33.10%	611	62	\$18,428,761	4	\$65,623	0	\$0	0	\$0	116	23
Swan Lake CDP	7.60	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Turtle Lake CDP	0.66	0.66	100.00%	422	6	\$746,239	0	\$0	0	\$0	0	\$0	209	88
Woods Bay CDP	1.38	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
County Commissioner Districts														
District 1	1,012.00	175.64	17.36%	112,411	2,866	\$601,166,910	517	\$109,160,373	8	\$30,345,025	1	\$3,277,204	4,466	831
District 2	477.42	0.00	0.00%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
District 3	162.49	59.40	36.56%	38,015	2,351	\$285,134,521	593	\$117,464,981	15	\$112,668,234	15	\$725,944	8,351	2,336
	1,651.92	235.04		150,426.02	5,217	\$886,301,431	1110	\$226,625,354	23	\$143,013,259	16	\$4,003,148	12,817	3,167

LAKE COUNTY CRITICAL FACILITIES - EARTHQUAKE HAZARD (40-50 PERCENT G)

Name	Address	Town	Jurisdiction	LAT	LONG	Replacement Value
Salish Kootenai College	52000 Hwy 93	Pablo	County	47.596812	-114.107108	\$32,700,008
Polson High School	1712-2nd St. W.	Polson	Polson	47.678666	-114.168232	\$24,440,954
Lake County Courthouse	106-4th Ave. E.	Polson	Polson	47.691833	-114.161106	\$18,340,913
Polson Middle School	1602-2nd St. W	Polson	Polson	47.680081	-114.168511	\$16,880,132
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	\$9,592,557
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	\$9,274,798
St. Joseph Medical Center	6-13th Ave. E.	Polson	Polson	47.683269	-114.161468	\$8,088,058
Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	\$7,303,903
Linderman School	312-4th Ave. E.	Polson	Polson	47.692006	-114.158202	\$6,540,418
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	\$3,513,989
Tribal Natural Resources	301 Main Street	Polson	Polson	47.693201	-114.162938	\$3,246,179
Polson City Hall/Fire Hall/Police Dept	106-1st St. E.	Polson	Polson	47.695191	-114.162218	\$1,825,976
Polson Road Shop / Pump House	54827 Hwy 93	Pablo	County	47.635944	-114.112695	\$618,647
Polson Fire Department / OEM / Sheriff		Polson	Polson	47.696241	-114.178357	\$391,539
Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	\$182,288
Cherry Valley School	107-8th Ave. W.	Polson	Polson	47.687818	-114.165747	\$72,900
Ronan Airport		Ronan	County	47.567595	-114.105229	\$0
Montecahto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	\$0
Lake County Health Department		Polson	Polson	47.687955	-114.163697	\$0
DNRC Polson Office	410 1st St East	Polson	Polson	47.691732	-114.162146	\$0
Tribal Health	5 4th Ave. East	Polson	Polson	47.692563	-114.161137	\$0
Polson Hill Communication Site #1		Polson	Polson	47.678004	-114.14247	\$0
Polson Hill Communication Site #2		Polson	Polson	47.674774	-114.148993	\$0

Flood Risk Assessment Documentation

*Lake County, Montana
Pre-Disaster Mitigation Plan*

LAKE COUNTY RISK ASSESSMENT SUMMARY - FLOOD																				
CENSUS DESIGNATION	FREQUENCY	MAGNITUDE	AREA SQ MI	FLOOD AREA SQ MI	PERCENT FLOOD	FLOOD AREA ACRES	# OF RESIDENTIAL BUILDINGS AT RISK	RESIDENTIAL BUILDING EXPOSURE \$	ANNUAL LOSS TO RESIDENTIAL BUILDING STOCK	# OF COMMERCIAL BUILDINGS AT RISK	COMMERCIAL BUILDING EXPOSURE \$	ANNUAL LOSS TO COMMERCIAL BUILDING STOCK	CRIT FAC # AT RISK	CRIT FAC EXPOSURE \$	ANNUAL LOSS TO CRITICAL FACILITIES	BRIDGE # AT RISK	BRIDGE EXPOSURE RISK \$	ANNUAL LOSS TO BRIDGES \$	AT RISK POPULATION TOTAL	AT RISK PERSONS UNDER 18
CENSUS Incorporated Towns																				
Polson city	0.21	0.0040%	4.17	0.02	0%	11	49	\$10,314,441	\$87	11	\$1,322,741	\$11	0	\$0	\$0	1	\$3,277,204	\$28	337	33
Ronan city	0.21	0.0040%	1.19	0.02	2%	11	7	\$615,416	\$5	16	\$14,259,884	\$120	0	\$0	\$0	0	\$0	\$0	94	26
St. Ignatius city	0.21	0.0040%	0.56	0.03	5%	19	41	\$4,604,999	\$39	7	\$181,280	\$2	0	\$0	\$0	1	\$40,232	\$0	251	71
COUNTY	0.21	0.0040%	1,646	173		111,033	2,389	\$608,995,285	\$5,122	287	\$24,472,893	\$206	0	\$0	\$0	26	\$3,799,076	\$32	7,659	1,800
CENSUS Designated Places																				
Arlee CDP	0.21	0.0040%	6.46	0.28	4%	181	24	\$2,327,944	\$20	5	\$438,868	\$4	0	\$0	\$0	1	\$126,800	\$1	261	68
Bear Dance CDP	0.21	0.0040%	2.77	0.03	1%	17	83	\$30,114,942	\$253	6	\$855,087	\$7	0	\$0	\$0	0	\$0	\$0	102	17
Big Arm CDP	0.21	0.0040%	5.41	0.02	0%	12	14	\$2,623,311	\$22	6	\$194,951	\$2	0	\$0	\$0	0	\$0	\$0	76	12
Charlo CDP	0.21	0.0040%	2.00	0.05	3%	30	8	\$1,121,491	\$9	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	118	33
Dayton CDP	0.21	0.0040%	0.55	0.02	4%	13	20	\$2,243,866	\$19	8	\$1,170,056	\$10	0	\$0	\$0	1	\$78,028	\$1	32	0
Elmo CDP	0.21	0.0040%	0.31	0.00	0%	1	11	\$2,106,475	\$18	11	\$93,200	\$1	0	\$0	\$0	0	\$0	\$0	68	16
Finley Point CDP	0.21	0.0040%	4.27	0.16	4%	102	582	\$125,650,735	\$1,057	57	\$595,542	\$5	0	\$0	\$0	0	\$0	\$0	245	27
Jette CDP	0.21	0.0040%	0.62	0.00	0%	3	11	\$1,380,312	\$12	2	\$70,671	\$1	0	\$0	\$0	0	\$0	\$0	56	5
Kerr CDP	0.21	0.0040%	1.02	0.08	8%	50	5	\$1,656,606	\$14	2	\$61,891	\$1	0	\$0	\$0	0	\$0	\$0	41	11
Kicking Horse CDP	0.21	0.0040%	3.55	0.07	2%	43	2	\$152,593	\$1	1	\$553	\$0	0	\$0	\$0	0	\$0	\$0	71	26
Kings Point CDP	0.21	0.0040%	1.35	0.08	6%	48	106	\$21,712,875	\$183	7	\$25,149	\$0	0	\$0	\$0	0	\$0	\$0	110	17
Lake Mary Ronan CDP	0.21	0.0040%	1.05	0.03	3%	17	18	\$1,849,467	\$16	2	\$592,164	\$5	0	\$0	\$0	0	\$0	\$0	38	4
Lindisfarne CDP	0.21	0.0040%	2.62	0.10	4%	62	129	\$23,987,580	\$202	7	\$227,603	\$2	0	\$0	\$0	0	\$0	\$0	141	20
Pablo CDP	0.21	0.0040%	4.84	0.04	1%	23	11	\$1,310,237	\$11	1	\$6,391	\$0	0	\$0	\$0	0	\$0	\$0	597	189
Ravalli CDP	0.21	0.0040%	2.64	0.14	5%	87	7	\$725,543	\$6	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	14	0
Rocky Point CDP	0.21	0.0040%	0.61	0.00	0%	2	14	\$3,394,002	\$29	2	\$27,433	\$0	0	\$0	\$0	0	\$0	\$0	44	8
Rollins CDP	0.21	0.0040%	2.87	0.02	1%	12	108	\$25,591,195	\$215	12	\$227,837	\$2	0	\$0	\$0	0	\$0	\$0	65	7
Swan Lake CDP	0.21	0.0040%	7.60	0.24	3%	155	86	\$15,904,601	\$134	8	\$281,621	\$2	0	\$0	\$0	0	\$0	\$0	55	11
Turtle Lake CDP	0.21	0.0040%	0.66	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
Woods Bay CDP	0.21	0.0040%	1.38	0.02	1%	13	67	\$16,129,057	\$136	19	\$2,186,447	\$18	0	\$0	\$0	1	\$34,400	\$0	141	22
County Commissioner Districts																				
District 1	0.21	0.0040%	1,012.00	161.02	16%	103,056	2,063	\$552,168,830	\$4,644	243	\$19,996,843	\$168	0	\$0	\$0	13	\$5,470,944	\$46	3,008	434
District 2	0.21	0.0040%	477.42	8.80	2%	5,633	352	\$59,957,984	\$504	55	\$3,419,853	\$29	0	\$0	\$0	14	\$1,618,748	\$14	3,601	1,001
District 3	0.21	0.0040%	162.49	3.73	2%	2,386	71	\$12,403,327	\$104	23	\$16,820,102	\$141	0	\$0	\$0	1	\$26,820	\$0	1,732	495
Total	0.21	0.0040%	1,661.92	173.55	20.05%	111,073.84	2,486	\$624,530,141	\$5,253	321	\$40,236,798	\$338	0	\$0	\$0	28	\$7,116,512	\$59.86	8,341	1,930

**Hazardous Material Incident
Risk Assessment Documentation**

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY RISK ASSESSMENT SUMMARY - HAZMAT

CENSUS DESIGNATION	AREA SQ MI	HAZMAT AREA SQ MI	PERCENT HAZMAT	HAZMAT ACRES	# OF RESIDENTIAL BUILDINGS AT RISK	RESIDENTIAL BUILDING EXPOSURE \$	# OF COMMERCIAL BUILDINGS AT RISK	COMMERCIAL BUILDING EXPOSURE \$	CRIT FAC # AT RISK	CRIT FAC EXPOSURE \$	BRIDGE # AT RISK	BRIDGE EXPOSURE RISK \$	AT RISK POPULATION TOTAL	AT RISK PERSONS UNDER 18
CENSUS Incorporated Towns														
Polson city	4.17	2.02	48%	1,293	890	\$90,923,471	517	\$149,850,759	11	\$31,062,173	1	\$3,277,204	2,721	611
Ronan city	1.19	1.02	86%	652	683	\$50,690,419	420	\$110,298,707	12	\$57,042,214	0	\$0	1,617	432
St. Ignatius city	0.56	0.16	29%	100	122	\$11,038,483	34	\$4,050,397	0	\$0	0	\$0	315	76
COUNTY	1,648	118		81,543	5,619	\$852,497,082	1,767	\$349,089,825	55	\$163,347,028	31	\$3,551,072	17,342	4,371
CENSUS Designated Places														
Arlee CDP	6.46	2.44	38%	1,564	119	\$11,301,631	62	\$9,727,230	5	\$5,578,791	2	\$240,184	588	169
Bear Dance CDP	2.77	2.20	79%	1,405	235	\$64,855,885	21	\$1,863,070	0	\$0	0	\$0	275	54
Big Arm CDP	5.41	1.57	29%	1,005	122	\$21,426,322	40	\$4,615,489	2	\$0	0	\$0	175	39
Charlo CDP	2.00	0.95	48%	608	168	\$13,566,621	53	\$3,485,537	4	\$53,611	0	\$0	377	105
Dayton CDP	0.55	0.46	84%	295	66	\$9,690,596	125	\$29,244,973	1	\$0	0	\$0	65	7
Elmo CDP	0.31	0.31	100%	200	43	\$6,886,918	35	\$646,874	1	\$0	0	\$0	180	44
Finley Point CDP	4.27	0.65	15%	418	142	\$37,854,239	17	\$758,545	0	\$0	0	\$0	224	35
Jette CDP	0.62	0.28	45%	180	49	\$7,428,780	2	\$155,470	0	\$0	0	\$0	165	27
Kerr CDP	1.02	0.42	41%	267	77	\$14,904,728	2	\$22,277	0	\$0	1	\$44,400	241	67
Kicking Horse CDP	3.55	0.25	7%	161	0	\$0	0	\$0	0	\$0	0	\$0	6	1
Kings Point CDP	1.35	0.00	0%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Lake Mary Ronan CDP	1.05	0.04	4%	24	0	\$0	0	\$0	0	\$0	0	\$0	20	3
Lindisfarne CDP	2.62	0.50	19%	318	116	\$21,804,345	13	\$490,667	0	\$0	0	\$0	146	31
Pablo CDP	4.84	1.18	24%	757	180	\$16,863,540	53	\$6,437,841	5	\$29,867,535	0	\$0	1,484	510
Ravalli CDP	2.64	1.19	45%	761	52	\$4,172,219	25	\$1,303,480	0	\$0	0	\$0	76	12
Rocky Point CDP	0.61	0.01	2%	4	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Rollins CDP	2.87	1.28	45%	822	138	\$25,993,657	21	\$1,214,145	1	\$0	0	\$0	181	28
Swan Lake CDP	7.60	0.68	9%	435	125	\$22,070,857	26	\$1,007,539	0	\$0	4	\$102,400	113	15
Turtle Lake CDP	0.66	0.00	0%	0	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Woods Bay CDP	1.38	0.67	49%	429	242	\$40,918,594	41	\$8,511,823	0	\$0	0	\$0	581	116
County Commissioner Districts														
District 1	1,012.00	58.50	6%	37,438	3,330	\$629,359,599	836	\$164,070,441	19	\$33,836,171	13	\$4,918,964	7,335	1,443
District 2	477.42	43.40	9%	31,468	1,343	\$138,265,585	385	\$79,404,466	13	\$13,566,148	13	\$1,556,640	5,492	1,485
District 3	162.49	17.63	11%	13,378	1,275	\$136,143,433	677	\$149,217,367	22	\$89,964,668	6	\$352,672	5,934	1,698
	1,651.92	119.53	0	\$82,284	5,948	\$903,768,617	\$1,898	392692274	54	\$137,366,987	32	\$6,828,276	18,761	4,626

LAKE COUNTY CRITICAL FACILITIES - HAZMAT							
Name	Address	Town	Jurisdiction	LAT	LONG	Replacement Value	
St. Luke Hospital	107-6th Ave. SW	Ronan	Ronan	47.528647	-114.106796	\$37,099,191	
Lake County Courthouse	106-4th Ave. E.	Polson	Polson	47.691833	-114.161106	\$18,340,913	
Tribal Forestry	104 Main SE	Ronan	Ronan	47.529016	-114.095513	\$11,956,663	
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	\$9,592,557	
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	\$9,274,798	
St. Ignatius Tribal Health	880 Mission Drive	St. Ignatius	St. Ignatius	47.316647	-114.104431	\$7,790,830	
Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	\$7,303,903	
Linderman School	312-4th Ave. E.	Polson	Polson	47.692006	-114.158202	\$6,540,418	
Ronan High School	103-3rd Ave. NW	Ronan	Ronan	47.530328	-114.100894	\$5,257,651	
Arlee Tribal Health	11 Bitterroot Jim	Arlee	County	47.167581	-114.089163	\$5,217,074	
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	\$3,513,989	
Tribal Natural Resources	301 Main Street	Polson	Polson	47.693201	-114.162938	\$3,246,179	
Ronan Middle School	220 Round Butte Rd.	Ronan	Ronan	47.532055	-114.104446	\$2,195,808	
Kootenai Culture Building	77406 Hwy 93	Elmo	County	47.830664	-114.352271	\$2,136,392	
Polson City Hall/Fire Hall/Police Dept	106-1st St. E.	Polson	Polson	47.695191	-114.162218	\$1,825,976	
Ronan Fire Hall	210 Adams SW	Ronan	Ronan	47.528032	-114.100768	\$1,040,755	
Polson Airport		Polson	Polson	47.693735	-114.183833	\$644,248	
Polson Road Shop / Pump House	54827 Hwy 93	Pablo	County	47.635944	-114.112695	\$618,647	
Ronan Tribal Health	26 Round Butte Rd.	Ronan	Ronan	47.530104	-114.098327	\$506,404	
Valley View School	7000 Valley View Rd.	Polson	County	47.631415	-114.284548	\$452,146	
Safety of Dams	711-3rd Ave. NW	Ronan	Ronan	47.536359	-114.101845	\$417,366	
Ronan Municipal Offices	207 Main St.	Ronan	Ronan	47.528497	-114.101056	\$407,650	
Polson Fire Department / OEM / Sheriff		Polson	Polson	47.696241	-114.178357	\$391,539	
Arlee Senior Center	106 Wessinger	Arlee	County	47.161751	-114.086398	\$361,717	
Ronan Municipal Garage	1010 Main St. SW	Ronan	Ronan	47.528967	-114.112876	\$314,136	
Swan Lake VFD	40942 Swan Hwy	Swan Lake	County	47.930754	-113.846561	\$243,360	
Ronan Police Dept	206 Adams St SW	Ronan	Ronan	47.528028	-114.100759	\$152,250	
Lift Station #2		Ronan	Ronan	47.528441	-114.107985	\$80,000	
Lift Station #1		Ronan	Ronan	47.530039	-114.108000	\$80,000	
Lift Station #3		Ronan	Ronan	47.530039	-114.102197	\$80,000	
St. Ignatius Airport		St. Ignatius	County	47.326357	-114.084045	\$75,402	
Cherry Valley School	107-8th Ave. W.	Polson	Polson	47.687818	-114.165747	\$72,900	
City Park Well		Ronan	Ronan	47.524641	-114.101747	\$67,514	
County Road Shop		Charlo	County	47.438830	-114.172786	\$53,611	
Proctor Fire Hall / Shop	44458 Brubaker lane	Proctor	County	47.890686	-114.298728	\$15,000	
Arlee Fire Department		Arlee	County	47.159597	-114.081001	\$0	
Arlee Fire Hall	200 Culloyah	Arlee	County	47.162627	-114.084647	\$0	
Arlee School	123 Fyant St.	Arlee	County	47.165616	-114.083534	\$0	
St. Ignatius Sewage Lagoons		St. Ignatius	County	47.317427	-114.110697	\$0	
Charlo Fire Department	39249 Dellwo Rd.	Charlo	County	47.429927	-114.174994	\$0	
Charlo Sewage Lagoons		Charlo	County	47.431043	-114.175764	\$0	
Charlo School	404-1st Ave. W	Charlo	County	47.440101	-114.174413	\$0	
Lake County Community Center	3rd Ave NW	Ronan	Ronan	47.532747	-114.102003	\$0	
Polson Wastewater Treatment		Polson	Polson	47.687077	-114.178165	\$0	
Lake County Health Department		Polson	Polson	47.687955	-114.163697	\$0	
DNRC Polson Office	410 1st St East	Polson	Polson	47.691732	-114.162146	\$0	
Tribal Health	5 4th Ave. East	Polson	Polson	47.692563	-114.161137	\$0	
Montealto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	\$0	
Big Arm Water System		Big Arm	County	47.797178	-114.292105	\$0	
Big Arm Fire Department		Big Arm	County	47.797697	-114.295121	\$0	
Elmo Fire Station		Elmo	County	47.830657	-114.350961	\$0	
Elmo Substation		Elmo	County	47.833521	-114.353884	\$0	
Dayton School	506 B Street	Dayton	County	47.865683	-114.279773	\$0	
Rollins Volunteer Fire Department	56 Big Lodge RD	Rollins	County	47.903233	-114.219061	\$0	

Landslide Risk Assessment Documentation

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY RISK ASSESSMENT SUMMARY - LANDSLIDE HAZARD

CENSUS DESIGNATION	AREA SQ MI	LANDSLIDE	PERCENT HAZARD	ACRES IN HAZARD AREA	# OF	RESIDENTIAL	# OF	COMMERCIAL	CRIT FAC # AT RISK	CRIT FAC	BRIDGE # AT RISK	BRIDGE	AT RISK POP TOTAL	AT RISK
		HAZARD AREA SQ MI			RESIDENTIAL BUILDINGS AT RISK	RESIDENTIAL BUILDING EXPOSURE \$	COMMERCIAL BUILDINGS AT RISK	COMMERCIAL BUILDING EXPOSURE \$		EXPOSURE RISK \$		EXPOSURE RISK \$		PERSONS UNDER 18
CENSUS Incorporated Towns														
Polson city	4.17	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Ronan city	1.19	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
St. Ignatius city	0.56	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
COUNTY	1,646	79	0	50,840	384	\$65,526,956	71	\$10,389,748	1	\$0	0	\$0	2,266	448
CENSUS Designated Places														
Arlee CDP	6.46	0.00	0.00%	1.03	0	\$0	0	\$0	0	\$0	0	\$0	3	0
Bear Dance CDP	2.77	0.19	6.86%	122.66	101	\$15,193,820	12	\$976,860	0	\$0	0	\$0	263	54
Big Arm CDP	5.41	0.01	0.18%	8.21	0	\$0	0	\$0	0	\$0	0	\$0	4	0
Charlo CDP	2.00	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Dayton CDP	0.55	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Elmo CDP	0.31	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Finley Point CDP	4.27	0.03	0.70%	22.22	14	\$2,334,412	5	\$654,291	0	\$0	0	\$0	67	14
Jette CDP	0.62	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Kerr CDP	1.02	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Kicking Horse CDP	3.55	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Kings Point CDP	1.35	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Lake Mary Ronan CDP	1.05	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Lindsfarne CDP	2.62	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Pablo CDP	4.84	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Ravalli CDP	2.64	0.04	1.52%	27.46	3	\$206,106	0	\$0	0	\$0	0	\$0	61	12
Rocky Point CDP	0.61	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Rollins CDP	2.87	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Swan Lake CDP	7.60	0.76	10.00%	487.27	0	\$0	0	\$0	0	\$0	0	\$0	48	3
Turtle Lake CDP	0.66	0.00	0.00%	0.00	0	\$0	0	\$0	0	\$0	0	\$0	0	0
Woods Bay CDP	1.38	0.06	4.35%	37.13	46	\$5,960,714	22	\$6,918,858	0	\$0	0	\$0	460	95
County Commisioner Districts														
District 1	1,012.00	38.88	3.84%	24,883.64	372	\$64,349,995	70	\$10,387,748	1	\$0	0	\$0	1,754	338
District 2	477.42	32.42	6.79%	20,749.75	11	\$1,073,105	1	\$2,000	0	\$0	0	\$0	313	71
District 3	162.49	8.14	5.01%	5,207.11	1	\$103,856	0	\$0	0	\$0	0	\$0	199	39
	1,651.92	79.44	15.64%	50,840.50	384	\$65,526,956	71	\$10,389,748	1	\$0	0	\$0	2,266	448

LAKE COUNTY CRITICAL FACILITIES - LANDSLIDE

Name	Address	Town	Jurisdiction	LAT	LONG	Replacement Value
Montecahto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	\$0

**Severe Summer Weather
Risk Assessment Documentation**

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY RISK ASSESSMENT SUMMARY - SEVERE SUMMER WEATHER

CENSUS DESIGNATION	FREQUENCY	MAGNITUDE	AREA SQ MI	# OF RESIDENTIAL BUILDINGS AT RISK	TOTAL RESIDENTIAL BUILDING STOCKS	ANNUALIZED LOSS FOR RESIDENTIAL BUILDING STOCK	# OF COMMERCIAL BUILDINGS AT RISK	TOTAL COMMERCIAL BUILDING STOCKS	ANNUALIZED LOSS FOR COMMERCIAL BUILDING STOCK	CRITICAL FACILITY #	TOTAL CRITICAL FACILITY STOCK	ANNUALIZED LOSS FOR CRIT FAC	BRIDGE #	TOTAL BRIDGE \$	ANNUALIZED LOSS FOR BRIDGES	TOTAL POP	TOTAL PERSONS UNDER 18
CENSUS Incorporated Towns																	
Polson city	0.65	0.0034%	4.17	2,014	\$264,253,693	\$5,871	641	\$186,643,179	\$4,147	14	\$80,471,317	\$1,788	1	\$3,277,204	\$73	4,488	1,085
Ronan city	0.65	0.0034%	1.19	869	\$68,159,449	\$1,514	428	\$111,261,523	\$2,472	16	\$59,905,388	\$1,331	0	\$0	\$0	1,871	518
St. Ignatius city	0.65	0.0034%	0.56	323	\$28,062,140	\$623	98	\$11,480,359	\$255	7	\$10,134,008	\$225	1	\$40,232	\$1	842	254
COUNTY	0.65	0.0034%	1,646	10,026	\$1,900,032,008	\$42,215	1,713	\$152,796,089	\$3,395	37	\$72,839,343	\$1,618	88	\$8,437,082	\$187	21,545	5,424
CENSUS Designated Places																	
Arlene CDP	0.65	0.0034%	6.46	152	\$15,525,979	\$345	65	\$9,733,532	\$216	5	\$1,115,758	\$25	2	\$240,184	\$5	636	187
Bear Dance CDP	0.65	0.0034%	2.77	244	\$66,399,442	\$1,475	25	\$1,948,114	\$43	0	\$0	\$0	0	\$0	\$0	275	54
Big Arm CDP	0.65	0.0034%	5.41	126	\$22,369,725	\$497	43	\$4,629,812	\$103	2	\$0	\$0	0	\$0	\$0	177	39
Charlo CDP	0.65	0.0034%	2.00	178	\$15,102,794	\$336	53	\$30,395,523	\$675	4	\$53,611	\$1	0	\$0	\$0	379	105
Dayton CDP	0.65	0.0034%	0.55	137	\$17,905,114	\$398	156	\$30,395,523	\$675	1	\$0	\$0	1	\$78,028	\$2	84	11
Elmo CDP	0.65	0.0034%	0.31	43	\$6,886,918	\$153	35	\$646,874	\$14	2	\$2,136,392	\$47	0	\$0	\$0	180	44
Finley Point CDP	0.65	0.0034%	4.27	909	\$231,936,697	\$5,153	104	\$2,679,845	\$60	0	\$0	\$0	0	\$0	\$0	480	76
Jette CDP	0.65	0.0034%	0.62	125	\$20,690,942	\$460	10	\$647,663	\$14	0	\$0	\$0	0	\$0	\$0	253	43
Kerr CDP	0.65	0.0034%	1.02	113	\$24,590,490	\$546	7	\$290,336	\$6	0	\$0	\$0	1	\$44,400	\$1	251	68
Kicking Horse CDP	0.65	0.0034%	3.55	15	\$2,046,669	\$45	8	\$1,680,673	\$37	1	\$0	\$0	1	\$26,840	\$1	286	71
Kings Point CDP	0.65	0.0034%	1.35	311	\$55,981,199	\$1,244	19	\$109,662	\$2	0	\$0	\$0	0	\$0	\$0	151	24
Lake Mary Ronan CDP	0.65	0.0034%	1.05	77	\$10,572,670	\$235	15	\$1,457,076	\$32	0	\$0	\$0	0	\$0	\$0	65	5
Lindsfarne CDP	0.65	0.0034%	2.62	443	\$77,983,856	\$1,733	54	\$1,148,242	\$26	0	\$0	\$0	0	\$0	\$0	284	56
Pablo CDP	0.65	0.0034%	4.84	388	\$37,391,847	\$831	120	\$10,588,590	\$235	6	\$62,567,543	\$1,390	0	\$0	\$0	2,254	744
Ravalli CDP	0.65	0.0034%	2.64	52	\$4,172,219	\$93	25	\$1,303,480	\$29	0	\$0	\$0	0	\$0	\$0	76	12
Rocky Point CDP	0.65	0.0034%	0.61	64	\$14,014,588	\$311	8	\$349,802	\$8	0	\$0	\$0	0	\$0	\$0	97	19
Rollins CDP	0.65	0.0034%	2.87	274	\$51,820,088	\$1,151	38	\$1,741,158	\$39	1	\$0	\$0	0	\$0	\$0	209	38
Swan Lake CDP	0.65	0.0034%	7.60	139	\$24,312,788	\$540	26	\$1,007,539	\$22	1	\$243,360	\$5	4	\$102,400	\$2	113	15
Turtle Lake CDP	0.65	0.0034%	0.66	6	\$746,239	\$17	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	209	88
Woods Bay CDP	0.65	0.0034%	1.38	452	\$101,436,397	\$2,254	68	\$9,548,120	\$212	0	\$0	\$0	1	\$34,400	\$1	661	128
County Commisioner Districts																	
District 1	0.65	0.0034%	1,012.00	6,909	\$1,460,302,704	\$32,445	1,288	\$176,960,310	\$3,932	20	\$33,836,171	\$752	23	\$6,607,214	\$147	9,610	1,879
District 2	0.65	0.0034%	477.42	3,012	\$386,007,439	\$8,576	637	\$91,882,006	\$2,041	31	\$173,215,083	\$3,848	39	\$3,735,868	\$83	9,435	2,705
District 3	0.65	0.0034%	162.49	3,311	\$414,197,147	\$9,203	955	\$193,338,834	\$4,296	23	\$16,298,802	\$362	28	\$1,411,436	\$31	9,701	2,697
	0.65	0.0034%	1651.92	13,232	\$2,260,507,290	\$50,224	2,880	\$462,181,150	\$10,269	74	\$223,350,056	\$4,962	90	\$11,754,518	\$261	28,746	7,281

**Severe Winter Weather Risk Assessment
Documentation**

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY RISK ASSESSMENT SUMMARY - SEVERE WINTER WEATHER

CENSUS DESIGNATION	FREQUENCY	MAGNITUDE	AREA SQ MI	# OF RESIDENTIAL BUILDINGS AT RISK	TOTAL RESIDENTIAL BUILDING STOCK \$	ANNUALIZED LOSS FOR RESIDENTIAL BUILDING STOCK	# OF COMMERCIAL BUILDINGS AT RISK	TOTAL COMMERCIAL BUILDING STOCK \$	ANNUALIZED LOSS FOR COMMERCIAL BUILDING STOCK	CRITICAL FACILITY #	TOTAL CRITICAL FACILITY STOCK	ANNUALIZED LOSS FOR CRIT FAC	BRIDGE #	TOTAL BRIDGE \$	ANNUALIZED LOSS FOR BRIDGES	TOTAL POP	TOTAL PERSONS UNDER 18
CENSUS Incorporated Towns																	
Polson city	1.04	0.0004%	4.17	2,014	\$264,253,693	\$1,099	641	\$186,643,179	\$776	14	\$80,471,317	\$335	1	\$3,277,204	\$14	4,488	1,085
Ronan city	1.04	0.0004%	1.19	869	\$68,159,449	\$284	428	\$111,261,523	\$463	16	\$59,905,388	\$249	0	\$0	\$0	1,871	518
St. Ignatius city	1.04	0.0004%	0.56	323	\$28,062,140	\$117	98	\$11,480,359	\$48	7	\$10,134,008	\$42	1	\$40,232	\$0	842	254
COUNTY	1.04	0.0004%	1,646	10,026	\$1,900,032,008	\$7,905	1,713	\$152,796,089	\$636	37	\$72,839,343	\$303	88	\$8,437,082	\$35	21,545	5,424
CENSUS Designated Places																	
Arlee CDP	1.04	0.0004%	6.46	152	\$15,525,979	\$65	65	\$9,733,532	\$40	5	\$1,115,758	\$5	2	\$240,184	\$1	636	187
Bear Dance CDP	1.04	0.0004%	2.77	244	\$66,399,442	\$276	25	\$1,948,114	\$8	0	\$0	\$0	0	\$0	\$0	275	54
Big Arm CDP	1.04	0.0004%	5.41	126	\$22,369,725	\$93	43	\$4,629,812	\$19	2	\$0	\$0	0	\$0	\$0	177	39
Charlo CDP	1.04	0.0004%	2.00	178	\$15,102,794	\$63	53	\$30,395,523	\$126	4	\$53,611	\$0	0	\$0	\$0	379	105
Dayton CDP	1.04	0.0004%	0.55	137	\$17,905,114	\$74	156	\$30,395,523	\$126	1	\$0	\$0	1	\$78,028	\$0	84	11
Elmo CDP	1.04	0.0004%	0.31	43	\$6,886,918	\$29	35	\$646,874	\$3	2	\$2,136,392	\$9	0	\$0	\$0	180	44
Finley Point CDP	1.04	0.0004%	4.27	909	\$231,936,697	\$965	104	\$2,679,845	\$11	0	\$0	\$0	0	\$0	\$0	480	76
Jette CDP	1.04	0.0004%	0.62	125	\$20,690,942	\$86	10	\$647,663	\$3	0	\$0	\$0	0	\$0	\$0	253	43
Kerr CDP	1.04	0.0004%	1.02	113	\$24,590,490	\$102	7	\$290,336	\$1	0	\$0	\$0	1	\$44,400	\$0	251	68
Kicking Horse CDP	1.04	0.0004%	3.55	15	\$2,046,669	\$9	8	\$1,680,673	\$7	1	\$0	\$0	1	\$26,840	\$0	286	71
Kings Point CDP	1.04	0.0004%	1.35	311	\$55,981,199	\$233	19	\$109,662	\$0	0	\$0	\$0	0	\$0	\$0	151	24
Lake Mary Ronan CDP	1.04	0.0004%	1.05	77	\$10,572,670	\$44	15	\$1,457,076	\$6	0	\$0	\$0	0	\$0	\$0	65	5
Lindisfarne CDP	1.04	0.0004%	2.62	443	\$77,983,856	\$324	54	\$1,148,242	\$5	0	\$0	\$0	0	\$0	\$0	284	56
Pablo CDP	1.04	0.0004%	4.84	388	\$37,391,847	\$156	120	\$10,588,590	\$44	6	\$62,567,543	\$260	0	\$0	\$0	2,254	744
Ravalli CDP	1.04	0.0004%	2.64	52	\$4,172,219	\$17	25	\$1,303,480	\$5	0	\$0	\$0	0	\$0	\$0	76	12
Rocky Point CDP	1.04	0.0004%	0.61	64	\$14,014,588	\$58	8	\$349,802	\$1	0	\$0	\$0	0	\$0	\$0	97	19
Rollins CDP	1.04	0.0004%	2.87	274	\$51,820,088	\$216	38	\$1,741,158	\$7	1	\$0	\$0	0	\$0	\$0	209	38
Swan Lake CDP	1.04	0.0004%	7.60	139	\$24,312,788	\$101	26	\$1,007,539	\$4	1	\$243,360	\$1	4	\$102,400	\$0	113	15
Turtle Lake CDP	1.04	0.0004%	0.66	6	\$746,239	\$3	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	209	88
Woods Bay CDP	1.04	0.0004%	1.38	452	\$101,436,397	\$422	68	\$9,548,120	\$40	0	\$0	\$0	1	\$34,400	\$0	661	128
County Commissioner Districts																	
District 1	1.04	0.0004%	1,012.00	6,909	\$1,460,302,704	\$6,075	1,288	\$176,960,310	\$736	20	\$33,836,171	\$141	23	\$6,607,214	\$27	9,610	1,879
District 2	1.04	0.0004%	477.42	3,012	\$386,007,439	\$1,606	637	\$91,882,006	\$382	31	\$173,215,083	\$721	39	\$3,735,868	\$16	9,435	2,705
District 3	1.04	0.0004%	162.49	3,311	\$414,197,147	\$1,723	955	\$193,338,834	\$804	23	\$16,298,802	\$68	28	\$1,411,436	\$6	9,701	2,697
	1.04	0.0004%	1651.92	13,232	\$2,260,507,290	\$9,404	\$2,880	\$462,181,150	\$1,923	74	\$223,350,056	\$929	90	\$11,754,518	\$49	28,746	7,281

Structure Fire Risk Assessment Documentation

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY RISK ASSESSMENT SUMMARY - STRUCTURE FIRE

CENSUS DESIGNATION	FREQUENCY	MAGNITUDE	AREA SQ MI	# OF RESIDENTIAL BUILDINGS AT RISK	TOTAL RESIDENTIAL BUILDING STOCK \$	ANNUALIZED LOSS FOR RESIDENTIAL BUILDING STOCK	# OF COMMERCIAL BUILDINGS AT RISK	TOTAL COMMERCIAL BUILDING STOCK	ANNUALIZED LOSS FOR COMMERCIAL BUILDING STOCK	CRITICAL FACILITY #	TOTAL CRIT FACILITY STOCK	ANNUALIZED LOSS FOR CRIT FAC	BRIDGE #	TOTAL BRIDGE \$	ANNUALIZED LOSS FOR BRIDGES	TOTAL POP	TOTAL PERSONS UNDER 16
CENSUS Incorporated Towns																	
Polson city	34.09	0.0005%	4.17	2,014	\$264,253,693	\$48,912	641	\$186,643,179	\$34,547	14	\$80,471,317	\$14,895	1	\$3,277,204	\$607	4,488	1,085
Ronan city	34.09	0.0005%	1.19	869	\$68,159,449	\$12,616	428	\$111,261,523	\$20,594	16	\$59,905,388	\$11,088	0	\$0	\$0	1,871	518
St. Ignatius city	34.09	0.0005%	0.56	323	\$28,062,140	\$5,194	98	\$11,480,359	\$2,125	7	\$10,134,008	\$1,876	1	\$40,232	\$7	842	254
COUNTY	34.09	0.0005%	1,646	10,026	\$1,900,032,008	\$351,686	1,713	\$152,796,089	\$28,282	37	\$72,839,343	\$13,482	88	\$8,437,082	\$1,562	21,545	5,424
CENSUS Designated Places																	
Arlee CDP	34.09	0.0005%	6.46	152	\$15,525,979	\$2,874	65	\$9,733,532	\$1,802	5	\$1,115,758	\$207	2	\$240,184	\$44	636	187
Bear Dance CDP	34.09	0.0005%	2.77	244	\$66,399,442	\$12,290	25	\$1,948,114	\$361	0	\$0	\$0	0	\$0	\$0	275	54
Big Arm CDP	34.09	0.0005%	5.41	126	\$22,369,725	\$4,141	43	\$4,629,812	\$857	2	\$0	\$0	0	\$0	\$0	177	39
Charlo CDP	34.09	0.0005%	2.00	178	\$15,102,794	\$2,795	53	\$30,395,523	\$5,626	4	\$53,611	\$10	0	\$0	\$0	379	105
Dayton CDP	34.09	0.0005%	0.55	137	\$17,905,114	\$3,314	156	\$30,395,523	\$5,626	1	\$0	\$0	1	\$78,028	\$14	84	11
Elmo CDP	34.09	0.0005%	0.31	43	\$6,886,918	\$1,275	35	\$646,874	\$120	2	\$2,136,392	\$395	0	\$0	\$0	180	44
Finley Point CDP	34.09	0.0005%	4.27	580	\$142,198,213	\$26,320	73	\$2,207,267	\$409	0	\$0	\$0	0	\$0	\$0	480	76
Jette CDP	34.09	0.0005%	0.62	125	\$20,690,942	\$3,830	10	\$647,663	\$120	0	\$0	\$0	0	\$0	\$0	253	43
Kerr CDP	34.09	0.0005%	1.02	113	\$24,590,490	\$4,552	7	\$290,336	\$54	0	\$0	\$0	1	\$44,400	\$8	251	68
Kicking Horse CDP	34.09	0.0005%	3.55	15	\$2,046,669	\$379	8	\$1,680,673	\$311	1	\$0	\$0	1	\$26,840	\$5	286	71
Kings Point CDP	34.09	0.0005%	1.35	311	\$55,981,199	\$10,362	19	\$109,662	\$20	0	\$0	\$0	0	\$0	\$0	151	24
Lake Mary Ronan CDP	34.09	0.0005%	1.05	77	\$10,572,670	\$1,957	15	\$1,457,076	\$270	0	\$0	\$0	0	\$0	\$0	65	5
Lindisfarne CDP	34.09	0.0005%	2.62	443	\$77,983,856	\$14,434	54	\$1,148,242	\$213	0	\$0	\$0	0	\$0	\$0	284	56
Pablo CDP	34.09	0.0005%	4.84	388	\$37,391,847	\$6,921	120	\$10,588,590	\$1,960	6	\$62,567,543	\$11,581	0	\$0	\$0	2,254	744
Ravalli CDP	34.09	0.0005%	2.64	52	\$4,172,219	\$772	25	\$1,303,480	\$241	0	\$0	\$0	0	\$0	\$0	76	12
Rocky Point CDP	34.09	0.0005%	0.61	64	\$14,014,588	\$2,594	8	\$349,802	\$65	0	\$0	\$0	0	\$0	\$0	97	19
Rollins CDP	34.09	0.0005%	2.87	274	\$51,820,088	\$9,592	38	\$1,741,158	\$322	1	\$0	\$0	0	\$0	\$0	209	38
Swan Lake CDP	34.09	0.0005%	7.60	139	\$24,312,788	\$4,500	26	\$1,007,539	\$186	1	\$243,360	\$45	4	\$102,400	\$19	113	15
Turtle Lake CDP	34.09	0.0005%	0.66	6	\$746,239	\$138	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	209	88
Woods Bay CDP	34.09	0.0005%	1.38	452	\$101,436,397	\$18,775	68	\$9,548,120	\$1,767	0	\$0	\$0	1	\$34,400	\$6	661	128
County Commissioner Districts																	
District 1	34.09	0.0005%	1,012.00	6,909	\$1,460,302,704	\$270,294	1,288	\$176,960,310	\$32,754	20	\$33,836,171	\$6,263	23	\$6,607,214	\$1,223	9,610	1,879
District 2	34.09	0.0005%	477.42	3,012	\$386,007,439	\$71,448	637	\$91,882,006	\$17,007	31	\$173,215,083	\$32,061	39	\$3,735,868	\$691	9,435	2,705
District 3	34.09	0.0005%	162.49	3,311	\$414,197,147	\$76,666	955	\$193,338,834	\$35,786	23	\$16,298,802	\$3,017	28	\$1,411,436	\$261	9,701	2,697
	34.09	0.0005%	1651.92	13,232	\$2,260,507,290	\$418,408	2,880	\$462,181,150	\$85,547	74	\$223,350,056	\$41,341	90	\$11,754,518	\$2,176	28,746	7,281

Wildfire Risk Assessment Documentation

*Lake County, Montana
Pre-Disaster Mitigation Plan*

LAKE COUNTY RISK ASSESSMENT SUMMARY - WILDFIRE

CENSUS DESIGNATION	FREQUENCY	MAGNITUDE	AREA SQ MI	WUI AREA SQ MI	PERCENT WUI	WUI AREA ACRES	# OF RESIDENTIAL BUILDINGS AT RISK	RESIDENTIAL BUILDING EXPOSURE \$	ANNUAL LOSS TO RESIDENTIAL BUILDING STOCK	# OF COMMERCIAL BUILDINGS AT RISK	COMMERCIAL BUILDING EXPOSURE \$	ANNUAL LOSS TO COMMERCIAL BUILDING	CRIT FAC # AT RISK	CRIT FAC EXPOSURE \$	ANNUAL LOSS TO CRITICAL FACILITIES	BRIDGE # AT RISK	BRIDGE EXPOSURE RISK \$	ANNUAL LOSS TO BRIDGES \$	AT RISK POPULATION TOTAL	AT RISK PERSONS UNDER 18
CENSUS Incorporated Towns																				
Polson city	0.3	0.0150%	4.17	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
Ronan city	0.3	0.0150%	1.19	0.01	1%	5	7	\$989,415	\$44	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	27	12
St. Ignatius city	0.3	0.0150%	0.56	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
COUNTY	0.3	0.0150%	1646.00	334.16		213,864	6,265	\$1,239,691,127	\$55,614	927	\$71,969,078	\$3,229	21	\$69,358,669	\$3,112	35	\$3,787,396	\$170	14,024	3,507
CENSUS Designated Places																				
Arlee CDP	0.3	0.0150%	6.46	6.41	99%	4,105	151	\$15,385,873	\$690	65	\$9,733,532	\$437	5	\$5,578,791	\$250	2	\$240,184	\$11	636	187
Bear Dance CDP	0.3	0.0150%	2.77	2.77	100%	1,774	244	\$66,399,442	\$2,979	25	\$1,948,114	\$87	0	\$0	\$0	0	\$0	\$0	275	54
Big Arm CDP	0.3	0.0150%	5.41	5.41	100%	3,464	126	\$22,369,725	\$1,004	43	\$4,629,812	\$208	2	\$0	\$0	0	\$0	\$0	177	39
Charlo CDP	0.3	0.0150%	2.00	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
Dayton CDP	0.3	0.0150%	0.55	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
Elmo CDP	0.3	0.0150%	0.31	0.01	3%	7	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	68	16
Finley Point CDP	0.3	0.0150%	4.27	4.27	100%	2,734	909	\$231,936,697	\$10,405	104	\$2,679,845	\$120	0	\$0	\$0	0	\$0	\$0	480	76
Jette CDP	0.3	0.0150%	0.62	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
Kerr CDP	0.3	0.0150%	1.02	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
Kicking Horse CDP	0.3	0.0150%	3.55	1.25	35%	799	15	\$2,046,669	\$92	3	\$23,780	\$1	1	\$0	\$0	1	\$26,840	\$1	286	71
Kings Point CDP	0.3	0.0150%	1.35	1.06	79%	681	276	\$48,709,003	\$2,185	15	\$105,948	\$5	0	\$0	\$0	0	\$0	\$0	136	24
Lake Mary Ronan CDP	0.3	0.0150%	1.05	1.03	98%	659	77	\$10,572,670	\$474	15	\$1,457,076	\$65	0	\$0	\$0	0	\$0	\$0	65	5
Lindisfarne CDP	0.3	0.0150%	2.62	2.62	100%	1,679	443	\$77,983,856	\$3,498	54	\$1,148,242	\$52	0	\$0	\$0	0	\$0	\$0	284	56
Pablo CDP	0.3	0.0150%	4.84	3.68	76%	2,358	340	\$32,898,978	\$1,476	101	\$9,782,087	\$439	6	\$62,567,543	\$2,807	0	\$0	\$0	2074	695
Riavall CDP	0.3	0.0150%	2.64	2.01	76%	1,283	52	\$4,172,219	\$187	25	\$1,303,480	\$58	0	\$0	\$0	0	\$0	\$0	76	12
Rocky Point CDP	0.3	0.0150%	0.61	0.00	0%	0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	0	0
Rollins CDP	0.3	0.0150%	2.87	2.87	100%	1,834	274	\$51,820,088	\$2,325	38	\$1,741,158	\$78	1	\$0	\$0	0	\$0	\$0	209	38
Swan Lake CDP	0.3	0.0150%	7.60	2.71	36%	1,736	139	\$24,312,788	\$1,091	26	\$1,007,539	\$45	1	\$62,567,543	\$2,807	4	\$102,400	\$5	113	15
Turtle Lake CDP	0.3	0.0150%	0.66	0.59	89%	376	6	\$746,239	\$33	0	\$0	\$0	0	\$0	\$0	0	\$0	\$0	209	88
Woods Bay CDP	0.3	0.0150%	1.38	1.37	99%	878	452	\$101,436,397	\$4,551	67	\$9,502,827	\$426	0	\$0	\$0	1	\$34,400	\$2	661	128
County Commissioner Districts																				
District 1	0.3	0.0150%	1,012.00	204.67	20%	130,989	4,646	\$1,011,880,374	\$45,394	612	\$35,239,540	\$1,581	6	\$243,360	\$11	10	\$1,919,412	\$86	5,629	1,048
District 2	0.3	0.0150%	477.42	93.19	20%	59,640	793	\$120,112,532	\$5,388	164	\$25,654,228	\$1,151	7	\$5,588,791	\$251	18	\$1,536,368	\$69	4,090	1,225
District 3	0.3	0.0150%	162.49	36.31	22%	23,240	833	\$108,687,636	\$4,876	151	\$11,075,310	\$497	8	\$63,526,518	\$2,850	7	\$331,616	\$15	4,332	1,246
Total	0.3	0.0150%	1651.92	334.17	62%	213,869	6,272	\$1,240,680,542	\$55,658	927	\$71,969,078	\$3,229	21	\$69,358,669	\$3,112	35	\$3,787,396	\$170	14,051	3,519

LAKE COUNTY CRITICAL FACILITIES - WILDFIRE						
Name	Address	Town	Jurisdiction	LAT	LONG	Replacment Value
Salish Kootenai College	52000 Hwy 93	Pablo	County	47.596812	-114.107108	\$32,700,008
Two Eagle River School	52096 Hwy 93	Pablo	County	47.600289	-114.111725	\$9,592,557
Tribal Complex Building (New)	21 Complex Rd.	Pablo	County	47.595921	-114.114321	\$9,274,798
Tribal Complex Building (Old)	21 Complex Rd.	Pablo	County	47.595766	-114.115712	\$7,303,903
Arlee Tribal Health	11 Bitterroot Jim	Arlee	County	47.167581	-114.089163	\$5,217,074
Pablo Elementary School	608-4th Ave. E.	Pablo	County	47.601619	-114.117031	\$3,513,989
Water Tower		Ronan	County	47.533602	-114.057531	\$648,750
Arlee Senior Center	106 Wessinger	Arlee	County	47.161751	-114.086398	\$361,717
Water Treatment Plant	Michel Road	Ronan	County	47.537177	-114.038806	\$310,225
Swan Lake VFD	40942 Swan Hwy	Swan Lake	County	47.930754	-113.846561	\$243,360
Pablo Division of Fire / Search and Rescue		Pablo	County	47.601902	-114.119595	\$182,288
Lift Station #5		Kicking Horse	County	47.510437	-114.082109	\$10,000
Arlee Fire Department		Arlee	County	47.159597	-114.081001	\$0
Arlee Fire Hall	200 Culloyah	Arlee	County	47.162627	-114.084647	\$0
Arlee School	123 Fyant St.	Arlee	County	47.165616	-114.083534	\$0
Kicking Horse Job Corp.		Ronan	County	47.477081	-114.057749	\$0
Salmon Prairie School	744 Salmon Prairie Road	Swan Lake	County	47.630818	-113.785325	\$0
Montecahto RFD	6100 East Shore RT	Polson	County	47.725931	-114.037944	\$0
Big Arm Water System		Big Arm	County	47.797178	-114.292105	\$0
Big Arm Fire Department		Big Arm	County	47.797697	-114.295121	\$0
Rollins Volunteer Fire Department	56 Big Lodge RD	Rollins	County	47.903233	-114.219061	\$0

APPENDIX D

MITIGATION DOCUMENTATION

*Lake County, Montana
Pre-Disaster Mitigation Plan*

Example Mitigation Strategies

*Lake County, Montana
Pre-Disaster Mitigation Plan*

ALL HAZARD - EXAMPLE MITIGATION PROJECTS

Prevention	
1	Obtain Reverse 911 for the County
2	Work with National Weather Service to get a radio signals where needed
3	Provide NOAA weather radios to all schools and critical facilities
4	Look for corporate sponsorships to provide NOAA weather radios to the public
5	Continue to work with cell phone companies to get a tower in towns, as needed
Emergency Services	
6	Continue to enhance and improve back-up location for dispatch center
7	Ensure continuity of operations by providing operable generator in 9-1-1 center
8	Recruit and train emergency response personnel
9	Develop templates for messaging system that could be used for transmission on radio stations (road reports, weather forecasts and conditions, emergency conditions and events, and public services).
10	Obtain a self-start generator for FM radio antennas.
11	Obtain self-start generators for schools/shelters.
12	Obtain additional repeaters for County.
13	Develop local hazard communication plan that establishes protocol for providing information to residents
14	Enhance GIS data to better to assist with mitigation.
	Continue to enhance and improve Reverse 911 capabilities through exercise and software development.
Public Information	
15	Encourage public to volunteer during disasters.
16	Promote disaster-related educational programs through the school system.
17	Provide awareness on developing a family disaster plan and disaster supply kit.

COMMUNICABLE DISEASE - EXAMPLE MITIGATION PROJECTS

Prevention

Property Protection

Structural Projects

Emergency Services

1

Expand capacity of facilities to handle an outbreak.

Public Information

2

Provide public awareness on communicable disease prevention.

DROUGHT - EXAMPLE MITIGATION PROJECTS

Prevention

Property Protection

Structural Projects

Emergency Services

Public Information

- | | |
|---|---|
| 1 | Support drought programs implemented through the Conservation District, FSA , and MSU extension |
| 2 | Develop funds and public impetus to improve XXX water intake system. |

EARTHQUAKE - EXAMPLE MITIGATION PROJECTS

EARTHQUAKE - EXAMPLE MITIGATION PROJECTS		
	<i>Prevention</i>	
1		Develop planning and zoning guidelines to keep critical facilities away from fault line
2		Develop planning/zoning ordinances and building codes for areas below steep slopes and soils subject to liquefaction
3		Adopt building codes to prohibit loose masonry, overhangs
	<i>Property Protection</i>	
4		Retrofit structures; add braces, remove overhangs, provide flexible utility connections and tie downs
5		Structurally retrofit unreinforced masonry buildings
6		Structurally retrofit roofs during re-roofing
7		Replace brittle equipment in electrical substations
8		Using shatter-proofing techniques strengthen windows in schools and critical facilities
9		Encourage non-structural projects in schools and critical facilities
10		Encourage schools and critical facilities to identify the need for structural retrofits
11		Encourage homeowners to perform structural and non-structural retrofits on their homes.
	<i>Structural Projects</i>	
12		Stabilize slopes
13		Analyze/strengthen water towers
14		Retrofit bridges, overpasses, and other critical transportation links
15		Provide shut-off valves in distribution lines for water and gas service
16		Add seismic connections such as bolting
17		Add shearwalls in buildings
18		Brace equipment that could block building exits or kill or injure people
19		Brace parapet walls on buildings; brace or demolish outdoor shelters that pose collapse hazards
20		Brace equipment (such as mechanical equipment, generators) whose failure may disrupt the operation of a critical facility such as a hospital.
21		Brace equipment (such as sprinkler piping) whose failure could lead to increase building damages
22		Pursue structural and non-structural mitigation projects for schools, public, essential service (target hazard) facilities.
	<i>Emergency Services</i>	
23		Prepare earthquake response plans to account for secondary problems; fires and hazardous materials spills
24		Provide emergency back-up power to critical facilities; emergency generators, secondary feeds
25		Harden critical wireless emergency communication systems
	<i>Public Information</i>	
26		Provide technical assistance on retrofitting and non-structural mitigation
27		Conduct educational earthquake awareness and preparedness in schools and for the general public

LANDSLIDE - EXAMPLE MITIGATION PROJECTS

LANDSLIDE - EXAMPLE MITIGATION PROJECTS		
	<i>Property Protection</i>	
1		Conduct study of landslide-prone areas
2		Implement preservation/stabilization measures of slide-prone areas

DAM FAILURE - EXAMPLE MITIGATION PROJECTS

DAM FAILURE - EXAMPLE MITIGATION PROJECTS		
	<i>Prevention</i>	
1		Develop planning and zoning guidelines for open space preservation within the floodway
2		Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.
3		Conduct dam safety inspections
4		Drain reservoir when conditions appear unsafe
5		Maintain Emergency Action Plans of high hazard dams and work with owners to keeps plans current.
6		Implement zoning below and around dams.
	<i>Property Protection</i>	
	<i>Structural Projects</i>	
7		Install movement sensors on faces of dams to detect pending failure.
8		Construct dam improvements, spillway enlargements
9		Remove unsafe dams
10		Reconstruct rip rap on earthen dams
	<i>Emergency Services</i>	
11		Develop evacuation plans, including means of transporting people and evacuation routes.
12		Promote installation of early warning systems on high hazard dams to interface with dispatch.
		Coordinate with dam owners to exercise EAPs with responders.
	<i>Public Information</i>	
13		Conduct public outreach / education with residents living in inundation areas.
14		Promote the benefit of residents downstream from high hazard dams having NOAA weather radios.

FLOODING - EXAMPLE MITIGATION PROJECTS

FLOODING - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Create planning and zoning guidelines for development within the floodplain
2		Create planning and zoning guidelines to preserve open space within the floodplair
3		Create floodplain ordinances
4		Develop storm water management guidelines
5		Continue to update floodplain mapping (DFIRMS).
6		Complete elevation survey of structures in floodplain
7		Update flood regulations when DFIRMs are adopted to protect future development
8		Consider a new zoning ordinance that stipulates new homes built in the 500-year floodplain are not allowed to have basements.
9		Implement a policy for residential and non-residential approach permits which includes installation standards and enforcement
	Property Protection	
10		Construct barriers and wet or dry flood proofing
11		Create structural openings in foundation walls allowing floodwaters in and out, thus avoiding collapse
12		Protect sewers from backing up by:
12a		Installing backflow valves or plugs in drains and toilets to prevent floodwaters from entering home
12b		Purchasing and installing sump pumps with back-up power
13		Obtain river gauges where needed.
14		Remove woody vegetation from the edge of the levee and dikes
15		Remove debris from floodways
16		Relocate, elevate and/or floodproof structures which have been repeatedly flooded
17		Complete an engineering study of what needs to be done to mitigate flooding in flood-prone areas
18		Install security fencing and signage on levees and dikes
19		Consider forming a flood control district to address concerns with the dikes/levees.
20		Perform maintenance on drainage systems
21		Identify and secure use of emergency retention ponds
22		Relocate furnaces, hot water heaters, and electrical panels from flood-prone areas
	Natural Resource Protection	
23		Protect wetlands
24		Work with partner agencies to identify erosion and sediment control issues.
25		Employ best management practices
	Structural Projects	
26		Diversions
27		Levees/floodwalls/dikes
28		Repair impaired bridges
29		Replace culverts with bridges to mitigate impacts of runoff
30		Reduce flooding by installing drainage ditches
31		Continue to resize and upgrade culverts in various locations throughout the county.

FLOODING - EXAMPLE MITIGATION PROJECTS

32	Identify locations throughout the county where culverts are needed
33	Install/redesign storm drainage system
34	Dredge rivers/creeks to increase carrying capacity.
<i>Emergency Services</i>	
35	Develop flood warning system
36	Continue to work with landowners, ranchers, and response agencies on flood response activities
37	Protect critical facilities
<i>Public Information</i>	
38	Provide flood map information
39	Provide for real estate disclosure
40	Continue to educate homeowners on the advantages of purchasing flood insurance through the National Flood Insurance Program through availability of information.
41	Work towards achieving a lower rating through the National Flood Insurance Program Community Rating System.
42	Participate in the National Weather Service's Flood Awareness Week
43	Provide awareness training to repetitive loss property owners (and others) on mitigation programs to relocate, elevate, and floodproof structures in the floodplain
44	Provide awareness training in agricultural areas that livestock grazing in floodplains should include a high spot where animals can evacuate to.
45	Educate county residents on what must be done to manage storm water in the community.

Promote participation in National Flood Awareness week

HAZARDOUS MATERIAL INCIDENTS - EXAMPLE MITIGATION PROJECTS

HAZARDOUS MATERIAL INCIDENTS - EXAMPLE MITIGATION PROJECTS		
	<i>Prevention</i>	
1		Increase security at bulk storage facilities
2		Implement Meth Watch Program in communities
3		Pursue zoning regulations to ensure that perimeter security is provided at bulk chemical and petroleum facilities
4		Explore the possibility of a Polson Bypass for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population center.
	<i>Property Protection</i>	
	<i>Emergency Services</i>	
5		Encourage local emergency responders have adequate training to respond to hazardous material events consistent with local capabilities
6		Continue providing awareness training to emergency responders.
7		Develop evacuation procedures for homes near transportation networks that commonly carry hazardous materials and near storage facilities and pipelines the house hazardous materials
8		Develop alternative routes when major arteries are compromised
9		Pursue funding for supplies and equipment trailer
10		Obtain decontamination trailers that can be placed around county.
11		Update resource list of emergency response supplies/vendors.
12		Obtain regional containment equipment trailers and supplies to strategically position for response in the county
13		Explore creating a safe haven for haz-mat loads that may be in trouble.
	<i>Public Information</i>	
14		Provide public education on methamphetamine labs and how to identify signs of labs and the dangers of labs
15		Increase public awareness of common hazardous materials either stored, used or transported through the area
16		Educate teachers and school staff in schools near hazardous materials facilities and transportation routes in how to limit exposure to hazardous materials to students during an incident.
17		Evaluate opportunities to inform private property owners who live along state highways on hazardous-material traffic.

RAILROAD ACCIDENTS - EXAMPLE MITIGATION PROJECTS

RAILROAD ACCIDENTS - EXAMPLE MITIGATION PROJECTS		
	<i>Emergency Services</i>	
1		Examine unprotected railroad crossings and recommend if gates/signage are needed.

SEVERE SUMMER WEATHER - EXAMPLE MITIGATION PROJECTS

SEVERE SUMMER WEATHER - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Encourage development and enforcement of wind resistant buildings and construction codes
2		Evaluate current building codes for efficiency in protecting structures from wind damage
	Property Protection	
1		Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms
2		Create partnerships with utility companies and negotiate for shorter span distances between power poles to better withstand snow loads and severe storms.
3		Negotiate with utility companies for replacement of weak or rotten power poles.
4		Develop strategies for managing overhead utility lines
5		Provide guy wires on power poles subject to failure
6		Protect traffic lights from high winds
7		Analyze communication lines on power poles; if they cause unacceptable loads, remove when possible
8		Install shutters on windows and doors or otherwise protect building openings from wind damage
9		Ensure that roof-mounted equipment is securely mounted
10		Develop and implement programs to keep trees from threatening lives, property, and public infrastructure during windstorm event:
10a		Develop partnerships between utility providers and county & local agencies to identify potentially hazardous trees
10b		Continue to encourage landowners to thin trees to reduce wind damages
10c		Make sure right-of-way around power lines is free of trees or limbs that may cause damage
10d		Develop strategies for clearing roads of fallen trees, and clearing debris from public and private property
11		Install 3-mil window film on windows of existing and future schools and critical facilities to prevent shattering.
12		Promote the use of hurricane clips for buildings vulnerable to high winds
	Structural	
13		Structurally analyze all buildings or rooms identified as shelters and strengthen these as necessary
	Emergency Services	
14		Provide emergency back-up power to critical facilities; emergency generators, secondary feeds, portable generators with standard camlock connections
	Public Information	
15		Distribute educational materials to organizations and county residents regarding preparedness for no power situations
16		Promote the National Weather Service's Severe Weather Awareness Week.
17		Continue participation in National Weather Service Storm Ready Community Program
18		Promote National Weather Service's severe weather spotter training program
19		Provide awareness training on securing loose objects and pruning back large trees that could break during wind events and cause property damage.
20		Provide outreach on the risks of lightning and other severe summer weather hazards

SEVERE WINTER WEATHER - EXAMPLE MITIGATION PROJECTS

SEVERE WINTER WEATHER - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Implement a building code that requires roofs to be designed to withstand appropriate snow load.
2		Explore implementing a building code that would require stronger building construction to withstand severe winds
	Property Protection	
3		Perform engineering study of public buildings and shelters to determine which may need retrofits to withstand snow loads.
4		Install air flow spoilers on powerlines in areas vulnerable to heavy snow loads.
5		Work with power companies to identify powerlines which should be buried to mitigate interruption of service.
	Structural	
6		Perform retrofits on public buildings and shelters that could become compromised by snow loads.
	Emergency Services	
7		Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property
8		Develop and implement programs to coordinate maintenance and mitigation activities to reduce risk to public infrastructure from severe winter storms
9		Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems
10		Develop partnerships between utility providers and county and local public works agencies to document known hazard areas
11		Develop a resource list of people who shovel snow from roofs.
12		Continue to aggressively address rural locations within the county so people's residences can be found for rescue purposes.
13		Obtain generators for emergency shelters.
14		Identify or update list of emergency shelters in each community.
15		Obtain generators for schools to maintain power supply during winter.
16		Coordinate with appropriate organizations to evaluate the need for more weather stations and/or weather instrumentation
17		Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.
18		Consider enhanced snow removal services to support public safety and infrastructure protection
	Public Information	
19		Distribute educational materials to residents regarding evacuation routes during road closures
20		Increase public awareness of severe winter storm mitigation activities
21		Prepare a guide book for special needs populations on winter weather survival
22		Provide training or video on how to measure snow moisture to determine when shoveling of roofs is necessary.

SEVERE WINTER WEATHER - EXAMPLE MITIGATION PROJECTS

23	Contintue to distribute educational material on how to prepare for winter.
24	Perform public outreach/education of location of emergency shelters.
25	Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow County to develop and maintain database with this information.
26	Promote the National Weather Service's Winter Weather Awareness Week
27	Educate the public on techniques to construct homes that will better withstand severe winds

STRUCTURE FIRE - EXAMPLE MITIGATION PROJECTS

	Prevention	
	Property Protection	
1		Encourage fire sprinkler systems in residential and older commercial buildings.
2		Provide adequate water supply to create water sources for fighting fires in new housing developments.
3		Increase availability of water resources for structure fire suppression by creating reliable water supplies in rural areas
	Emergency Services	
4		Encourage volunteer fire departments to recruit and train volunteers
5		Update equipment needed for suppressing structure fires
	Public Information	
6		Promote public education on the benefit of smoke detectors
7		Support volunteer fire department fire prevention activities
8		Support the education program in school on topics supplied by International Fire Council.
9		Support a community education program on structure fire prevention.
10		Promote the need for emergency action plans for special needs populations.
11		Encourage preparation of Family Emergency Plans.
12		Promote sprinkler system installation in commercial structures

WILDFIRE - EXAMPLE MITIGATION PROJECTS

WILDFIRE - EXAMPLE MITIGATION PROJECTS		
	Prevention	
1		Create zoning districts to reflect fire risk zones
2		Develop planning and zoning guidelines to restrict development to areas near fire protection and water sources
3		Require new subdivisions to space buildings, provide fire breaks, on-site water storage, wide roads, multiple access, require defensible space and inspection of new development in the WUI
4		Adopt building code standards for roof materials, spark arresters
5		Review subdivision regulation to reexamine water supply requirements.
6		Review implementation process for rural impact fees for fire protection in the WUI.
7		Encourage Planning Board to adopt subdivision regulations that require creation of survivable space, ingress/egress roads and adequate water supply for fire fighting and limit construction on steep slopes for all new developments.
8		Consider strategies for county regulations (subdivision and others) that would require maintenance of fuel reduction projects in the WUI and enforcement.
9		Consider implementing zoning in the county for requiring fuel reduction in the WUI.
10		Consider implementing zoning in the county requiring fire-resistant building materials in the WUI
	Property Protection	
11		Retrofit roofs with fire-resistant materials and add spark arrestors
12		Remove vegetation and combustible materials around structures
13		Perform fuel treatments along evacuation routes and initial attack roads in the WUI
14		Continue grants programs for landowners to create defensible space.
15		Study creation of fire breaks in appropriate locations in Conservation Reserve Program lands and areas of future development.
16		Perform fuel mitigation around historic sites
17		Upgrade the water supply in communities as needed to more effectively assist with wildfire suppression
18		Encourage BLM and USFS to perform fuel mitigation on federal lands adjacent to the WUI
19		Encourage utility companies to perform fuel reduction along utility corridors
20		Encourage contiguity in fuel management projects so there will be no gaps in treatment.
21		Support interagency collaboration on fuel management projects.
	Natural Resource Protection	
22		Prohibit development in sensitive areas
23		Employ mechanical thinning and prescribed burning to abate the risk of catastrophic fire
24		Protect watersheds from erosion, prevent water pollution to the public water supply from wildfires
25		Clear trimmings, trees, brush, and other debris completely from sites to reduce fire risk.
	Structural Projects	
26		Create fire breaks to prevent the spread of fire
27		Provide more than one means of access into and out of a community
28		Equip water storage facilities with fire-resistant electrical pump when not connected to a community water system
29		Develop alternative firefighting water sources
30		Widen initial attack roads and install culverts where needed.

WILDFIRE - EXAMPLE MITIGATION PROJECTS

WILDFIRE - EXAMPLE MITIGATION PROJECTS		
<i>Emergency Services</i>		
31		Recruit and train volunteer fire fighters
32		Enhance emergency services to increase the efficiency of wildfire response and recovery activities
33		Install more fire reporting stations for better access and coverage
34		Coordinate fire departments and other emergency services in prevention and response activities
35		Obtain more 4-WD tenders
36		Install booster antennas to enhance cell service in fire districts where it would be beneficial.
37		Improve training and qualifications of personnel to more effectively interface with incoming Incident Management Teams deployed in the county.
38		Obtain additional repeaters or relocate existing repeaters to enhance radio communications.
39		Increase availability of water resources for wildland firefighting by strategic placement of water tanks and ponds.
40		Create a database of water sources for firefighting and make database available to rural fire districts.
41		Consider increasing air support for wildfire suppression
<i>Public Information</i>		
42		Develop fuels mapping for public and private lands
43		Continue to update and maintain fire hazard mapping project
44		Develop and disseminate updated maps relating to fire hazard to assist builders and homeowners in wildfire mitigation and guide emergency services during response.
45		Publicize fire season
46		Develop partnerships to provide for fire mitigation activities and suppression preparedness
47		Promote FIREWISE Programs
48		Conduct community-based demonstration projects of fire prevention and mitigation in the urban interface
49		Establish neighborhood "drive-through" activities that pinpoint site-specific mitigation activities.
50		Support volunteer fire department fire prevention activities
51		Provide outreach to citizens on wildfire mitigation techniques.
52		Promote evacuation planning for landowners.
53		Provide education to landowners on fuel mitigation along evacuation routes.

Mitigation Strategy Action Plans

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.1 - Enhance Emergency Services to Mitigate Impacts from Wildfire</i>		
Project	Project 1.1.1 - Identify and facilitate additional training for firefighters.		
Category	Emergency Services		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Individual Fire Chiefs		
Potential Funding Source(s)	Grants, Fire Service Training School		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.2 - Protect Property from Wildfire</i>		
Project	Project 1.2.1 - Continue to be proactive in fuel management county- and reservation-wide.		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Lake County Commissioners, Tribal Fire		
Potential Funding Source(s)	Lake County Fuel Reduction Program		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.2 - Protect Property from Wildfire</i>		
Project	Project 1.2.2 - Support interagency collaboration on fuel management projects.		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Fuel Reduction Office, Commissioners,		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	Objective 1.2 - Protect Property from Wildfire		
Project	Project 1.2.3 - Continue to support and enhance County fuel reduction program.		
Category	Property Protection		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Fuel Reduction Office, Lake County Commissioners		
Potential Funding Source(s)	County, Lake County Fuel Reduction Program		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 1 - Reduce Impacts from Wildfire		
Objective	<i>Objective 1.3 - Provide Public Education and Awareness on Wildfire</i>		
Project	Project 1.3.1 - Provide wildfire mitigation information to urban interface landowners.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Wildfire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	County Planning, Fire Chiefs		
Potential Funding Source(s)	County		
Jurisdiction Participation	Jurisdictions will participate according to their capabilities. At a minimum, the project will be discussed at meetings of the City of Ronan and Town of St. Ignatius (Mission) Rural Fire Departments. Information on creating defensible space, available from FireSafe Montana, will be distributed at these meetings.		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	<i>Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents</i>		
Project	Project 2.1.1 - Coordinate emergency response activities between railroad, Tribes, counties and municipalities.		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC, Fire Chiefs		
Potential Funding Source(s)	County (including RFD budgets)		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	<i>Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents</i>		
Project	Project 2.1.2 - Encourage local emergency responders to have adequate training to respond to hazardous material incidents consistent with local capabilities.		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	LEPC/TERC, DES		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	<i>Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents</i>		
Project	Project 2.1.3 - Work with MDT to enhance chain-up areas along U.S. Highway 93.		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	Lake County		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source(s)	County, Tribe, State		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	<i>Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents</i>		
Project	Project 2.1.4 - Continue to work with MRL and encourage ongoing training with local responders.		
Category	Emergency Services		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	Lake County		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	7
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	<i>Objective 2.2 - Implement Actions to Prevent Impacts from Transportation Accidents</i>		
Project	2.2.1 - Explore the possibility of a Polson Bypass for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population center.		
Category	Prevention		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	Lake County, Polson		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Low	
Responsible Agency	Commissioners		
Potential Funding Source(s)	County		
Implementation Schedule	Long-term		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	<i>Objective 2.2 - Implement Actions to Prevent Impacts from Transportation Accidents</i>		
Project	2.2.2 - Encourage truck traffic to use Highway 93 instead of Highway 35 around Flathead Lake.		
Category	Prevention		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	Lake County		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC, RFDs		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 2 - Reduce Impacts from Transportation Accidents		
Objective	Objective 2.3 - Provide Public Education and Awareness on Transportation Accidents		
Project	Project 2.3.1 - Increase public awareness of common hazardous materials either stored, used or transported through the area.		
Category	Provide Public Education and Awareness		
Hazard(s) Addressed	Transportation Accidents		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 3 - Reduce Impacts from Landslides		
Objective	<i>Objective 3.1 - Protect Property from Landslides</i>		
Project	Project 3.1.1 - Encourage MDT to work with the County to identify landslide prone areas.		
Category	Property Protection		
Hazard(s) Addressed	Landslides		
Jurisdiction(s)	Lake County		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 3 - Reduce Impacts from Landslides		
Objective	<i>Objective 3.1 - Protect Property from Landslides</i>		
Project	Project 3.1.2 - Encourage MDT to implement preservation/stabilization measures of slide-prone areas.		
Category	Property Protection		
Hazard(s) Addressed	Landslides		
Jurisdiction(s)	Lake County		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)	x	1
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	7
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	Objective 4.1 - Protect Property from Structure Fire		
Project	Project 4.1.1 - Encourage fire sprinkler systems in residential and older commercial buildings.		
Category	Property Protection		
Hazard(s) Addressed	Structure Fire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	12
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Low	
Responsible Agency	RFDs, City Fire Depts.		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	<i>Objective 4.1 - Protect Property from Structure Fire</i>		
Project	Project 4.1.2 - Continue to consult with Fire Chiefs regarding whether new water supplies are needed to maintain fire flows in new housing developments.		
Category	Property Protection		
Hazard(s) Addressed	Structure Fire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Planning, Fire Chiefs, Commissioners		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	Objective 4.2 - Enhance Emergency Services to Mitigate Impacts from Structure Fire		
Project	Project 4.2.1 - Encourage volunteer fire departments to recruit and train volunteers.		
Category	Emergency Services		
Hazard(s) Addressed	Structure Fire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	RFDs		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 4 - Reduce Impacts from Structure Fire		
Objective	<i>Objective 4.3 - Provide Public Education and Awareness on Structure Fire</i>		
Project	Project 4.3.1 - Support volunteer fire department fire prevention activities.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Structure Fire		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	12
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Low	
Responsible Agency	RFDs		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather</i>		
Project	Project 5.1.1 - Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property.		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Road Dept, City Public Works Depts., MDT, Tribal Housing		
Potential Funding Source(s)	County, Tribal, State		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather</i>		
Project	Project 5.1.2 - Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems.		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	DES, Commissioners, Cities, Tribe, MDT		
Potential Funding Source(s)	County, Cities, Tribe, State		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather</i>		
Project	Project 5.1.3 - Continue to aggressively address rural locations within the county so people's residences can be found for rescue purposes.		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	GIS, Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather</i>		
Project	Project 5.1.4 - Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.		
Category	Emergency Services		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather		
Project	Project 5.2.1 - Continue to distribute educational material on how to prepare for winter.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	County, State		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather</i>		
Project	Project 5.2.2 - Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow County to develop and maintain database with this information.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Public Health, E911, DES, Tribe		
Potential Funding Source(s)	Grants		
Implementation Schedule	Long-term		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 5 - Reduce Impacts from Severe Winter Weather		
Objective	<i>Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather</i>		
Project	Project 5.2.3 - Promote the National Weather Service's Winter Weather Awareness Week (third full week in October).		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Winter Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source(s)	County, NWS		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	Objective 6.1 - Implement Actions to Prevent Impacts from Flooding		
Project	Project 6.1.1 - Support FEMA's Map Modernization Program which will provide Lake County with updated floodplain mapping (DFIRMS).		
Category	Prevention		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	Objective 6.1 - Implement Actions to Prevent Impacts from Flooding		
Project	Project 6.1.2 - Update flood regulations when DFIRMs are adopted to protect future development.		
Category	Prevention		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Planning, Commissioners, Cities		
Potential Funding Source(s)	County, Cities		
Implementation Schedule	Short-term		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	Objective 6.2 - Implement Actions to Protect Natural Resources from Flooding		
Project	Project 6.2.1 - Work with partner agencies to identify erosion and sediment control issues.		
Category	Natural Resource Protection		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	6
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Planning, Road Dept., Tribe		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding		
Project	Project 6.3.1 - Continue to resize and upgrade culverts in various locations throughout the county.		
Category	Structural		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Road Dept., MDT, Tribe		
Potential Funding Source(s)	County, FEMA, State		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding		
Project	Project 6.3.2 - Identify locations throughout the county where culverts are needed.		
Category	Structural		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	County Road Dept., MDT, Tribe		
Potential Funding Source(s)	County, FEMA, State		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	<i>Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding</i>		
Project	Project 6.4.1 - Continue to work with landowners, ranchers, and response agencies on flood response activities.		
Category	Emergency Services		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	<i>Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding</i>		
Project	Project 6.4.2 - GPS all homes along waterways.		
Category	Emergency Services		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Low	
Responsible Agency	GIS, Planning		
Potential Funding Source(s)	County, Grants		
Implementation Schedule	Long-term		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	<i>Objective 6.5 - Provide Public Education and Awareness on Flooding</i>		
Project	Project 6.5.1 - Continue to educate homeowners on purchasing flood insurance through the National Flood Insurance Program through availability of information.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Low	
Responsible Agency	Planning		
Potential Funding Source(s)	County, FEMA		
Jurisdiction Participation	Jurisdictions will participate according to their capabilities. At a minimum, information on the NFIP, available from FEMA, will be distributed at meetings of the Ronan City Council and St. Ignatius Town Council.		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	<i>Objective 6.5 - Provide Public Education and Awareness on Flooding</i>		
Project	Project 6.5.2 - Educate homeowners on flood concerns.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	11
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low		High
Responsible Agency	DES		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 6 - Reduce Impacts from Flooding		
Objective	<i>Objective 6.5 - Provide Public Education and Awareness on Flooding</i>		
Project	Project 6.5.3 - Make floodplain maps available on county website.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Flooding		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	GIS, Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Short-term		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 7 - Reduce Impacts from Communicable Disease		
Objective	<i>Objective 7.1 - Provide Public Education and Awareness on Communicable</i>		
Project	Project 7.1.1 - Encourage and support local public health in preparing plans for biological hazards.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Communicable Disease		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Public Health		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 7 - Reduce Impacts from Communicable Disease		
Objective	<i>Objective 7.1 - Provide Public Education and Awareness on Communicable</i>		
Project	Project 7.1.2 - Provide public awareness on communicable disease prevention.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Communicable Disease		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Public Health		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 8.1 - Protect Property from Severe Summer Weather</i>		
Project	Project 8.1.1 - Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms.		
Category	Property Protection		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 8.1 - Protect Property from Severe Summer Weather</i>		
Project	Project 8.1.2 - Develop strategies for clearing roads of fallen trees, and clearing debris from public and private property.		
Category	Property Protection		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Low	
Responsible Agency	County Road Dept., City Public Works, MDT, RFDs, Power Companies		
Potential Funding Source(s)	County, Cities, State		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 8.2 - Provide Public Education and Awareness on Severe Summer Weather</i>		
Project	Project 8.2.1 - Continue participation in National Weather Service Storm Ready Community Program.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	County, NWS		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 8 - Reduce Impacts from Severe Summer Weather		
Objective	<i>Objective 8.2 - Provide Public Education and Awareness on Severe Summer Weather</i>		
Project	Project 8.2.2 - Promote National Weather Service's severe weather spotter training program.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Severe Summer Weather		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	<i>Objective 9.1 - Protect Property from Earthquakes</i>		
Project	Project 9.1.1 - Encourage non-structural projects in schools and critical facilities.		
Category	Property Protection		
Hazard(s) Addressed	Earthquakes		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC, Schools		
Potential Funding Source(s)	County		
Implementation Schedule	Year 1 - 5		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	<i>Objective 9.1 - Protect Property from Earthquakes</i>		
Project	Project 9.1.2 - Encourage schools and critical facilities to identify the need for structural retrofits		
Category	Property Protection		
Hazard(s) Addressed	Earthquakes		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC, Schools		
Potential Funding Source(s)	County		
Implementation Schedule	Year 1 - 5		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	<i>Objective 9.1 - Protect Property from Earthquakes</i>		
Project	Project 9.1.3 - Encourage homeowners to perform structural and non-structural retrofits on their homes.		
Category	Property Protection		
Hazard(s) Addressed	Earthquakes		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)	x	3
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	County, FEMA		
Implementation Schedule	Year 1 - 5		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 9 - Reduce Impacts from Earthquakes		
Objective	<i>Objective 9.2 - Provide Public Education and Awareness on Earthquakes</i>		
Project	Project 9.2.1 - Promote and support educational earthquake awareness and preparedness in schools and for the general public.		
Category	Public Education and Awareness		
Hazard(s) Addressed	Earthquakes		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source(s)	County, FEMA		
Implementation Schedule	Year 1 - 5		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 10 - Reduce Impacts from Dam Failure		
Objective	<i>Objective 10.1 - Implement Actions to Prevent Impacts from Dam Failure</i>		
Project	Project 10.1.1 - Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.		
Category	Prevention		
Hazard(s) Addressed	Dam Failure		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium-High	
Responsible Agency	Planning		
Potential Funding Source(s)	County		
Implementation Schedule	Year 1 - 5		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 10 - Reduce Impacts from Dam Failure		
Objective	<i>Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam Failure</i>		
Project	Project 10.2.1 - Coordinate with dam owners to exercise EAPs with responders.		
Category	Emergency Services		
Hazard(s) Addressed	Dam Failure		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source(s)	Dam Owners		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 10 - Reduce Impacts from Dam Failure		
Objective	<i>Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam</i>		
Project	Project 10.2.2 - Maintain EAPs of high hazard dams and work with owners to keeps plans current.		
Category	Emergency Services		
Hazard(s) Addressed	Dam Failure		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	Dam Owners, DES		
Potential Funding Source(s)	Dam Owners		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards</i>		
Project	Project 11.1.1 - Buy weather radios for various critical facilities.		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	3
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards</i>		
Project	Project 11.1.2 - Continue coordinating with public broadcasting stations with information for Early Alert System.		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low		High
Responsible Agency	DES, Chief Elected Officials		
Potential Funding Source(s)	County, Cities		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards</i>		
Project	Project 11.1.3 - Continue to encourage that public facilities and schools obtain generators for backup power.		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (1 point)		
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source(s)	County, Schools, Cities		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards</i>		
Project	Project 11.1.4 - Identify emergency shelters and encourage them to obtain generators.		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	6	x
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES, LEPC/TERC		
Potential Funding Source(s)	County		
Implementation Schedule	Year 1 - 5		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards		
Project	Project 11.1.5 - Continue to enhance and improve back-up location for dispatch center.		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	Sheriff, Commissioners, DES		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards</i>		
Project	Project 11.1.6 - Continue to enhance and improve Reverse 911 capabilities through exercise and software development.		
Category	Emergency Services		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)	x	2
	Low = < \$100,000 (3 points)		
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	E911, Sheriff		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.2 - Provide Public Education and Awareness on All Hazards</i>		
Project	Project 11.2.1 - Promote the need for emergency action plans for special needs populations.		
Category	Public Education and Awareness		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)	x	1
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC, Public Health		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.2 - Provide Public Education and Awareness on All Hazards</i>		
Project	Project 11.2.2 - Encourage preparation of Family Emergency Plans.		
Category	Public Education and Awareness		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)	x	3
	Medium = 20 to 50% of County residents (2 points)		
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points	x	10
	Medium = 6 to 9 points		
	Low = 3 to 5 points		
County Priority	High, Medium, Low	High	
Responsible Agency	LEPC/TERC, Public Health, DES, RFDs		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.2 - Provide Public Education and Awareness on All Hazards</i>		
Project	Project 11.2.3 - Promote disaster-related educational programs through the school system.		
Category	Public Education and Awareness		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)	x	3
	Medium = Technology may be available/implementation could be difficult (2 points)		
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	9
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	LEPC/TERC		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

LAKE COUNTY MONTANA PDM PLAN			
Mitigation Action Plan			
Goal	Goal 11 - Reduce Impacts from All Hazards		
Objective	<i>Objective 11.3 - Implement Actions to Prevent Impacts from All Hazards</i>		
Project	Project 11.3.1 - Continue to work with cell phone companies to get a tower in towns, as needed.		
Category	Prevention		
Hazard(s) Addressed	All Hazards		
Jurisdiction(s)	Lake County, Polson, Ronan, St. Ignatius		
Benefit-Cost Ranking	Options	Selection	Score
Estimated Cost	High = > \$500,000 (1 point)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (3 points)	x	3
Population Benefit	High = > 50% of County residents (3 points)		
	Medium = 20 to 50% of County residents (2 points)	x	2
	Low = < 20% County residents (1 point)		
Property Benefit	High = > \$500,000 (3 points)		
	Medium = \$100,000 to \$500,000 (2 points)		
	Low = < \$100,000 (1 point)	x	1
Feasibility	High = Technology available/implementation likely (3 points)		
	Medium = Technology may be available/implementation could be difficult (2 points)	x	2
	Low = No technology available/implementation unlikely (1 point)		
Total Score	High = 10 to 12 points		
	Medium = 6 to 9 points	x	8
	Low = 3 to 5 points		
County Priority	High, Medium, Low	Medium	
Responsible Agency	DES		
Potential Funding Source(s)	County		
Implementation Schedule	Ongoing		

Mitigation Project Summary & Status

***Lake County, Montana
Pre-Disaster Mitigation Plan***

LAKE COUNTY 2012 MITIGATION STRATEGY			
Goal	Objective	Project	# from 2005 Strategy
Goal 1 - Reduce Impacts from Wildfire	Objective 1.1 - Enhance Emergency Services to Mitigate Impacts from Wildfire	1.1.1 - Identify and facilitate additional training for firefighters.	4.1.1
	Objective 1.2 - Protect Property from Wildfire	1.2.1 - Continue to be proactive in fuel management county- and reservation-wide.	NEW
		1.2.2 - Support interagency collaboration on fuel management projects.	NEW
		1.2.3 - Continue to support and enhance County fuel reduction program.	NEW
Objective 1.3 - Provide Public Education and Awareness on Wildfire	1.3.1 - Provide wildfire mitigation information to urban interface landowners.	3.1.2	
Goal 2 - Reduce Impacts from Transportation Accidents	Objective 2.1 - Enhance Emergency Services to Mitigate Impacts from Transportation Accidents	2.1.1 - Coordinate emergency response activities between railroad, Tribes, counties and municipalities.	5.1.4
		Project 2.1.2 - Encourage local emergency responders to have adequate training to respond to hazardous material incidents consistent with local capabilities.	NEW
		2.1.3 - Work with MDT to enhance chain-up areas along Highway 93.	NEW
		2.1.4 - Continue to work with MRL and encourage ongoing training with local responders.	NEW
	Objective 2.2 - Implement Actions to Prevent Impacts from Transportation Accidents	2.2.1 - Explore the possibility of a Polson Bypass for truck traffic carrying hazardous material loads and/or a signed hazardous material route to avoid population center.	NEW
		2.2.2 - Encourage truck traffic to use Highway 93 instead of Highway 35 around Flathead Lake.	NEW
Objective 2.3 - Provide Public Education and Awareness on Transportation Accidents	2.3.1 - Increase public awareness of common hazardous materials either stored, used or transported through the area.	NEW	
Goal 3 - Reduce Impacts from Landslides	Objective 3.1 - Protect Property from Landslides	3.1.1 - Encourage MDT to work with the County to identify landslide prone areas.	NEW
		3.1.2 - Encourage MDT to implement preservation/stabilization measures of slide-prone areas.	NEW
Goal 4 - Reduce Impacts from Structure Fire	Objective 4.1 - Protect Property from Structure Fire	4.1.1 - Encourage fire sprinkler systems in residential and older commercial buildings.	NEW
		4.1.2 - Continue to consult with Fire Chiefs regarding whether new water supplies are needed to maintain fire flows in new housing developments.	NEW
	Objective 4.2 - Enhance Emergency Services to Mitigate Impacts from Structure Fire	4.2.1 - Encourage volunteer fire departments to recruit and train volunteers.	NEW
	Objective 4.3 - Provide Public Education and Awareness on Structure Fire	4.3.1 - Support volunteer fire department fire prevention activities.	NEW

LAKE COUNTY 2012 MITIGATION STRATEGY			
Goal	Objective	Project	# from 2005 Strategy
Goal 5 - Reduce Impacts from Severe Winter Weather	Objective 5.1 - Enhance Emergency Services to Mitigate Impacts from Severe Winter Weather	5.1.1 - Develop coordinated management strategies for de-icing roads, plowing snow, clearing roads of fallen trees, and clearing debris from public and private property.	NEW
		5.1.2 - Partner with responsible agencies and organizations to design and implement programs that reduce risk to life, property, and utility systems.	NEW
		5.1.3 - Continue to aggressively address rural locations within the county so people's residences can be found for rescue purposes.	NEW
		5.1.4 - Enhance weather monitoring to attain earlier severe winter storm warnings through collaboration with NWS.	NEW
	Objective 5.2 - Provide Public Education and Awareness on Severe Winter Weather	5.2.1 - Continue to distribute educational material on how to prepare for winter.	NEW
		5.2.2 - Conduct public outreach campaign where special needs residents would provide information on where they live and what they need. Explore software program to allow County to develop and maintain database with this information.	NEW
		5.2.3 - Promote the National Weather Service's Winter Weather Awareness Week (third full week in October).	NEW
Goal 6 - Reduce Impacts from Flooding	Objective 6.1 - Implement Actions to Prevent Impacts from Flooding	6.1.1 - Support FEMA's Map Modernization Program which will provide Lake County with updated floodplain mapping (DFIRMS).	NEW
		6.1.2 - Update flood regulations when DFIRMS are adopted to protect future development.	NEW
	Objective 6.2 - Implement Actions to Protect Natural Resources from Flooding	6.2.1 - Work with partner agencies to identify erosion and sediment control issues.	NEW
	Objective 6.3 - Implement Structural Projects to Reduce Impacts from Flooding	6.3.1 - Continue to resize and upgrade culverts in various locations throughout the county.	NEW
		6.3.2 - Identify locations throughout the county where culverts are needed.	NEW
	Objective 6.4 - Enhance Emergency Services to Mitigate Impacts from Flooding	6.4.1 - Continue to work with landowners, ranchers, and response agencies on flood response activities.	NEW
		6.4.2 - GPS all homes along waterways.	1.1.2
	Objective 6.5 - Provide Public Education and Awareness on Flooding	6.5.1 - Continue to educate homeowners on purchasing flood insurance through the National Flood Insurance Program through availability of information.	NEW
		6.5.2 - Educate homeowners on flood concerns.	1.1.3
		6.5.3 - Publish and distribute floodplain maps to homeowners.	1.1.4
Goal 7 - Reduce Impacts from Communicable Disease	Objective 7.1 - Provide Public Education and Awareness on Communicable Disease	7.1.1 - Encourage and support local public health in preparing plans for biological hazards.	NEW
		7.1.2 - Provide public awareness on communicable disease prevention.	NEW

LAKE COUNTY 2012 MITIGATION STRATEGY			
Goal	Objective	Project	# from 2005 Strategy
Goal 8 - Reduce Impacts from Severe Summer Weather	Objective 8.1 - Protect Property from Severe Summer Weather	8.1.1 - Support/encourage electrical utilities to use underground construction methods where possible to reduce power outages from windstorms.	NEW
		8.1.2 - Develop strategies for clearing roads of fallen trees, and clearing debris from public and private property.	NEW
	Objective 8.2 - Provide Public Education and Awareness on Severe Summer Weather	8.2.1 - Continue participation in National Weather Service Storm Ready Community Program.	NEW
		8.2.2 - Promote National Weather Service's severe weather spotter training program.	NEW
Goal 9 - Reduce Impacts from Earthquakes	Objective 9.1 - Protect Property from Earthquakes	9.1.1 - Encourage non-structural projects in schools and critical facilities.	NEW
		9.1.2 - Encourage schools and critical facilities to identify the need for structural retrofits.	NEW
		9.1.3 - Encourage homeowners to perform structural and non-structural retrofits on their homes.	NEW
	Objective 9.2 - Provide Public Education and Awareness on Earthquakes	9.2.1 - Conduct educational earthquake awareness and preparedness in schools and for the general public.	NEW
Goal 10 - Reduce Impacts from Dam Failure	Objective 10.1 - Implement Actions to Prevent Impacts from Dam Failure	10.1.1 - Consider using dam inundation as criteria for future subdivision review and require disclosure by developers to prospective buyers.	NEW
	Objective 10.2 - Enhance Emergency Services to Mitigate Impacts from Dam Failure	10.2.1 - Coordinate with dam owners to exercise Emergency Action Plans with responders.	NEW
		10.2.2 - Maintain Emergency Action Plans of high hazard dams and work with owners to keeps plans current.	NEW
Goal 11 - Reduce Impacts from All Hazards	Objective 11.1 - Enhance Emergency Services to Mitigate Impacts from All Hazards	11.1.1 - Buy weather radios for various critical facilities.	2.1.1
		11.1.2 - Continue coordinating with public broadcasting stations with Early Alert System information.	2.1.2
		11.1.3 - Continue to encourage that public facilities and schools obtain generators for backup power.	5.1.5
		11.1.4 - Identify emergency shelters and encourage them to obtain generators.	NEW
		11.1.5 - Continue to enhance and improve back-up location for dispatch center.	NEW
		11.1.6 - Continue to enhance and improve Reverse 911 capabilities through exercise and software development.	NEW
	Objective 11.2 - Provide Public Education and Awareness on All Hazards	11.2.1 - Promote the need for emergency action plans for special needs populations.	NEW
		11.2.2 - Encourage preparation of Family Emergency Plans.	NEW
		11.2.3 - Promote disaster-related educational programs through the school system.	NEW

LAKE COUNTY 2012 MITIGATION STRATEGY			
Goal	Objective	Project	# from 2005 Strategy
	Objective 11.3 - Implement Actions to Prevent Impacts from All Hazards	11.3.1 - Continue to work with cell phone companies to get a tower in towns, as needed.	NEW

LAKE COUNTY 2005 MITIGATION STRATEGY STATUS

Goal	Project	Ongoing	Progress	Complete	Delete from 2012 Strategy?	Reason for Deleting	Retain for 2012 Strategy
Goal 1.0 - Reduce Impacts from Flooding	1.1.1 - Move homeowners from floodplains through the mitigation process				X	Include an expanded project which considers elevation as well as acquisition.	
	1.1.2 - GPS all homes along waterways, establish a buyout program	X	Rural addressing is up to date and can be intersected with floodplain when DFIRMs complete		X (second statement)	County doesn't want to establish a buy-out program.	X
	1.1.3 - Educate homeowners on flood concerns	X	Lake County Planning doing a great job at this			X	X
	1.1.4 - Publish and distribute floodplain maps to homeowners	X	DFIRMs are being reviewed at this time			X	X
Goal 2.0 - Enhance Early Warning Capabilities	2.1.1 - Buy weather radios for various critical facilities	X	state program provided to all the schools. Tribal council and chief elected officials have them now.				X
	2.1.2 - Continue coordinating with Provide public broadcasting station with Early Alert System information on dangers or critical	X	Ongoing through EAS				X
	2.1.3 - Upgrade siren systems in all communities				X	obsolete technology and funding issues. Not hazards to notify public on with sirens	
Goal 3.0 - Minimize Risk of Wildfire at Urban Interface	3.1.1 - Continue to Identify risk areas and homes to develop pre-attack plans	X	Tribe finished project mapping risk areas and evacuation at rocky point, wilderness valley, finley point. RP Wildfire Pre-Attack Plan - product (operational plan for wildfire)				X
	3.1.2 - Provide wildfire mitigation information to urban interface landowners	X	Some door-to-door done w/ tribe and through fuel reduction program.				X
	3.1.3 - Identify crews to help clean up homeowners backyards				X	don't want to do	
Goal 4.0 - Improve Fire Fighting Capabilities	4.1.1 - Identify and facilitate Provide additional training to	X					X
	4.1.2 - Purchase turn-out gear through available grants				X	RFD responsibility. County doesn't do it.	
	4.1.3 - Assist departments in grant writing				X	RFD responsibility. County doesn't do it.	
Goal 5.0 - Enhance Emergency Response	5.1.1 - Recruit EMT volunteers through public outreach				X	Preparedness	
	5.1.2 - Provide training to first responders				X	Preparedness	

LAKE COUNTY 2005 MITIGATION STRATEGY STATUS

Goal	Project	Ongoing	Progress	Complete	Delete from 2012 Strategy?	Reason for Deleting	Retain for 2012 Strategy
Systems	5.1.3 - Continue to provide training and software on hazardous materials to emergency managers				X	Preparedness	
	5.1.4 - Coordinate emergency response activities between railroad, Tribes, counties and municipalities						
	5.1.5 - Continue to encourage Ensure generators have been provided for nursing homes/schools- that public facilities and schools obtain generators for backup power	X					X
	5.1.6 - Provide water treatment plants, lift stations and pumping stations are equipped with generators				X	incorporated in 5.1.5	
Goal 6.0 - Secure Integrity of Utilities and Infrastructure	6.1.1 - Secure bulk petroleum, propane, and anhydrous ammonia tanks with fencing and security systems (motion detectors and				X	up to private entities to do this	
	6.1.2 - Continue providing awareness training on meth labs				X	handled by other agencies	
	6.1.3 - Network with FEMA, EPA and USDOT on hazmat				X	not really a project	
Goal 7.0 - Reduce Risk of Biological Hazards	7.1.1 - Investigate mitigation options for West Nile Virus	X			X	Incorporated in a new project	
	7.1.2 - Write mitigation and surveillance plan for West Nile Virus				X	Incorporated in a new project	
	7.1.3 - Anthrax				X	Incorporated in a new project	

APPENDIX E

RELEVANT PLANS

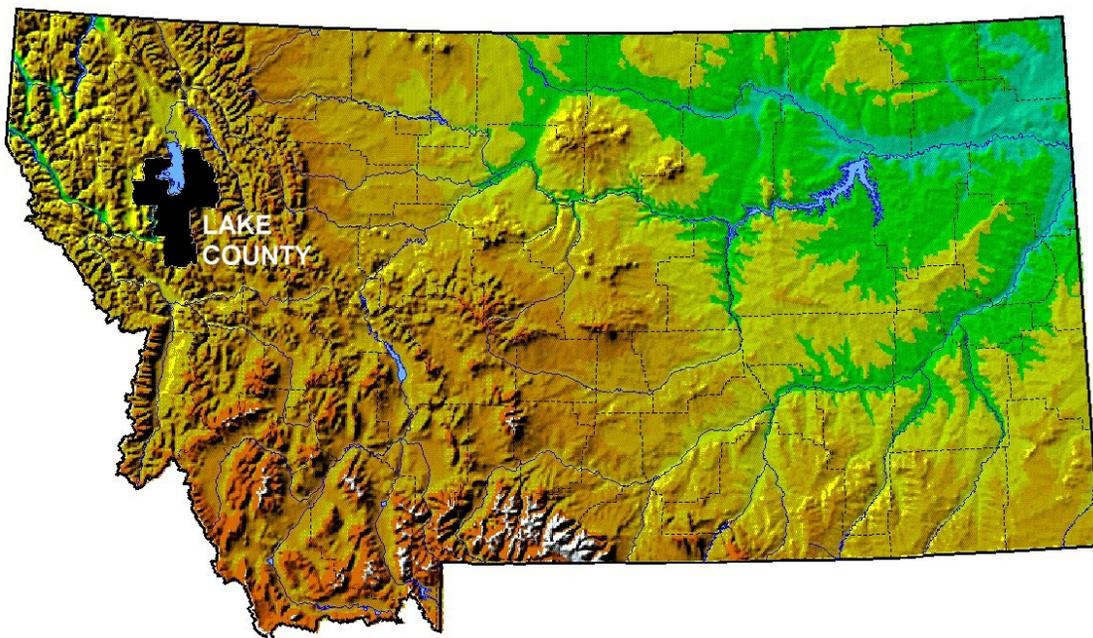
*Lake County, Montana
Pre-Disaster Mitigation Plan*

Community Wildfire Protection Plan

For

Lake County, Montana

January, 2005



Prepared For:

Lake County, Montana

In Cooperation With
**Northwest Regional RC&D,
Montana Department of Commerce, and
U.S. Forest Service, National Fire Plan**

Prepared By:

Arctos Research
Jeff Reistroffer, Project Mgr.
P.O. Box 728
Plains, MT 59859
Tel. (406) 826-5171
arctos@blackfoot.net

LAKE COUNTY COMMUNITY WILDFIRE PROTECTION PLAN

TABLE OF CONTENTS

APPROVALS	ii
CHAPTER 1: INTRODUCTION	1
1.1 PURPOSE.....	1
1.2 GOALS.....	3
1.3 PLAN STRUCTURE.....	4
1.4 PLANNING PROCESS	4
CHAPTER 2: LAKE COUNTY CHARACTERISTICS	10
2.1 POPULATION	10
2.2 LAKE COUNTY COMMUNITIES	10
2.3 LAND COVER.....	11
2.4 LAND OWNERSHIP	12
2.5 WATER RESOURCES	12
2.6 ECONOMY.....	13
2.7 CULTURAL RESOURCES	15
CHAPTER 3: WILDLAND FIRE MANAGEMENT ORGANIZATION	16
3.1 WILDLAND FIRE AGENCIES.....	16
3.2 LAKE COUNTY ORGANIZATIONS	18
CHAPTER 4: FOREST CONDITIONS AND FIRE ENVIRONMENT	22
4.1 HISTORICAL FIRE REGIMES.....	22
4.2 FOREST TYPES IN LAKE COUNTY	23
4.3 FIRE HISTORY	28
CHAPTER 5: WILDFIRE RISK ASSESSMENT.....	29
5.1 IDENTIFYING THE WILDFIRE PROBLEM IN LAKE COUNTY.....	29
5.2 RISK ASSESSMENT PROCESS.....	30
5.3 IDENTIFYING PLANNING AREAS.....	31
5.4 IDENTIFYING WORK UNITS	32
5.5 RISK RATING METHODOLOGY	33
5.6 PLANNING AREA RISK ASSESSMENTS.....	37
CHAPTER 6: MITIGATION.....	49
6.1 MITIGATION PLANNING PROCESS	49
6.2 MITIGATION STRATEGIES	53
6.3 FUNDING.....	57
CHAPTER 7: MONITORING AND EVALUATION	58
7.1 ANNUAL OPERATING PLAN OUTLINE	58
APPENDIX A - MAPS	59
APPENDIX B: SAMPLE HOMEOWNER MATERIALS.....	69
APPENDIX C – ANNUAL OPERATING PLANS.....	79

APPROVALS

This **Lake County Wildland Fire Protection Plan** has been developed in cooperation and collaboration with the representatives of the following organizations, agencies, and individuals.

By: Mike Hutchin, Chairman
Lake County Board of Commissioners

Date

By: Stephen Stanley, Coordinator
Lake County Office of Emergency Management

Date:

By: Tony Harwood, Manager - Division of Fire
Confederated Salish and Kootenai Tribes

Date

By: Dan Cassidy, Fire & Service Forestry Manager
Montana DNRC, Northwestern Field Office

Date:

By: Steve Brady, District Ranger
USFS Flathead NF, Swan Lake Ranger District

Date:

By: Chris Adler, President
Lake County Association of Firefighters

Date:

By: John Konzen, Chairman
Northwest Regional Resource Conservation & Development

Date:

CHAPTER 1: INTRODUCTION

1.1 PURPOSE

The purpose of this Community Fire Protection Plan is to help make Lake County residents, communities, and businesses less vulnerable to the adverse effects of wildland fires. This will be accomplished by identifying the wildfire problem in the County, assessing the level of risk to people, property and natural resources, and developing a collaborative approach to mitigation programs through federal, tribal, state, and local planning efforts.

This Community Fire Protection Plan is intended to establish a starting point for a continuing and open-ended community protection program relying on a concerted effort between fire protection agencies and the residents of Lake County. Additionally, this fire plan is intended to assist emergency response personnel and landowners in identifying and mitigating wildland fire hazards on public and private land, and to work cooperatively in developing mitigation options to reduce the impact of a wildland fire.

This Plan has been prepared in compliance with:

- The National Fire Plan; A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan– May 2002.
- The Federal Emergency Management Agency’s Region 10 guidelines for a Local Hazard Mitigation Plan as defined in 44 CFR parts 201 and 206, and as related to a fire mitigation plan chapter of a Natural Hazards Mitigation Plan. This plan will be attached as an annex to the Lake County Pre-Disaster Mitigation Plan.

The objective of combining these two complimentary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-disaster hazard mitigation activities, and prioritize efforts to enhance the protection of people, structures, the environment, and significant infrastructure in Lake County.

Among the primary guiding principals in preparing this plan are:

1. Priority setting that emphasizes the protection of communities and other high-priority values at-risk.
2. Collaboration among government agencies and the citizens of the County.
3. Ensuring successful implementation through the establishment of a dynamic and continuing planning process.

NATIONAL FIRE PLAN

This Wildland-Urban Interface Fire Mitigation Plan documents the County’s intentions in meeting the National Fire Plan’s 10-Year Comprehensive Strategy. The projects and activities recommended under this plan are in addition to other Federal, state, and private / corporate forest and rangeland management activities. The implementation plan does not alter, diminish, or expand the existing jurisdiction, statutory and regulatory responsibilities and authorities or budget processes of participating Federal, State, and tribal agencies.

By endorsing this implementation plan, all signed parties agree that reducing the threat of wildland fire to people, communities, and ecosystems will require:

- Firefighter and public safety continuing as the highest priority.
- A sustained, long-term and cost-effective investment of resources by all public and private parties, recognizing overall budget parameters affecting Federal, State, Tribal, and local governments.
- A unified effort to implement the collaborative framework called for in the Strategy in a manner that ensures timely decisions at each level.
- Accountability for measuring and monitoring performance and outcomes, and a commitment to factoring findings into future decision making activities.
- The achievement of national goals through action at the local level with particular attention on the unique needs of cross-boundary efforts and the importance of funding on-the-ground activities.
- Communities and individuals in the wildland-urban interface to initiate personal stewardship and volunteer actions that will reduce wildland fire risks.
- Management activities, both in the wildland-urban interface and in at-risk areas across the broader landscape.
- Active forestland and rangeland management, including thinning that produces commercial or pre-commercial products, biomass removal and utilization, prescribed fire and other fuels reduction tools to simultaneously meet long-term ecological, economic, and community objectives.

The National Fire Plan identifies a three-tiered organization structure including 1) the local level, 2) state/regional and tribal level, and 3) the national level. This plan adheres to the collaboration and outcomes consistent with a local level plan. Local level collaboration involves participants with direct responsibility for management decisions affecting public and/or private land and resources, fire protection responsibilities, or good working knowledge and interest in local resources. Participants in this planning process include Tribal representatives, local representatives from Federal and State agencies, local governments, landowners and other stakeholders, and community-based groups with a demonstrated commitment to achieving the defined goals. Existing resource advisory committees, watershed councils, or other collaborative entities may serve to achieve coordination at this level. Local involvement, expected to be broadly representative, is a primary source of planning, project prioritization, and resource allocation and coordination at the local level. The role of the private citizen is not to be underestimated, as their input and contribution to all phases of risk assessments, mitigation activities, and project implementation is greatly facilitated by their involvement.

FEDERAL EMERGENCY MANAGEMENT AGENCY

Effective November 1, 2004, a Local Hazard Mitigation Plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM programs provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The new local hazard mitigation plan requirements for HMGP and PDM eligibility is based on the Disaster Mitigation Act of 2000, which amended the Stafford Disaster Relief Act to promote and integrate a cost effective approach to mitigation. Local hazard mitigation plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria covers the planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

FEMA will only review a local hazard mitigation plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). Draft versions of local hazard mitigation plans will not be reviewed by FEMA. FEMA will review the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will be unable to approve it prior to adoption.

A FEMA designed plan will be evaluated on its adherence to a variety of criteria.

Adoption by the Local Governing Body	Multi-jurisdictional Plan Adoption
Multi-jurisdictional Planning Participation	Documentation of Planning Process
Identifying Hazards	Profiling Hazard Events
Identifying Assets	Estimating Potential Losses
Multi-Jurisdictional Risk Assessment	Local Hazard Mitigation Goals
Identification and Analysis of Mitigation Measures	Implementation of Mitigation Measures
Multi-Jurisdictional Mitigation Strategy	Continued Public Involvement
Monitoring, Evaluating, and Updating the Plan	Implementation Through Existing Programs

Although numerous Federal, State, Tribal and local agencies participate in this planning effort, the plan itself is considered to be a “Single-Jurisdiction” plan under FEMA guidelines (there are no incorporated towns or cities in Lake County with jurisdiction over lands considered as Wildland-Urban Interface). Approval of the Plan by the Lake County Board of Commissioners signifies it’s adoption by Lake County governmental departments, as well as by the subordinate political subdivisions of Lake County.

1.2 GOALS

- To reduce the area of WUI land burned and losses experienced because of wildfires where these fires threaten communities in the wildland-urban interface
- Prioritize the protection of people, structures, infrastructure, and unique ecosystems that contribute to the quality of life and the sustainability of the local and regional economy
- Educate communities about the unique challenges of wildfire in the wildland-urban interface (WUI)
- Establish mitigation priorities and develop mitigation strategies in the WUI
- Strategically locate, plan, and implement fuel reduction projects
- Provide recommendations for alternative treatment methods, such as modifying forest stand density, prescribed burning, fuel reduction techniques, and disposal of treated slash
- Meet or exceed the requirements of the National Fire Plan and FEMA for a County level Fire Mitigation Plan.

1.3 PLAN STRUCTURE

The Lake County Community Fire Protection Plan is comprised of two parts:

- 1.) The main Plan (this document) is intended to provide background information on the Lake County wildfire situation, identify overall goals and objectives, and to establish general operating guidelines for a continuing planning process. This plan does not include recommendations for specific risk reduction projects; it does, however, provide guidance for the conduct of an on-going, collaborative hazard mitigation program throughout the County. Given the general nature of this document, it is intended to be valid for a period of at least five years. The Plan may be amended if needed, as part of the annual planning process, which will be described in later chapters.**
- 2.) An operating plan will be prepared annually, based on guidance and direction provided in the main plan. The annual update will be used as a means for documenting plan activities, identification of emerging issues, evaluation of past work projects, and to establish an annual risk-mitigation work plan based on priorities set by involved stakeholders.**

For purposes of complying with the requirements of the Healthy Forest Restoration Act, this Community Wildfire Protection Plan is considered to include the current Annual Operating Plan.

1.4 PLANNING PROCESS

Documentation of the planning process, including public involvement, is required to meet FEMA's DMA 2000 (44CFR§201.4(c)(1) and §201.6(c)(1)). This section includes a description of the planning process used to develop this plan, including how it was prepared, who was involved in the process, and how all of the involved agencies participated. Documentation of the process for development of the overall plan is included in this primary plan document, and the annual operating plan will include documentation of on-going planning and mitigation efforts.

The Lake County Community Wildfire Protection Plan was developed through a collaborative process involving the following organizations and agencies:

Lake County Board of Commissioners
Lake County Office of Emergency Management
Lake County Local Emergency Planning Committee
Lake County Fire Association
Lake County Conservation District
Northwest Regional Resource Development and Conservation Area
Montana Department of Natural Resources
Confederated Salish and Kootenai Tribes
Bureau of Indian Affairs, Flathead Agency
USFS Flathead National Forest

The County's local coordinator contacted these organizations directly to invite their participation in organizing the planning effort. Development of the plan was guided principally by a Fire Plan

Steering Committee that was formed with representatives from some of these agencies.
Steering Committee member include:

Paddy Trusler, Lake County Commissioner
Greg Larson, Northwest Regional Resource Conservation and Development
Steve Stanley, Lake County Emergency Management Coordinator
Tony Harwood, Confederated Salish and Kootenai Tribes
Dave Poukish, Montana Department of Natural Resources
Dennis Devries, Lake County Conservation District

The planning process included 5 distinct phases which were in some cases sequential (step 1 then step 2) and in some cases intermixed (step 2 completed though out the process):

1. Identifying Objectives of the planning effort, and obtaining funding
2. Collection of Data & Compilation of Maps
3. Identification of issues
4. Development of Mitigation strategies
5. Analysis and Drafting of the Report

Funding for the development of this plan was provided through an *Economic Action Program* grant from the U.S. Department of Agriculture, Forest Service, administered through the *Community Planning for Fire Protection Program* of the Montana Department of Commerce. The Grant was awarded to the Northwest Regional Resource Conservation and Development Area, which assisted Lake County in the preparation of the plan. The NWRC&D solicited competitive bids from companies for management, analysis and development of the Lake County Wildfire Protection Plan. Arctos Research, of Plains, Montana was selected for this task in August, 2004, with a goal of having a completed plan in place by November of 2004. The project manager for Arctos Research is Jeff Reistroffer, of Plains, and Greg Larson of NWRC&D served as the liaison between the county and the contractor.

EXISTING EFFORTS, STUDIES AND PLANNING DOCUMENTS

Lake County Cooperative Fire Management Plan (DNRC)

Lake County Annual Action Plan (DNRC)

Seeley-Swan Fire Plan

Lake County Emergency Operations Plan

Lake County Pre-Disaster Mitigation Plan (in progress)

Wildland Fire Annual Operating Plan (Flathead Agency, BIA)

Lake County Growth Policy

Lake County Emergency Services Master Mutual Aid Agreement

Lake County Growth Density Plan (Draft)

RECORD OF PLANNING MEETINGS HELD

<u>DATE</u>	<u>LOCATION</u>	<u>GROUP</u>	<u>PURPOSE</u>
6/9/04	Polson	Steering Committee	Planning effort initiation
7/8/04	Polson	Steering Committee	Scoping, establish guidelines & contract spec.
8/02/04	Polson	Steering Committee	Initial meeting with contractor; establish scope
8/09/04	Polson	Firefighters Assn.	Discussion of planning effort; request for input
9/16/04	Libby	NWRC&D	Review of Outline/ proposed plan structure
10/6/04	Ronan	Steering Committee	Interim Plan review; discussion of critical items
10/20/04	Ronan	Firefighters Assn.	Special planning meeting; risk rating criteria
10/29/04	Polson	Lake Co. Planning	Mapping and GIS products
12/8/04	Swan Lake	General Public	Presentation of draft plan; request comments
12/9/04	Ronan	General Public	Presentation of draft plan; request comments
12/13/04	Ronan	Firefighters Assn.	Presentation of draft plan; request comments

PUBLIC INVOLVEMENT

Public involvement in this plan is essential to ensure an effective fire prevention and public safety strategy. There are a number of ways that public involvement is sought and facilitated. In some cases members of the public may provide information and seek an active role in protecting their own homes and businesses, while in other cases it may lead the public to become more aware of the process without becoming directly involved in the planning process. Public meetings were held during the development phase of this plan, and the annual planning process incorporates public involvement through extensive outreach programs throughout the course of the year, on a continuing basis.

News Releases

A news release was provided to the Lake County Leader newspaper at the beginning of the planning effort. The following news release was published in the September 9th issue of the paper, accompanied by a wildfire-related photograph.

PRESS RELEASE

DATE: September 3, 2004

TO: Lake County Leader
FROM: Arctos Research
Attn: Jeff Reistroffer
P.O. Box 728
Plains, MT 59859

Phone: (406) 826-5171
FAX: (406) 826-5172
e-mail: arctos@blackfoot.net

PLANNING EFFORT UNDERWAY FOR WILDFIRE SAFETY

A Community Wildfire Protection Plan is currently being developed for Lake County in order to enhance public safety and to help prevent property loss from wildfires. The Northwest Regional Resource Conservation and Development Area, based in Libby, is administering the planning project which has been funded through a grant from the Montana Department of Commerce. Similar planning projects have recently been completed in the Seeley Lake/Swan Valley area, the Bitterroot Valley and Lincoln County. Arctos Research, a research and development firm based in Plains, has been contracted to coordinate and produce the plan for Lake County.

The two primary objectives of this planning effort are: (1.) To identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will help protect lives and property at-risk from wildfire, and (2.) To recommend measures that homeowners and communities can take to reduce the ignitability of structures in forested areas throughout the county.

In addition, completion of a Wilfire Protection Plan will enable Lake County to compete for federal funding of hazardous fuels reduction projects carried out under the auspices of the National Fire Plan and the Healthy Forests Restoration Act of 2003.

This project is being undertaken in cooperation with the Lake County Board of Commissioners, the Lake County Office of Emergency Management, the Lake County Fire Association, CS&KT Fire Management, the Montana Department of Natural Resources, the USFS Flathead National Forest, and other fire-related entities.

At this time, the planning process is in the early stages of gathering baseline information and producing maps for use in identifying those areas of the County at greatest risk from wildfire. Meetings will be held this fall to analyze existing conditions and to determine recommendations for needed actions. Input from homeowner associations, community groups, and other interested parties is welcomed. If you would like to be kept informed of the progress of this planning project, or have questions about it, please send a letter indicating your interest to: FIREPLAN, c/o Arctos Research, P.O. Box 728, Plains, MT 59859 or by e-mail to fireplan@blackfoot.net.

The following news release was issued after completion of the preliminary draft, and published in the November 26, 2004 edition of the Lake County Leader:

PRESS RELEASE

DATE: November 22, 2004

TO: Lake County Leader
FROM: Arctos Research
Attn: Jeff Reistroffer
P.O. Box 728
Plains, MT 59859

Phone: (406) 826-5171
FAX: (406) 826-5172
e-mail: arctos@blackfoot.net

DRAFT COUNTY WILDFIRE PLAN TO BE PRESENTED

A Community Wildfire Protection Plan for Lake County has been in development for the past three months, and a draft version of the plan is now available for public comment. The plan is intended to help in improving public safety, and to help prevent property loss from wildfires. The Northwest Regional Resource Conservation and Development Area, based in Libby, is administering the planning project which has been funded through a grant from the Montana Department of Commerce.

In addition to describing the wildfire situation in the County, the Plan has the following two main objectives: (1.) To identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment that will help protect lives and property at-risk from wildfire, and (2.) To recommend measures that homeowners and communities can take to reduce the ignitability of structures in forested areas throughout the county.

Furthermore, completion of a Wilfire Protection Plan will enable Lake County to compete for federal funding of hazardous fuels reduction projects carried out under the auspices of the National Fire Plan and the Healthy Forests Restoration Act of 2003.

This project is being undertaken in cooperation with the Lake County Board of Commissioners, the Lake County Office of Emergency Management, the Lake County Fire Association, CS&KT Fire Management, the Montana Department of Natural Resources, the USFS Flathead National Forest, and other fire-related agencies.

A draft version of the Plan will be presented to the public at two upcoming open-house meetings: December 8th at the Swan Lake Community Center and December 9th at the Tribal Division of Fire Management conference room. Both meetings will begin at 7:00 p.m. The public is invited to attend, and comments are welcomed for consideration in the writing of the final version of the Plan. Further information may be obtained by sending an e-mail inquiry to fireplan@blackfoot.net, or by calling Jeff Reistroffer, the project director, at 406-826-5171.

PUBLIC MEETINGS HELD

There were two public meetings held for the purpose of presenting the preliminary draft of the Community Wildfire Protection Plan and to solicit comments, corrections or other input. The figure shown below is a copy of the announcement of the meetings. The announcement was posted at all post offices in the county, as well as at other significant bulletin boards, at least two weeks in advance of the meetings.

PROTECTING HOMES FROM WILDFIRE

A Preliminary Draft of the Lake County Community Fire Protection Plan has been completed, and will be discussed at upcoming Open House meetings.



Lake County residents and landowners interested in the County's

HAZARDOUS FUELS REDUCTION PROGRAM

are invited to attend. Comments on the preliminary draft are welcomed, and will be considered in the development of the final version.

WEDNESDAY, DECEMBER 8th
7:00 P.M.
SWAN LAKE COMMUNITY CENTER
HIGHWAY 83
SWAN LAKE

THURSDAY, DECEMBER 9th
7:00 P.M.
TRIBAL FIRE MANAGEMENT
CONFERENCE ROOM
IN RONAN (NEAR THE AIRPORT)

For Further Information, Call Jeff Reistroffer at (406)826-5171

CHAPTER 2: LAKE COUNTY CHARACTERISTICS

2.1 POPULATION

The 2000 U.S. Census count shows the population of Lake County at 26,507 people. Lake County is currently ranked tenth in population for Montana counties. From 1990 to 2000, Lake County grew by 26 percent, or 5,466 persons. During that same period, the Montana population grew by almost 13 percent. The current rate of growth in Lake County is more than a 50 percent increase over that which occurred during the 1980s, when the overall growth rate was 10.4 percent.

Lake County is more densely populated than Montana as a whole. The average population density of Lake County is 17.75 people per square mile, while the average population density of Montana is six people per square mile. Approximately 25 percent of Lake County's population lives within the incorporated communities of Polson, Ronan and St. Ignatius. These areas grew by 23, 17 and 1.25 percent respectively during the 1990s. Despite the relatively fast growth of the incorporated areas, 75 percent of the population of Lake County lives in unincorporated areas. The unincorporated population centers are Arlee, Charlo, Pablo, Woods Bay, Elmo, Big Arm, Dayton, Rollins, Swan Lake, Finley Point and Ravalli. Of these, Arlee and Charlo each grew by approximately 23 percent, Pablo grew by almost 40 percent, and Finley Point grew by 25 percent. See Map #7, "Residential Density" (pg. 66).

The U. S. Census Bureau predicts that population growth in Lake County will continue at a rate of 1.8 percent annually through 2025. This translates into over 12,000 new residents over the 25-year period. Table 1-3 shows population projections for Lake County through 2025.

Year	2000	2005	2010	2025
Projected Population	26,507	28,840	31,230	38,570
Percent Increase	NA	9	18	46
Projected Number of New Residents		2,333	4,723	12,063

2.2 LAKE COUNTY COMMUNITIES

The two largest commerce centers within Lake County are the cities of Polson and Ronan, both of which are bisected by Highway 93. While much of the commercial/industrial development is located within the limits of these cities, development has crept north and south of both due to exposure along the highway. St. Ignatius and Arlee have also experienced commercial development along the highway frontage. In general, retail businesses are located in the centers of the communities, while light manufacturing, mini storage, some services and retail sales such as auto dealers (which require more space) are located at and beyond the edges of the communities. Due to the volume of recreational traffic using and passing through Lake County on Highway 93 and 35, there are many gas and convenience-type stores located along Highway 93, particularly around Polson and in the southern areas.

Communities in Lake County fall into several categories with respect to their geographic settings. The largest category is made up of those places located along U.S. Highway 93. This includes all of the incorporated entities---Polson, St. Ignatius and Ronan---and Pablo, Arlee and Ravalli, which are unincorporated. Charlo is located off Highway 93 but sets on a rail line and along Highway 212. With the exception of Ravalli, which is constrained by topography, the locations of these communities offer level to nearly-level building sites, easy highway access, room for expansion, scenic vistas and good water quality. These areas are prime for expansion, but generally lack excess public sewer and water capacity. The few constraints to expansion that do exist in the valley communities include the depth to groundwater (which varies from extremely shallow to very deep in areas), clayey soils that demand enhanced individual sewage treatment systems and close proximity to important wildlife habitat in some areas.

Most of the remaining communities, all unincorporated, are situated on the shores of Flathead Lake. These include Big Arm, Dayton, Rollins, and Elmo on the western side, also located along or just off Highway 93. On the eastern side of Flathead Lake are Finley Point, Yellow Bay and Woods Bay, all of which are accessed via Highway 35. The terrain in these areas has more relief than in the valley bottoms, and Flathead Lake constrains expansion, making development more challenging, but offering excellent views, recreational opportunities and nearby highway access.

The remaining towns are Proctor, northwest of Flathead Lake, and Ferndale, Salmon Prairie and Swan Lake in the Swan Valley. All of these unincorporated communities are located outside of the Flathead Reservation boundary. Proctor is off the main highway system, and the communities in the Swan Valley are located on Highway 83, a secondary state highway that runs the length of the valley. Ferndale is located along Highway 209 between Big Fork and the Swan Valley and is one of the most rapidly growing areas of Lake County due to its scenic, forested setting and proximity to Kalispell.

2.3 LAND COVER

Lake County has a diverse vegetative cover due to the variety of soil types, landforms and differences in elevation. The highest elevations in the Mission and Swan Ranges that are covered by snow, ice fields, and rock are devoid of vegetation. The eastern one third of Lake County (the Swan Valley, Swan Range, and the Mission Range) at lower to mid elevations are covered primarily with evergreen forests. Approximately 50 percent of Lake County is forested (see Map #6, "Forest Land Cover"). Commercial forest lands are owned and managed by the Tribes, the state and federal governments, Plum Creek, and small private land owners. The Tribes recently finalized a Forest Management Plan which emphasizes "modified restoration" to pre-settlement conditions on their commercial timberlands.

2.4 LAND OWNERSHIP

Land Ownership Status	Acreage	Percent of Area of County
Fee (both Tribal and non-Tribal members)	364,882	35%
Tribal	290,103	27%
Federal Government	168,989	16%
Water*	102,495	10%
State Government	65,668	6%
Large Corporate	64,000	6%
Conservation Organization	524	.05%
Local Government	87	.001%
Total Surface Area	1,056,679	100%

See Map #2, "Land Ownership".

2.5 WATER RESOURCES

Lake County is situated at the southern end of the Flathead Basin, a watershed that drains approximately six million acres of northwestern Montana and southeastern British Columbia. Waters from this basin flow into the Clark Fork River and eventually into the Columbia River. The waters of the Flathead Basin play a vital role in the lives of Lake County's citizens and visitors. They support fish and wildlife as well as domestic, municipal, irrigation, stock watering, manufacturing, and recreational uses. Average annual precipitation for the Mission and Jocko Valleys is about 17 inches and is about 29 inches in the Swan Valley. Up to 70 percent of this moisture falls from April to September (Soil Survey for Lake County, Montana, Natural Resources Conservation Service, 1997).

Lakes and streams cover approximately 100,000 acres of Lake County, or just under 10 percent of the total area. The most prominent surface water features in Lake County are the southern two-thirds of Flathead Lake, the Flathead River, Swan Lake, the Swan River, Mission Creek, Post Creek, the Jocko River and Lake Mary Ronan. Other sizeable lakes include McDonald, Loon and St. Mary's Lakes. Lake County also contains several large reservoirs, including Pablo, Kicking Horse, Lower Crow, Mission and Ninepipe, and numerous small reservoirs which are important for wildlife and agriculture.

According to records of the Montana Department of Environmental Conservation, there are three public water supplies in Lake County that are permitted to derive at least part of their water from surface water sources (other than Flathead Lake). These are as follows:

- The City of Ronan Public Water Supply obtains water primarily from a surface water source, Middle Crow Creek, draining from the Mission Mountains located west of Ronan. The intake is located at the approximate point where the stream leaves the mountains into the valley. The backup water supply comprises two wells installed into a relatively deep aquifer comprised of glacial outwash deposits covered by several hundred feet of clay-rich glacial tills. One well is located in the central part of town, and the second is located on the west side of town (Figure 2). The wells draw water from an approximate depth of 400 feet below the ground surface. Ground water in the source aquifer for the wells flows in an general westward direction in the Ronan area.

The Middle Crow Creek Watershed is located within the Lower Flathead Watershed as part of the headwaters of the Columbia River Watershed. The limits of the Middle Crow Creek Watershed upstream from the surface water intake are shown on the map accompanying the “Mission Front, North” risk assessment worksheet in Section 5.6 of this document. The Middle Crow Creek watershed in the Mission Mountains upstream from the intake covers an estimated area of 3.25 square miles. Flow from the watershed is derived from meltwater from mountain glaciers in the upper elevations of the watershed; and from baseflow from the geologic materials filling the valley.

- Prior to the mid-1980s, Polson relied primarily on surface water from Hell Roaring Creek for the public water supply. During this period groundwater was used primarily during periods of unusually cold weather or high turbidity in Hell Roaring Creek. The limits of the Hell Roaring Creek Watershed upstream from Hell Roaring Dam are shown on the map accompanying the “Turtle Lake” risk assessment worksheet in Section 5.6 of this document. The hydrological integrity of this watershed is highly valued by the City of Polson, and the City considers the area to be a high priority for protection from wildfire.

Discoveries of Giardia lamblia cysts in the Hell Roaring Creek supply in 1985 led to temporary abandonment of the supply. After engineering evaluations and consideration of available options the City of Polson began developing additional groundwater supplies to replace the surface water system. This shift to groundwater for the Polson Public Water Supply appears to have eliminated the contamination problem. At the present time, Hell Roaring Creek does not account for any portion of Polson’s water supply, however the City is maintaining the integrity of this source for possible future uses.

- The Woods Bay Public Water Supply System has, in the past, obtained water from a spring that is fed by Sheaver’s Creek. Water from the spring is now classified as “Groundwater Under the Influence of Surface Water”, which requires a significant level of filtration and treatment before it can be used for a public water supply. This source is now listed as “Inactive” according to the most recent Public Water Supply System Monitoring report filed with the Montana DEQ. The limits of the Sheaver’s Creek Watershed upstream from the springwater intake are shown on the map accompanying the “East Shore - North” risk assessment worksheet in Section 5.6 of this document.

2.6 ECONOMY

The Montana and Lake County economies have changed significantly over the past 30 years. In 1970, half of Montana’s workers were employed in the basic industries of farming and ranching, the federal government, forestry, manufacturing, mining and tourism. These are called basic industries because they bring outside income to the state. By 1997, only one-

quarter of Montana's workers were employed in these industries. In Lake County, the federal government and the mining industry do not play a major role, while farming and ranching, forestry, local and tribal governments and tourism all figure significantly in today's economy.

The Lake County and Flathead Indian Reservation economies are part of a larger regional picture. The regional business and economic centers are Missoula and Kalispell. Local residents go to those cities to purchase and sell goods and services that cannot be found, or have a limited market, locally. Population centers like Polson, Ronan, Pablo, St. Ignatius, and Arlee provide local employment and purchasing opportunities. The local population and regional economic centers share an interdependent relationship: Lake County has goods and services, such as wood products and recreational opportunities, that urban residents enjoy, while the economic centers have shopping and business opportunities that cannot be found locally.

Economic activity grew steadily throughout the 1990s in Lake County. Tourism and recreation, retail sales, construction and manufacturing all continued to grow, although the rate of expansion slowed by some measures toward the end of the decade. Jobs were relatively plentiful, however many of them were part-time and provided low wages. Some recent examples of economic growth in the area include tribal developments such as the KwaTaqNuk Resort, the People's Center and the Salish Kootenai College expansion, the Wal-Mart store in Polson, new post offices in Dayton, Polson, St. Ignatius and Arlee, and a number of new banking, fast food and grocery facilities across Lake County. Jore Corporation in Ronan expanded rapidly during the 1990s and reached a peak year-round employment of over 600 employees. The company has since endured a major restructuring and change of ownership but has retained around 300 permanent employees.

In addition to these large and well-known businesses, the numerous small businesses of Lake County are a major sustainer of economic activity. The majority of these are low-profile, home-based and employ few non-family members. They typically provide the local economy with diversity and strength, increase the tax base, provide some job opportunities and have minimal demands on local services. In 1996, more than one-third of the workforce in Lake County was self-employed. The major employers in Lake County at this time include the tribal government, New Jore, St. Luke Healthcare, the Ronan and Polson school districts and Plum Creek Timber.

The timber industry has a solid base in Lake County, due largely to the lands owned by Plum Creek Timber and the Confederated Salish & Kootenai Tribes. However, reductions in the amount of board feet taken from the Flathead National Forest and tribally owned lands may be affecting the numbers employed in the timber industry. The other major sectors, including retail trade, construction, and manufacturing, have been fairly stable over the past 25 years in terms of employing a given percentage of the workforce.

The largest economic sector in terms of both employment and personal income in Lake County is the service sector. In 1975, service-related jobs employed 19 percent of the labor market and accounted for just over 25 percent of non-farm labor earnings. In 1996, the service sector employed 33 percent of the workforce and was responsible for almost 43 percent of these earnings. The next closest income sector is retail sales, which generated over 16 percent of all non-farm labor earnings, followed by manufacturing at almost 15 percent and construction at almost 11 percent. The following table shows the percentages of total labor income in relation to the major sectors of the economy.

	1975	1985	1996
Sector percentages of non-farm labor earnings:			
Services	25.14%	33.6%	42.75%
Retail Trade	24.91%	20.13%	16.34%
Manufacturing	12.67%	17.06%	14.83%
Construction	13.44%	13.71%	10.72%
Finance, insurance, & real estate	5.84%	4.07%	5.27%
Agricultural services, forestry, fisheries, etc.	3.57%	1.93%	1%
Transportation and public utilities	7.69%	6.91%	6.05%
Wholesale trade	5.66%	1.75%	2.81%
Mining	1.08%	0.82%	0.22%

Source: O'Connor Center for the Rocky Mountain West, Regional Economic Assessment Database

2.7 CULTURAL RESOURCES

Cultural resources in Lake County include sites of historical, cultural or spiritual importance. Cultural resource inventories to locate these sites have been carried out in Lake County by the Confederated Salish & Kootenai Tribes, the Forest Service, the U.S. Fish and Wildlife Service, the Montana Department of Transportation, the Department of Natural Resources and Conservation and contractors to these entities. Inventories are frequently conducted in areas prior to ground disturbing projects, such as timber sales or road construction, to locate and protect cultural resources. While certain areas of Lake County have been surveyed for cultural resources, no systematic county-wide inventory has been conducted.

Federal historic preservation law is grounded in the concepts of conserving cultural resources for the benefit of future generations and focuses on the identification, designation, and protection of historic districts, sites, structures, and objects. Within the exterior boundaries of the Flathead Indian Reservation and in all dependent communities, the Tribal Historic Preservation Officer is the official conservator of culturally significant sites. In other areas of the state, the State Historic Preservation Officer investigates sites and maintains cultural site records.

The Tribal Preservation Office (TPO) is responsible for the protection, preservation, survey, and documentation of Tribal and historic cultural resources on the sites under its jurisdiction. In the Tribes' world-view, the intangible or ideology cannot be separated from the cultural sites, so they look to the elders and the Culture Committees for guidance on the best management and protection of these non-renewable resources.

As of June 1999, a total of 235 sites had been recorded in Lake County. This number reflects the vast majority, but not necessarily every site, which has been recorded by the Tribes. Once a site has been recorded as culturally significant, it must be evaluated to determine if it is to be listed on the National Register of Historic Places. Most of the sites recorded in Lake County have not yet been evaluated for listing. Of the 235 sites recorded, six have been found eligible and nominated to the National Register. These sites are Fort Connah, the Kootenai Lodge Historic District, the Frank Bird Linderman House, the Polson Feed Mill, the St. Ignatius Mission and the Swan Lake Rock House Historic District.

CHAPTER 3: WILDLAND FIRE MANAGEMENT ORGANIZATION

In order to assure well coordinated wildland fire protection in the county, it is important to begin with a clear definition of the roles and responsibilities of everyone that takes part in fire control operations. The various individuals and entities must fully understand their own mission, as well as the role others fill in the countywide fire service.

Montana Statutes charge certain governmental bodies with wildland fire protection, depending on location, ownership, and vegetative cover of the land. Many times these distinctions are not exclusive, resulting in some areas of the county having wildland fire protection by more than one agency. This overlapping jurisdiction often provides some lands, usually classified forestlands, with an extra measure of fire protection. However, it can also lead to confusion and omissions if pre-established plans are inadequate or misunderstood.

The fire service in Lake County is essentially made up of two types of protection agencies: "county level" organizations and "Recognized Forest Fire Protection" agencies at both the State and federal level. The following section will describe the roles and responsibilities of the individual departments or agencies that fall under each classification.

3.1 WILDLAND FIRE AGENCIES

Forest fire protection is defined in 76-13-102(6) MCA as the "work of prevention, detection, and suppression of forest fires and includes training required to perform those functions." Most classified forestlands in Montana are in the Central and Western portions of the state. The majority of these lands are either part of a Forest Fire Protection District or an Affidavit Unit, which are generally referred to as direct protection areas. Within these areas, there is only one recognized agency assigned wildland fire protection, usually the DNRC, USFS, BLM, or CS&KTs. These lands are provided this protection based on an assessment for services rendered, paid through the county tax rolls to the State.

Because the DNRC is allowed under 76-13-105 MCA to "protect nonforest lands and improvements", there are nonforest agreements written for areas that are NOT classified forest. These areas are assigned a recognized wildland protection agency and they are protected at the same level as Forest Fire Districts. This is one reason why the term Non Forest Zones (NFZ) does not always give the correct picture of fire protection, as NFZ can have direct protection as mentioned previously. Because of the high value placed on commercial timber, and on natural resources in general, governmental agencies are mandated to provide wildfire protection to lands owned by the Government. In addition, Montana State law requires that all privately owned forested lands in the State be provided with wildfire protection (76-13-201 MCA). State laws also establish a mechanism to provide this service, through the formation of Forest Fire Protection Districts (76-13-204). These Forest Fire Protection Districts are formed in a manner similar to Rural Fire Districts, except that the DNRC (the State Board of Land Commissioners is still the final authority) is the body that creates the Forest Fire Protection District instead of the County Commissioners. In Lake County, there are three Forest Fire Protection Districts, with boundaries roughly the same as the protection boundaries shown on Map #3, "Wildland Fire Protection" (pg. 62), in Appendix A of this Plan.

"Forest fire protection" involves more than just putting out fires. Protection agencies are also responsible for pre-attack planning, fire prevention, equipment procurement, detection,

suppression, cause determination, and reporting. Under 76-13-201 MCA, an owner of forestland classified as such by the department shall protect against the starting or existence and suppress the spread of fire on that land. The department must in conformity with reasonable rules and standards for adequate fire protection adopt this protection and suppression.

Private owners of forested land in the State are required to pay a fee for this fire protection. A Forest Fire Assessment program is managed by the Department of Natural Resources and Conservation to collect these funds, through the county-based property tax system. Landowners are assessed a fee of \$.17 per acre or a minimum fee of \$22.00 currently per parcel in each fire protection district.

A landowner paying fire protection fees can receive no other charges as a result of wildfire originating on his or her land, unless the landowner is responsible for starting the fire. Although Rural Fire Districts are often reluctant to bill for costs, state and federal fire agencies are mandated, pursuant to MCA 50-63-103, *liability of offender for damages and costs*, to attempt to collect suppression costs from those responsible for starting the fire.

The following sections give a brief overview of the three wildland agencies in Lake County:

CONFEDERATED SALISH AND KOOTENAI TRIBE (CS&KT)

The CS&KT, Division of Fire protects 1.22 million acres of land on the Flathead Reservation. Tribal Trust and Trust Allotments account for 712,000 acres, private (fee) land accounts for 468,000 acres, and the remaining 40,000 is State owned. From a fire ecology perspective the reservation is quite diverse ranging from alpine forest types in the Mission Mountain Tribal Wilderness to sagebrush and grass at the driest site in Montana at Niarada. The Tribes fire mission ranges from prescribed natural fire in the Mission Wilderness to rapid response and suppression of fires in the Wildland Residential Interface along Flathead Lake, the foothills of the Mission Mountains, and throughout the classified forest and mutual threat zones in the Mission Valley. The tribe describes these suppression strategies as 1) Full suppression in the residential interface zone; 2) Modified suppression on fringes of wilderness areas; 3) Full wildland fire use (PNF) in wilderness areas.

The CS&KT maintains their own dispatch center located in Ronan and is members of the Southwestern Montana Interagency Coordination Center in Missoula. There are 30 seasonal firefighters staffed, 3 Type 4 engines, 4 Type 6 engines and 1 Type three helicopter contracted with the Lolo National Forest. They also have on a call when needed basis 5 - 10 Montana Indian Firefighter (20 person) Crews and 4 camp crews. These resources respond to an average of 36 fires per year on the Flathead Reservation, thirty-six percent (36%) of which are person caused.

The tribe also plans on using prescribed fire on an average of 4,000 acres per year including broadcast burns, under burns, pile burns, and hazard fuel reductions around homesites and urban interface.

DEPARTMENT OF NATURAL RESOURCES & CONSERVATION (DNRC)

The Kalispell and Swan Units of the Northwestern Land Office protect a total of 170,000 acres in Lake County. Both units are dispatched through the Flathead Interagency Dispatch Center located in the Flathead National Forest Supervisor's Office in Kalispell. The Kalispell Unit is a

participating member in the Interagency Burn Permit Center, which is located in the Northwestern Land Office North of Kalispell. The Swan Unit issues their own burn permits.

The Kalispell Unit is responsible for fire prevention and suppression on 58,000 acres of predominantly industrial and non-industrial private land as well as scattered State and U.S. Forest Service ownership. The bulk of this land is relatively low elevation and well roaded, characterized by increasing residential wildland interface extending from Rollins and Bigfork population centers. Seven seasonally staffed engine crews respond to an average of 4 fires per year, 33% of which are person-caused. The Northwestern Land Office also staffs a state owned Type 2 (UH-1H) helicopter for initial attack on the 5 DNRC Units in NW Montana.

The Swan Unit provides fire prevention and suppression for 112,000 acres of State, private and federal lands within Lake County. This area can be described as mid to high elevation, commercially productive timberland with good road access at the lower elevations. The Residential Wildland Interface areas are also expanding. The Unit's two wildland engines respond to an average of 12 fires per year, 30 % of which are person caused. The Swan Unit's fire protection area lies within the area covered by the Seeley-Swan Fire Plan, as well as this Lake County Community Wildfire Protection Plan.

U.S. FOREST SERVICE, FLATHEAD NATIONAL FOREST

The Flathead National Forest in addition to it's administrative site in Kalispell, is composed of The Swan Lake Ranger District, Tally Lake Ranger District, and the Three Forks Zone. The Three Forks Zone is comprised of the former Glacier View, Hungry Horse, and Spotted Bear Ranger Districts. Collectively these offices administer Fire management activities on over 2 million acres of national forest system lands in Flathead and Lake Counties, including the Bob Marshall Wilderness Area. The Swan Lake Ranger District, headquartered in Bigfork, provides fire protection to about 125,000 acres of predominately National Forest lands in the Swan River Valley, as well as lands along the east shore of Flathead Lake north of the Reservation boundary. The Flathead Forest is home to several threatened, endangered, or sensitive wildlife species such as the west slope cutthroat and bull trout, grizzly bears, and wolves. In addition, the Flathead Forest receives tremendous recreational use in the Bob Marshal Wilderness, Jewel Basin and on the three forks of the Flathead River. Most of the Forest is considered highly productive commercial timber ground containing many valuable watersheds important for maintaining water quality. On a National Forest with these kinds of competing management issues fire plays an important role as a management tool.

The Flathead Forest manages an average of 6 prescribed natural fires and suppresses an average of 65-70 fires per year. They house the Flathead Interagency Dispatch Center in their office across from the City Airport. The Forest hosts a national Type 1 Interagency Hotshot Crew, an air tanker and retardant plant, and supports a Type 3 contract helicopter for project and Fire management work. The districts staff 10 engines and employ 50 seasonal firefighters Forest wide.

3.2 LAKE COUNTY ORGANIZATIONS

RURAL FIRE DISTRICTS

A Rural Fire District (RFD) is a political subdivision having geographical boundaries established by a vote of the residents of an area. The operations of a district are funded by collection of a tax on all real property in the district.

In accordance with State law, Rural Fire Districts are responsible for protection of all property within the district from fire. There is no distinction in the law regarding what type of fire, so all fires are included (structural, vehicle, and wildland). This applies regardless of the vegetative cover on the land, so forested lands are also included even if these lands are already protected by a Recognized Wildland Protection Agency. It is these forested lands, lying within established rural fire districts, that are referred to as having "overlapping jurisdiction."

There is also no provision in the law that would exempt non-taxable, government-owned lands within the District's boundaries from the District's responsibility to provide fire protection. If government-owned lands were not specifically excluded from the fire district when it was formed, then the district must provide the same level of fire protection to those lands as it does to private lands.

Although the two types of organizations may share geographical responsibilities, they differ in their respective missions. In Montana the "recognized wildland fire protection agencies" include the U.S. Forest Service (USFS), U.S. Bureau of Land Management (BLM), Montana Department of Natural Resources & Conservation (DNRC), Confederated Salish & Kootenai Tribes (CS&KT), and any of the 56 counties in the State/County Coop Fire program where a higher level of wildland protection does not exist, and where the County accepts this responsibility. These entities are primarily wildland fire fighters, and for the most part will not perform structural fire fighting, as they do not have the training or equipment to do so. Fire districts on the other hand, are more geared towards fighting structure fires, and some structural departments have limited expertise in wildland firefighting, where natural fuels, weather, and topography influence fire fighting tactics.

These different agency orientations have changed in recent years, due to the growth of housing developments in the residential/wildland interface. As homes are built further out into the forest, all of the entities involved in fire operations find themselves operating closer to the others "turf." Rural fire districts must be more proficient in the wildland fire suppression arena to effectively protect structures from wildfires, and wildland fire agencies are faced with interface fires where man-made fuels (houses) are intermixed with wildland fuels.

FIRE SERVICE AREAS

Fire Service Areas (FSA) are a relatively new form of fire protection codified in 7-33 part 24 MCA. They are also formed by submitting a petition to the County Commissioners, though the requirements (30 owners of real property in the proposed area), are much less strict than those for Rural Fire Districts. In areas where there are several large landowners, it was often impossible to get the required 50% or more of the owners of a majority of the land to sign a petition for forming a Rural Fire District. This meant that the formation of a Fire Company might be the only way to provide the structural protection that people sought for their homes. People found it hard to supply needed fire equipment when they had to rely on bake sales to raise the money. Fire Service Areas are supported by a tax on individual structures, or improvements. As such, FSAs have no direct or implied wildland Fire protection component. Only the Commissioners, by resolution, can decide on the boundaries, kinds, types, or levels of service a FSA will supply. Unless there is a Resolution to the effect that a FSA will do the wildland protection, one should assume that they are NOT legally mandated to do it. Most FSAs will respond to wildland fire calls within their boundaries, as it is prudent to help stop the spread of a wildfire before it involves the structures they are all legally mandated to protect. The wildland area within a FSA boundary but outside the overlap area of either a Forest Fire District/Affidavit Unit/Nonforest Agreement or other recognized wildland fire agency, would be considered county

fire protection responsibility, and would in most cases be assigned to that FSA. In addition, the FSA would not be paid by the State or federal agency to provide structural fire suppression within their boundaries as they are legally mandated to do this. They would not be paid to fight wildland fire on any areas within their boundaries, except under specific contractual arrangements made with the wildland fire protection agency with jurisdiction (such is the case with the Swan Valley Fire Service Area). If they were assigned the wildland fire protection within their boundaries by the County Commissioners, the FSA would not be eligible for payment within their boundaries by the federal or State agencies. Again, these specific exceptions should be addressed in an Annual Interagency Operating Plan where the FSA would respond to wildland fires within the areas of Nonforest Agreements in return for the *recognized agency* responding into the FSA.

For a specific location of all Rural Fire Districts/Fire Service Areas in Lake County see Map # 4 (pg. 63). All of these fire districts are dispatched by Lake County 911 center except for Arlee, VFD which is dispatched by Missoula County 911. The Fire Districts and Fire Service Areas are:

Arlee Rural Fire District
Big Fork Rural Fire District (Flathead County District covering a portion of Lake County)
St. Ignatius Rural Fire District
Charlo / Moiese Rural Fire District
Finley Point Rural Fire District
Hot Springs Rural Fire District (Sanders County District covering a portion of Lake County)
Polson Volunteer Fire Department (Covers Polson Rural Fire District)
Ronan Volunteer Fire Department (Covers Ronan Rural Fire District)
Ferndale Rural Fire District
Chief Cliff Fire Service Area
Rollins Rural Fire District
Swan Lake Rural Fire District
Swan Valley Fire Service Area

COUNTY OEM COORDINATOR

The county Office of Emergency Management (OEM) Coordinator is responsible for ensuring that the county meets State and federal Disaster and Emergency Services requirements. This primarily involves pre-planning, resource tracking, readiness evaluation, and emergency response coordination.

Lake County, like other counties in the State, has an Emergency Operations Plan (EOP) that documents preparedness and response actions for declared emergencies and disasters within the county. There is a wildfire annex to the plan which addresses wildfires that are declared to be emergency situations or that result in a major disaster. Although every wildfire is technically an emergency, the county does not officially declare an emergency in most cases. An Emergency Declaration may be warranted in fire situations where multiple homes are under immediate threat of destruction, and where the ability of local fire forces to handle the fire is inadequate. Such a situation could occur with a large-scale fire in the wildland/urban interface anywhere in the county. The Lake County OEM Coordinator also serves as the Lake County Fire Coordinator (LCFC).

LAKE COUNTY FIRE ASSOCIATION

The Lake County Fire Association is comprised of representatives from all of the fire departments, rural fire districts, fire service areas and wildland fire protection agencies in the County. The Association meets at least every two months, and works to improve the effectiveness of the County's fire service through cooperation and information exchange. Topics routinely handled include joint training programs, equipment compatibility, communications, mutual aid agreements, fire prevention activities and response coordination.

TRIBAL EMERGENCY RESPONSE COMMITTEE (TERC) / LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)

Emergency services providers in Lake County participate in a Local Emergency Management Committee that is chaired by the Emergency Management Coordinator. This group is now combined with a group representing the Flathead Reservation that has similar responsibilities. The purpose of the LEPC is:

- To carry out for Lake County and its political subdivisions those responsibilities required of the LEPC pursuant to Public Law 99-499, Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III, also known as the Emergency Planning and Community Right to Know Act (EPCRA) and other related regulations. This includes the development of a hazardous material emergency response plan for Lake County and its political subdivisions.
- To plan, develop, review, update, train and exercise community emergency response plans for all other risks and hazards identified in Lake County including but not limited to flooding, wildfires, major structure fires, winter storms, tornadoes, terrorism, etc.

FUELS REDUCTION ADVISORY COMMITTEE

In 2004, the Lake County Commissioners formed an informal working group comprised of representatives from agencies in Lake County involved in wildland fires to address the hazardous fuels issue in Wildland-Urban Interface areas. These agencies include Lake County Office of Emergency Management, Confederated Salish and Kootenai Tribes, Montana Department of Natural Resources, U.S. Forest Service, Flathead Forest and the Lake County Fire Association. This group is involved in coordinating efforts to reduce the risk of loss due to wildfires through planning activities, application for grants, and the administration of fuels reduction projects. The chairman of the committee is the Lake County Emergency Services Coordinator.

FUELS REDUCTION COORDINATOR

The mission of the Fuels Reduction Coordinator for Lake County is to protect lives, property, and the environment through hazard analysis and implementing mitigation projects to reduce identified risks. The position reports directly to the Lake County Office of Emergency Management, however direction and guidance is also provided by the Fuels Reduction Advisory Committee. The position is funded through grant money received by the County. Duties include:

- Program manager of the County's Hazardous Fuels Reduction program.
- Public information and education related to wildfire risk management.
- Prepares grant applications and administers projects conducted under awarded grants.
- Member of the Lake County Pre-Disaster Mitigation Planning Committee.
- Manages planning activities in accordance with this Community Fire Protection Plan.
- Provides professional forestry advice to the Fuels Reduction Advisory Committee.
- Works with the Lake County Fire Association in other wildfire-related matters.

CHAPTER 4: FOREST CONDITIONS AND FIRE ENVIRONMENT

4.1 HISTORICAL FIRE REGIMES

An important factor in identifying the potential range of forest conditions that can occur on a landscape is an understanding of the influence of historical disturbance regimes on vegetation structure, species composition and spatial distribution. Some of the more common disturbance regimes within North America include fire, insects, disease, hurricanes, blowdowns, and flooding. Within any given landscape, several different historical disturbance regimes may have operated to influence vegetation in this manner. For the Fire Plan area three primary historical disturbance regimes influencing species composition and structure were the short-interval fire regime (avg. <25 years) and the long-interval fire regime (avg. >100 years), and the mixed severity fire regime with intermediate fire return intervals creating forest patches displaying either short or long-term fire effects. Fire was the primary disturbance agent in this landscape directly influencing large-scale changes in forest species composition, structure and spatial distribution. While insects and disease were and continue to be important disturbance agents as well, their activities often contribute to the occurrence and severity of fire as the end result. Consequently, the ultimate driving force of large-scale disturbance in the fire plan region was predominately fire.

Human-induced changes and/or impacts have functionally suppressed, eliminated or changed many of the historical disturbance regimes throughout North America. The result has been the loss of many native ecosystems and their corresponding biodiversity. In Lake County, the primary influence in this regard has been the suppression of fire for nearly 100 years as well as past logging that has changed the historical structure of many forest stands. Fire suppression programs have had profound effects on many ecological communities and ecosystem processes.

Short-interval Fire Regime

The short-interval fire regime is predominantly characterized by relatively frequent, non-lethal, low to moderate intensity fires that burn along the ground and remain within the understory. The frequency of these fires, generally averaging between 5 and 25 year intervals, influences both the species composition and vegetation structure within these forests. Fire tolerant species such as ponderosa pine and western larch become dominant in the overstory and bunch grasses become dominant in the understory. This becomes what is referred to as a “fire maintained seral disclimax”; due to the frequency of the fires, the stand is unable to succeed toward climax vegetation. Stand history studies have demonstrated that stands occurring within the short-interval fire regime had relatively predictable species composition and vegetative structure. They were also less likely to move through a typical successional progression of age classes. Instead, fire maintained a multi-age structure, characterized by saplings to old growth trees.

Long-interval Fire Regime

The long-interval fire regime is characterized by an infrequent, lethal, high intensity fire that consumes both the understory and overstory as it moves across the landscape. Stand replacing fire regimes result in a short term, catastrophic effect on stand conditions, in contrast to the persistent, yet less obvious effects of the short-interval fire regime. The result of this impact is to set the stand back to an early successional stage and release plant species

stimulated by severe fire events. Then the stand proceeds along an undisturbed successional trajectory for many years, depending on the ecological site.

Mixed Severity Fire Regime

Within the Fire Plan region, a “mixed severity” fire regime also occurred. That is, depending on site conditions or position on the landscape, both non-lethal and lethal fires could occur within a mosaic of diverse stand conditions. This is typically common through the transitional portion of the environmental gradient where the lower elevation, drier sites are dominated by non-lethal fire regimes and the high elevation, moister sites are dominated by the lethal fire regime. Consequently, where a transitional site occurs primarily adjacent to the low elevation types, it is predominantly influenced by a short-interval fire regime. Where it occurs primarily adjacent to the high elevation types, it is predominantly influenced by a long-interval fire regime. Topographic features can also influence the occurrence of a “mixed” fire regime as well. For example, dry south aspect slopes and ridges within an ecological site such as warm, moist subalpine fir can be predominantly influenced by a short- interval fire regime. Whereas under average site conditions, this ecological site would more typically be influenced by a long-interval fire regime.

4.2 FOREST TYPES IN LAKE COUNTY

Warm, Dry Ponderosa Pine, Xeric Douglas-fir

Distribution: This group of habitat types, representing a large percentage of forested residential areas in Lake County, is at the warm, dry extreme of forest environments wherever ponderosa pine is found. Typically, they represent lower timberline conditions and in northwest Montana may occur as low as 2,000 feet in elevation. Upper limits may extend to about 5,400 feet on steep, dry, southerly aspects. Associated geology is quite variable and includes steep, rocky sites to glacially scoured ridge tops and ridge noses to moderately deep glacial till, with drumlins and moraines, to shallow and moderately deep residual soils. Geology and terrain appear to be limiting factors only to the extent of retaining sufficient soil moisture, which is the controlling influence.

Potential Dominant Species: Open stands of ponderosa pine are the characteristic tree cover. At the upper elevations of this habitat type, scattered Douglas-fir may be associated with the pine. The undergrowth vegetation is characterized by grasses (bluebunch wheatgrass, elk sedge and pinegrass) and occasional shrubs (bitterbrush and snowberry). In contrast to other habitat types, all members of the shrub and herb layers occur as components of the even drier shrub steppe or mountain shrub zones of vegetation. Consequently, this group of habitat types marks the lower transition between forest and non-forest.

These sites are severely limited in their tree-stocking capability and maintain a savannah appearance when fully stocked. Before Euro-American settlement interrupted the normal fire cycle, nearly all stands were likely in a savannah condition with grass-dominated understories. Historically, these sites burned at least every 5 to 25 years. Average densities ranged from 5 to 20 trees per acre. Historical patch sizes were characterized by small openings of less than 5 acres, within 20 to 200 acre stands of low-density trees. Low-intensity short-interval fires would result in few fire-sensitive shrubs, low fuel accumulations, and few tree seedlings and small saplings. Since the early 1900s, attempts to exclude fire have lengthened fire return intervals. Tree seedlings, small saplings, and fire-sensitive shrubs such as bitterbrush, and snowberry, have become more common and thereby have increased understory fuel loadings. When fires

do occur, they are often of higher severity and result in conditions that rarely occurred historically.

Warm, Dry Douglas-fir

Distribution: This group of habitat types represents the warm and dry Douglas-fir/ponderosa pine forests of northwestern Montana and is a major component of the fire plan area. It characterizes the warm, mild environments of low- to mid-elevation forests but may extend upward to about 5,800 feet on dry, southerly aspects. These sites are typically well drained and vary from fairly deep glacial till associated with drumlins and moraines, to shallow and moderately deep residual soils.

Potential Dominant Species: The Douglas-fir habitat types are characterized by mixed stands of Douglas-fir and ponderosa pine but at lower elevations, Douglas-fir may be absent. On moderate elevation sites, ponderosa pine, Douglas-fir and western larch are major seral species with small amounts of lodgepole pine, Engelmann spruce, or subalpine fir present as well. In unlogged stands, ponderosa pine, at low elevations, and western larch, at moderate elevations, are usually the larger, older component with Douglas-fir ranging from sapling to mature trees. The undergrowth, if undisturbed, supports mainly rhizomatous shrub and grasses such as common snowberry, mallow, ninebark, pinegrass, or elksedge. Following a disturbance such as fire or logging, a wide variety of other shrubs, herbs, and grasses may be present.

Historically, these sites experienced frequent low-intensity underburns that excluded most Douglas-fir and killed many small ponderosa pines and western larch. Estimates of fire return intervals range from 15 to 45 years. These fires burned extensively throughout the low- to mid-elevation forests, being extinguished only by fall rains or lack of fuel due to previous fires. Under this burning regime, the stands remained open and park-like, consisting of mostly ponderosa pine, western larch and to a lesser degree, Douglas-fir in a variety of age classes. Stand density ranged from about 15 to 30 large overstory trees per acre. Trees often occurred in clumps, with irregular shaped openings between the relatively low density of trees. The potential for destructive wildfire, insect, or disease events was low. Due to their different responses to low-intensity burning, it is likely that shrub cover was less and grass cover was greater than under present conditions

Since Euro-American settlement, fires have become less frequent and stand conditions have changed dramatically, particularly in unmanaged stands. Here, the historical stand of widely spaced ponderosa pine or western larch is often still evident in the overstory as an older stand component. Between the pines, many smaller Douglas-firs and lodgepole pine have become established since the last underburn, which likely occurred in the late 1800s to early 1900s. Stand densities now range from 250 to 600, and sometimes 900, trees per acre, creating stressful conditions throughout the tree layer. Now the potential for destructive wildfire, bark beetle, spruce budworm, Douglas-fir tussock moth, dwarf mistletoe, and root rot events is quite high.

Cool, Moist and Cool, Dry Douglas-fir

Distribution: Cool moist and dry Douglas-fir sites are less common in the fire plan area and represent the cooler extremes of the Douglas-fir zone. Subalpine fir is usually present on adjacent cooler sites. Cool, moist Douglas-fir sites may extend upwards to about 6,800 feet in elevation but are also common down to about 4,800+ feet in cold air drainages and frost pocket areas. At the lower elevation, nightly cold air patterns may be compensating for soil moisture.

Potential Dominant Species: Ponderosa pine is present as a major seral species only at the warmer extremes of these habitat types and is usually absent at the colder extremes. Lodgepole pine may be common on the cooler and more frost-prone sites. Trembling aspen along with lodgepole pine, may dominate early seral stands. In some cases, Douglas-fir is the only tree species capable of growing on the site. The undergrowth is characterized by shade-tolerant species such as mountain maple, mountain ash, and/or huckleberries. Many other disturbance-related species may be present, such as serviceberry, Scouler willow, thimbleberry, and chokeberry. On drier sites, undergrowth vegetation may be sparse with pinegrass and elksedge the most common species.

Historically, these sites likely experienced a mixed regime of both short-interval and long-interval fire regimes. Average short-interval fire regimes may have ranged from 17-102 years while long-interval fire regimes ranged from 150-400 years. Consequently, stand composition can vary from nearly pure stands of single-age lodgepole pine to mixtures of multi-age lodgepole or ponderosa pine with Douglas-fir or pure multi-age stands of Douglas-fir. The extended fire return intervals on some sites increase the opportunities for dwarf mistletoe and bark beetle infestations.

As a result of organized fire suppression, a shift to continuous, multi-story stands of Douglas-fir has greatly increased. The result being less opportunity for the diverse mosaic of vegetative conditions that result from a mixed fire regime. The probability of widespread stand-destroying fire has increased. Lack of fire has also increased the proportion of dense multistoried stands, making them more vulnerable to bark beetle attack and stand-destroying fire. Severity of dwarf mistletoe infection among these stands has also increased. In some areas, the increase has been dramatic, creating stands composed primarily of large witches brooms.

Warm, Moist Douglas-fir

Distribution: In northwestern Montana, the warm, moist Douglas-fir group of habitat types is usually inter-fingered with the warm, dry Douglas-fir group and occurs wherever more favorable sites exist. This habitat type group is common in the fire plan area. These sites range in elevation from about 2,000 to 5,800 feet and occur on a variety of slopes and aspects but are most common on northerly aspects, toe slopes, and stream terraces.

Potential Dominant Species: In early seral stages, ponderosa pine is common at the warmer extremes, and western larch, Douglas-fir, and lodgepole pine are common on the cooler sites. Douglas-fir and on some sites, Engelmann spruce, dominate later seral stages. Small amounts of subalpine fir are often present on the cooler sites. Douglas-fir is the climax dominant throughout this group, depending on the habitat types.

Huckleberries, mainly dwarf huckleberry, are a major component of most mid to late seral undergrowths and are often accompanied by beargrass, Rocky Mountain maple, common snowberry, twinflower, or occasionally pachistima. A wide variety of early or mid seral shrubs, herbs, and grasses can appear following a major disturbance. For example, ceanothus, Scouler willow, and thimbleberry may develop high coverages following a wildfire. Sitka alder, common brome, and sweet-scented bedstraw can become conspicuous following logging.

Fire scar analysis and structure and composition of older stands suggest that historically, some of these sites experienced predominantly short-interval fires ranging from 17 to 102 years, particularly on the dryer sites. Here the underburns killed the small Douglas-fir and helped prolong the dominance of ponderosa pine, western larch, and even lodgepole pine. But long fire-free intervals also occurred, particularly on the wetter sites, and allowed Douglas-fir to

develop dense multilayered overstories. Sites predominantly influenced by long-interval fires would have experienced return intervals ranging from 100 to 250 years. Under these circumstances, stand-destroying wildfire would have been a normal part of the forest cycle.

Historic patch sizes typically ranged from 5 to 50 acres on the short-interval fire sites and from 20 to 200 acres on the long-interval fire sites. Tree densities ranged from 15 to 60 overstory trees per acre, with more in riparian areas.

Warm, Moist Subalpine Fir

Distribution: This group ranges in elevation from about 5,000 to 7,200 feet but may follow cold air drainages as low as 4,500 feet. This habitat type group is common in the Swan Valley portion of the fire plan area. These sites are found in moist, protected areas such as stream terraces, toe slopes, and steep, northerly aspects. Soils are variable and range from loess overlaying glacial tills and lacustrine sediments, to alluvial and outwash deposits on terraces.

Potential Dominant Species: Various mixtures of lodgepole pine, western larch, Douglas-fir, and Engelmann spruce comprise the seral tree layers. Any one of these tree species may be dominant, depending on stand history and local site conditions.

Seral shrub layers may be tall and dense, consisting largely of Sitka alder. Lesser amounts of mountain maple, mountain ash, and serviceberry may be present. In late seral and climax stages, menziesia dominates some sites, but usually lower-growing shrubs, such as blue huckleberry and Utah honeysuckle, are more common.

Historically, these sites experienced both short-interval and long-interval severity fires. Estimates of fire frequency range from 38 to 120 years on predominantly short-interval sites and 120-300 on predominantly long-interval sites. Generally, ignitions occurred on adjacent drier sites, and the fire was wind-driven onto these sites. Fire patterns could be small and patchy (100 acres or less) or uniform and extensive (5,000 to 100,000 acres), depending on the burning conditions. Sites influenced by predominantly short-interval (mixed severity) fires resulted in large gaps in the canopy and a mosaic of structures within the stand. The presence of western larch in the canopy is a good indicator of short-interval fires on these sites. Long-interval fires create a mosaic of even-aged structures across stands and are characterized by the presence of both seral and climax species.

Warm, Dry Subalpine Fir

Distribution: Warm, dry subalpine fir sites represents a small proportion of the fire plan area. They are found at elevations between 4,800 and 7,500 feet and represent the warm, dry extremes of the subalpine fir zone. At their lower limits, these sites occur mainly on steep, northerly or easterly aspects but shift to southerly and westerly aspects at their upper limits. Sites at the lower limits are often controlled by cold air drainage and are strongly interfingering with Douglas-fir sites.

Potential Dominant Species: Douglas-fir is the predominant seral tree, and small amounts of ponderosa pine may occur on the warmer sites. At the cool, moist extremes, lodgepole pine and Engelmann spruce may appear in varying amounts but seldom dominate.

Tall, dense shrub layers are common, reflecting the relatively warm nature of these sites. Mountain maple and mountain ash are common in near climax stands, while beargrass, serviceberry and Scouler willow are common components of mid-seral grass and shrub layers. Ceanothus and pinegrass can develop high coverages on severely burned sites in early seral

stages. The pinegrass can persist indefinitely on many of these sites, often dominating the herb layer. The historical fire regime consisted of sites influenced by predominantly short-interval fires ranging from 38 to 71 years and long-interval fires ranging from 100 to 500 years. A mixture of short-interval and long-interval fire patterns can create a mosaic of seral stages at the landscape level. Cyclic bark beetle attacks on dense patches of Douglas-fir, lodgepole pine, and Engelmann spruce can contribute further to this mosaic. The influence of fire regime on the species composition and structure are similar to those exhibited in Warm, Moist Subalpine fir. Historic patch size ranged from 50 to 300 acres on short-interval sites and 5,000 to 100,000 on long-interval sites. However, with a recent history of fire suppression, these sites are losing their mosaic patterns and are becoming more uniform. Unless managed to maintain landscape diversity, these sites will increase their risk of extensive, stand-destroying fire and bark beetle epidemics, providing less opportunities for a mosaic of conditions at the landscape level.

Cool, Dry Subalpine Fir

Distribution: These sites are common at mid to upper elevations of the subalpine fir zone. They represent cold, dry subalpine sites and range upwards to 7,800 feet in elevation but are also common down to about 4,500 feet in cold frost-pocket areas. At the lower elevations, these sites usually occur in the dry gentle terrain formed by glacial outwash in broad valleys.

Potential Dominant Species: At upper elevations, whitebark pine may be present in minor amounts, however in recent years its distribution has decreased as a result of mountain pine beetle and whitepine blister rust. In the moister areas, minor amounts of Engelmann spruce are common. At the cold, dry extremes, which are transitional to nonforested systems, lodgepole pine is the only tree present and is considered to be the climax species. Elsewhere, subalpine fir usually appears in varying amounts as the climax indicator species. Alpine larch occurs on rockslides and talus. Douglas-fir, western larch, and western white pine rarely occur on these ecological sites.

Shrub layers are usually sparse and consist mainly of low-growing huckleberries, such as dwarf huckleberry and whortleberry. The sparse low shrub layer reflects the cool temperatures and short growing seasons inherent to these sites.

Stand conditions predominantly influenced by long-interval fire regimes and mountain pine beetle attacks were the normal historical recycling process. Long-interval fires occurred about every 100 to 300 years. Short-interval fires occurred less often and on a frequency of every 35 to 300 years. Minor fire scars in these stands attest to the nature of these low-intensity, short-interval fires. Fires crept through these stands wherever fine fuels would carry a flame and then flared up wherever fuel concentrated in the denser patches of larger trees, usually those greater than eight inches in diameter. When these trees were killed, the beetle population subsided until another group of trees grew into the vulnerable size class. After each beetle event, the dead trees soon fell and provided an opening for more regeneration. In this manner, a mosaic of tree sizes and densities were maintained, which helped reduce stand uniformity and the widespread destruction of crown fires and bark beetle epidemics.

Note: The Fire Regime and Forest Type sections are taken from the Seeley-Swan Fire Plan, 2004.

4.3 FIRE HISTORY

Lake County's wildland fire suppression services respond to an annual average of over 67 fires burning approximately 1,644 acres. These fires typically burn in dryland crop and range land, and the surrounding coniferous forests. The lower elevation dry-site conifer stands are comprised largely of Ponderosa Pine, which is a fire-adapted species having a burning cycle of 20 years or less. Increasing rural development, commonly known as the wildland-urban interface, in these high fire frequency ecosystems will continue to add to the complexity of wildfire suppression in Lake County. Additionally, increasing amounts of ladder fuels (primarily Douglas Fir) in the understories will lead to more intense and severe stand replacing fires.

Because of the prevalence of grassland in the valley bottoms the most active part of the fire season for the rural fire districts is typically in the spring before green-up. Spring debris burning in these fuel types is responsible for the majority of person-caused fires in the county. Map #5, "Wildland Fire Occurrence" (pg. 64) displays fire locations from the past 20 years, by cause (lightning and person-caused).

CHAPTER 5: WILDFIRE RISK ASSESSMENT

One of the core elements of a community fire plan is developing an understanding of the risk of potential losses to life, property and natural resources during a wildfire. The Healthy Forests Restoration Act, the National Fire Plan, FEMA's Disaster Mitigation Act of 2000 and the National Association of State Foresters all provide guidance on conducting a hazard and risk assessment for wildfire. In particular, this Community Fire Protection Plan is based on criteria suggested by the National Wildland /Urban Interface Fire Protection Program through a publication entitled "Wildland/Urban Interface Fire Hazard Assessment Methodology" (1997).

The objectives of the Risk Assessment process are to:

- Identify Communities-at-Risk and the Wildland-Urban Interface
- Develop and conduct an assessment of the potential for loss due to wildfires.
- Provide a comparative analysis of interface areas within Lake County to assist in establishing priorities for hazardous fuels treatment projects and other mitigation efforts.

5.1 IDENTIFYING THE WILDFIRE PROBLEM IN LAKE COUNTY

In January 2001, then U.S. Agriculture Secretary Dan Glickman and Interior Secretary Bruce Babbitt released a proposed list of communities eligible for enhanced federal wildfire prevention assistance. The preliminary list of over 4000 communities included many that are near public lands managed by the federal government. The initial definition of urban wildland interface and the descriptive categories used in this notice are modified from "A Report to the Council of Western State Foresters—Fire in the West—The Wildland/Urban Interface Fire Problem" dated September 18, 2000. Under this definition, "the urban wildland interface community exists where humans and their development meet or intermix with wildland fuel."

There are three categories of communities that meet this description. Generally, the Federal agencies will focus on communities that are described under categories 1 and 2. For purposes of applying these categories and the subsequent criteria for evaluating risk to individual communities, a structure is understood to be either a residence or a business facility, including Federal, State, and local government facilities. Structures do not include small improvements such as fences and wildlife watering devices.

Category 1. Interface Community:

The Interface Community exists where structures directly abut wildland fuels. There is a clear line of demarcation between residential, business, and public structures and wildland fuels. Wildland fuels do not generally continue into the developed area. The development density for an interface community is usually 3 or more structures per acre, with shared municipal services. Fire protection is generally provided by a local government fire department with the responsibility to protect the structure from both an interior fire and an advancing wildland fire. An alternative definition of the interface community emphasizes a population density of 250 or more people per square mile.

Category 2. Intermix Community:

The Intermix Community exists where structures are scattered throughout a wildland area. There is no clear line of demarcation; wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres. Fire protection districts funded by various taxing authorities normally provide life and property fire protection and may also have wildland fire protection responsibilities. An alternative definition of intermix community emphasizes a population density of between 28–250 people per square mile.

Category 3. Occluded Community:

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

As listed in the Federal Register, Lake County Communities classified as “At Risk from Wildfire” include:

Arlee	Big Arm	Charlo
Condon (Salmon Prairie)	Elmo	Hwy 93 Corridor
Jocko River Corridor	Swan Lake	Ronan
Ravalli	Polson	Pablo
Moisse	Misson	Yellow Bay

5.2 RISK ASSESSMENT PROCESS

The Lake County Community Fire Protection Plan wildfire risk assessment is the analysis of the potential for loss of life, property and natural resources from wildfires. The analysis takes into consideration a combination of factors that are defined below:

Risk: the potential and frequency for wildfire ignitions (based on past occurrences)

Hazard: the conditions that may contribute to wildfire (fuel type, fuel loading, slope, aspect, weather factors and weather)

Values: the people, property, natural resources and other resources that could suffer losses in a wildfire event.

Protection Capability: the ability to mitigate losses, prepare for, respond to and suppress wildland and structural fires.

Structural Vulnerability: the elements that affect the level of exposure of the hazard to the structure (roof type and building materials, access to the structure, and whether or not there is defensible space or fuels reduction around the structure.)

IDENTIFICATION OF WILDLAND/URBAN INTERFACE AREAS

The planning process in Lake County will involve two levels of risk assessment:

1. This Community Fire Protection Plan will identify major areas of the County that are particularly at risk from wildfire. These blocks are identified as “Planning Areas”, and will be comparatively evaluated for their level of risk in relation to each other. Examples of these areas include Lake Mary Ronan, Salmon Prairie, Big Arm, Ferndale, Swan Lake, etc. The Planning areas are evaluated in this Community Fire Protection plan for the first four of the rating factors above (all except for “Structural Vulnerability”).
2. The Annual Operating Plan will establish work priorities within the major Planning Areas, focusing on manageable work units (i.e.: subdivision or cluster level). The Annual Operating Plan may target certain areas for more intensive, site-specific risk rating, to prioritize fuels reduction work as well as other prevention measures such as door-to-door or neighborhood outreach efforts. The “Structural Vulnerability” rating factor will be assessed at the time of the site-specific risk rating effort. Work unit size should be based on criteria such as the number of concurrently open fuels treatment contracts, neighborhood identity, and resource allocation efficiency.

A primary objective in establishing two levels of planning is to enable overall prioritization of smaller, more manageable work units, and to accommodate an ongoing risk reduction process. The Planning Areas risk assessment conducted in the current plan will provide long-term guidance for targeting those general areas of the county in greatest need of mitigation work activities. There may be dozens of Work Units identified in the annual planning process, and the two-tier system of assessment allows for changes in priorities as a result of new growth or other changes in the County.

5.3 IDENTIFYING PLANNING AREAS

For the purposes of this planning document, The wildland-urban interface in Lake County is identified as those areas of the county that are classified as “forested”, and have residential development. Approximately 50% of Lake County is considered to be forested, however most residential development is located at lower elevations on the edges of the large blocks of forested lands. In order to identify those areas that are most at risk from wildfires, the interface areas were delineated into separate blocks. The blocks of land have general boundaries that encompass broad areas of mostly homogenous fuel conditions.

Planning Area Boundaries were established using the, “Forest Land Cover” map (Map #6, pg. 65) and the “Residential Density” map (Map #7, pg. 66). Residential density was derived from a County GIS data set of assigned addresses. The various degrees of shading on the map represent differing densities of assigned addresses; the lightest shading indicates two or more residences per square mile, and the darkest shading represents those areas of the County with greater than one hundred residences per square mile. The Forested Area map represents those areas of the County that have forested land cover, regardless of the actual tree species. The data for this map was provided by the Montana Natural Resource Information Service (NRIS), of Helena, Montana.

These two data sets have been combined on Map #8 titled “Residential Density in Forested Areas” (pg. 67). The Planning Areas are based on those areas of the county with over 2 residences per square mile, and that are also classified as forested. These general Interface areas are further separated, where applicable, by administrative boundaries such as Rural Fire Districts and Wildland Fire Protection Agency (except for the area covered by the Ferndale and Swan Lake Fire Districts, which was combined because of the similar fuel type). Planning Area boundaries are intended to delineate broad, general areas considered to be Wildland-Urban Interface; they should not be strictly interpreted as a precise demarcation between high-risk and low-risk regions.

The Planning Areas are shown on Map #9 “Wildland-Urban Interface Planning Areas”, pg. 68, and are described in the following table:

LAKE COUNTY WILDLAND-URBAN INTERFACE PLANNING AREAS			
NAME	AREA (ACRES)	NUMBER OF RESIDENCES*	ASSESSED VALUATION**
Arlee	18,560	579	\$29,498,449
Big Arm / Rocky Point	26,880	1,118	\$172,148,893
East Shore – North	12,800	805	\$120,602,060
East Shore – South	23,680	766	\$127,435,026
Ferndale / Swan Lake	31,360	850	\$151,629,117
Lake Mary Ronan	8,960	83	\$12,165,187
Mission Front – North	32,000	1,121	\$71,490,604
Mission Front – South	23,680	202	\$16,519,798
Rollins	9,600	348	\$72,346,307
Salmon Prairie	17,920	132	\$14,373,401
Turtle Lake	7,680	283	\$13,408,363
Notes:			
* Number of assigned addresses within Planning Area boundary. From Lake County Planning Dept. GIS Database			
** Assessed Property Valuation within Planning Area Boundary, and includes timber and commercial values. From Lake County Assessor’s Office.			

5.4 IDENTIFYING WORK UNITS

Planning Areas will be further subdivided into smaller-scale Work Units during the annual planning process. Representatives from the County (Fuels Reduction Coordinator), the responsible Wildland Fire Protection Agency, and the local Fire District will work to identify subdivisions, neighborhoods, or housing clusters to target annual work projects. Work Units should be established based on a variety of criteria such as neighborhood / community identity, fuel hazard characteristics, administrative efficiencies (i.e.: fuels reduction contract administration), and expressed interest in mitigation efforts by residents.

5.5 RISK RATING METHODOLOGY

This risk assessment is based on a review of many different methods developed by a number of different jurisdictions in various states to evaluate wildfire and other natural hazards. The assessment is intended as a tool to illustrate the relative level of risk to life, property and natural resources within different areas of the county. As fuels reduction, emergency management and fire prevention projects are implemented, the maps and priorities developed through the assessment will change, but they will always point to areas identified as having the highest relative ranking for risk and hazard. The objective is not to quantify the level of risk, but to make a comparative analysis of the relative risk between Planning Areas within the county.

The assessment considers four categories in determining the relative severity of fire risk; Hazard, Values, Protection Capabilities, and Ignition Risk. Within each category is a number of individual rating elements that will be assigned a three-level score representing the relative ranking of a particular Planning Area for that element, in relation to others in the county. Depending on the rating element, a level of one, two or three corresponds with a LOW, MODERATE, OR HIGH level of risk, respectively. The numerical rating may also be considered to represent a BELOW AVERAGE, AVERAGE, and ABOVE AVERAGE risk with respect to fire-related loss.

Assignment of risk levels for each scoring element were made by evaluation of on-the-ground conditions in the Planning Areas, or were derived from available data sources. Road-based surveys were conducted in the fall of 2004, driving through a major portion of each Planning area and determining average, or predominate rating element conditions.

The aggregate sum of the scores assigned to the scoring elements, within each general risk category, is divided by the sum of the total points possible. The "Hazard" risk category, for example, is comprised of four scoring elements, each with a maximum score of three, yielding a total of 12 points possible. The resultant fraction is then multiplied by 100, to provide a rough score for the category (represented as a percentage of maximum risk).

A composite score for the planning area is derived by applying varying degrees of weighting to each category score, and then adding the weighted scores together. The weighting factors were arrived at through discussions among officials involved with the planning effort, and represent the degree to which each category affects overall wildfire risk. **The higher the score, the higher the risk of loss.** The composite scores are the primary basis for setting priorities between Lake County Planning Areas for risk mitigation activities. Rating criteria for each category is as follows:

HAZARD COMPONENT

Fuel Type

Predominate fuel types in the Planning Areas are classified using the 13 standard fire behavior fuel models that were developed by the U.S. Forest Service. Each fuel model, representing the depth and arrangement of surface fuels, will yield a different flame length under standard weather/fuel conditions. Flame length is a good estimator of the expected intensity of a fire, and can be used to predict the effects a given fire will have on the area being burned. Fuel models were ranked low to high based on the flame length that is produced under standard conditions. Short flame lengths yield low risk; long flame lengths yield high risk.

Topography

Fire generally spreads faster uphill, with a resultant increase in flame lengths and fire intensity. The steeper the slope, the more difficult it is to control a fire and thus the risk is greater. Aspect, the cardinal direction which the slope faces, affects fire behavior because of the effects of solar heating on fuels. Some aspects are directly exposed to the drying effects of sunshine, or prevailing winds, while others are only indirectly exposed to sunlight or prevailing winds. This rating factor combines the effects of slope and aspect as a measure of relative risk.

Weather

This component takes into account the general weather factors in an area that influence fire behavior. Some areas of the county are wetter than others, overall, due to topographical features that affect rainfall. In addition, predominate winds that affect areas during the height of the fire season, in relation to fuels and residential densities, may contribute to a higher degree of fire danger for certain areas than for others.

Condition Class

Condition Class is used as a relative description of the degree of departure from historical fire regimes and generally describes how ‘missed’ fires have affected key ecosystem vegetative components. Effective fire suppression over the past 100 years has resulted in significant changes in the forest stands in some areas of the county, resulting in unnatural accumulations of fuels and higher densities of small trees and brush. For the purpose of this assessment, the condition class represents stand density and the amount of ladder fuels present (ladder fuels provide a pathway for surface fires to transition into a destructive crown fire).

HAZARD COMPONENT		
Factor	Level	Rating Criteria
Fuel Type	1	Fuel Model 8 (Closed canopy fir/spruce; little dead & down)
	2	Fuel Model 2 (Open Pine Stand w/ grass understory) Fuel Model 9 (Closed Pine w/ some surface litter)
	3	Fuel Model 10 (Heavy Doug. Fir; dead & down woody materials) Fuel Model 6 (Pine/Doug. Fir w/ moderate to heavy brush)
Topography	1	Flat to 10% slope
	2	Greater than 10% slope; Northwest through Southeast Aspect
	3	Greater than 10% slope; South, Southwest, West Aspect
Weather	1	Moist; Sheltered from winds
	2	Average; Some exposure to winds
	3	Dry; Open exposure to winds
Condition Class	1	<i>Condition Class 1</i> = Fire frequencies are within or near the historical range, and have departed from historical frequencies by no more than one return interval; vegetation attributes are intact and functioning within the historic range. Mature, even-aged stand.
	2	<i>Condition Class 2</i> = Fire frequencies and vegetation attributes have been moderately altered from the historical range, and fire frequencies have departed from historical frequencies by more than one return interval. Higher amount of regen. w/ some ladder fuels
	3	<i>Condition Class 3</i> = Fire frequencies and vegetation attributes have been significantly altered from the historical range, and fire frequencies have departed from historical frequencies by multiple return intervals. Dense stands of young trees w/ heavy ladder fuels

VALUES AT RISK COMPONENT

\$ Valuation

Using the County’s GIS resources, The Assessment and Taxation database was used to determine the total assessed valuation of property and improvements within the Planning Area boundaries. The value of standing timber is included for most privately-owned lands, however some timber value is not covered if it lies within large blocks of land that extend far beyond the Planning Area Boundaries (primarily Plum Creek Timber Co. lands). The value of non-taxable lands are also not included (i.e.: Tribal and government lands). Total valuation is divided by the size of the Planning Area, in square miles, and then three equal-sized classes of \$/sq. mile were partitioned for the rating system.

Density

The County GIS system was queried to determine the total number of assigned address with the Planning Areas. The totals were divided by the size of the Planning Areas to provide a residential density figure representing the number of residences per square mile.

Other Values

Other values include those special, non-monetary values that may lie within, or adjacent to the Planning Areas that would be negatively affected by wildfire loss. These include commercial establishments (jobs), Tribal cultural sites, ecologically sensitive areas, community watersheds, recreation sites, wildlife habitat, and tourism-related concerns.

VALUES-AT-RISK COMPONENT		
Factor	Level	Rating Criteria
\$ Valuation	1	Less than \$ 2.34 million per square mile in assessed property value
	2	Between \$2.34 and \$4.16 million per square mile in assessed property value
	3	More than \$4.16 million per square mile in assessed property value
Residential Density	1	Less than 16.5 Residences per square mile
	2	Between 16.5 and 28.3 Residences per square mile
	3	More than 28.3 Residences per square mile
Other Values	1	None
	2	Average (Relative to other Planning Areas within the County)
	3	More than average (Relative to other Planning Areas within the County)

PROTECTION CAPABILITY COMPONENT

Response

Response times and the amount of firefighting resources from both the Rural Fire Districts and the Wildland Fire Protection Agencies are considered. Close proximity of a rural fire district station is an advantage, however the time required for a sufficient number of personnel and equipment to quickly contain a wildfire on hot August day must also be considered. A normal late-season response to a fire in timber, with structures threatened, would involve a number of wildland engines, structural engines, water tenders, and aerial resources. The rating of this element is derived from a relative comparison of these factors between all of the Planning Areas in the County, and is not a measure of any fire protection agency’s performance capability.

Access

During a wildfire emergency, the movement of firefighting resources *in* to the fire area while at the same time providing for the possibility of evacuating residents *out* of the area is critical. The purpose of this rating element is to assess the road infrastructure of the Planning Areas in regards to the ability of firefighting resources to achieve access to the site of fires, and to protect dwellings. The rating is based on visual observation of roadways and bridges, as well as analysis of county road maps.

Water Supply

Adequate water supplies for fire suppression efforts are an important factor when considering protection capabilities. There are very few interface areas that have fire hydrants available, so direct drafting from water bodies is usually the most effective solution. Alternatively, Lake County fire protection agencies have developed an efficient mutual aid water tender shuttle system that is utilized to transport water from distant sources. This rating element is used to evaluate the availability of water supplies for wildfire control, and for structure protection. Turnaround times to helicopter bucket dip-sites is also considered.

PROTECTION CAPABILITIES COMPONENT		
Factor	Level	Rating Criteria
Response	1	Short Response Time
	2	Average Response Time
	3	Longer Response Time
Access	1	Good; multiple access points, short driveways, wide roadways
	2	Average
	3	Poor; single road access, long narrow driveways, no turnarounds
Water Supplies	1	Good; hydrants or dry hydrants located among structures
	2	Average; water bodies available for pumping to fire
	3	Poor; Water Tender shuttles from off-site supplies

IGNITION RISK

Person-Caused Fires

Fire occurrence data was obtained from wildland fire protection agency records listing wildland fire ignition locations for the past 20 years. For each Planning Area, the total number of person-caused fires is divided by the size of the area, in square miles, and then divided by 20 to provide the average number of fires per square mile per year. The full range of this figure among the Planning Areas is divided into 3 equal rating classes.

Lightning-Caused Fires

Fire occurrence data was obtained from wildland fire protection agency records listing wildland fire ignition locations for the past 20 years. For each Planning Area, the total number of lightning-caused fires is divided by the size of the area, in square miles, and then divided by 20 to provide the average number of fires per square mile per year. The full range of this figure among the Planning Areas is divided into 3 equal rating classes.

Rural Fire District response records were not used for this rating component because of the possibility for duplication of fire responses; the Rural Fire Districts and the wildland fire protection agencies are jointly responsible for responding to wildfires in the interface areas.

IGNITION RISK COMPONENT		
Factor	Level	Rating Criteria
Person-Caused Fires	1	Less than 0.05 fires per square mile per year
	2	Between 0.05 and 0.075 fires per square mile per year
	3	More than 0.075 fires per square mile per year
Lightning Fires	1	Less than 0.029 fires per square mile per year
	2	Between 0.029 and 0.05 fires per square mile per year
	3	More than 0.05 fires per square mile per year

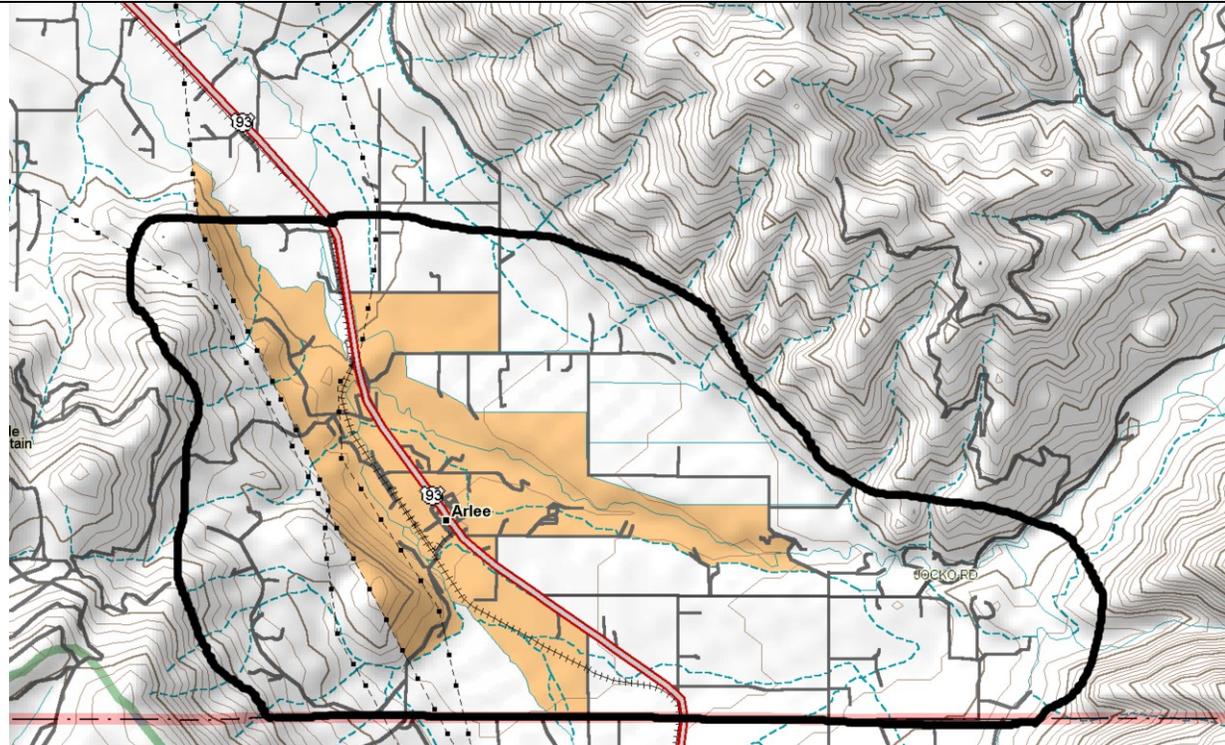
5.6 PLANNING AREA RISK ASSESSMENTS

A Risk Assessment Worksheet has been completed for each of the Planning Areas, using the rating criteria listed above. This section includes the following worksheets, in alphabetical order:

Page 38	Arlee
Page 39	Big Arm/Rocky Point
Page 40	East Shore, North
Page 41	East Shore, South
Page 42	Ferndale/Swan Lake
Page 43	Lake Mary Ronan
Page 44	Mission Front, North
Page 45	Mission Front, South
Page 46	Rollins
Page 47	Salmon Prairie
Page 47	Turtle Lake

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Arlee



GEOGRAPHICAL DESCRIPTION:

Adjacent to southern boundary of Lake County. Includes town of Arlee and mouth of Jocko River. 29 Square Miles.

LOCAL FIRE DEPARTMENT

Arlee Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

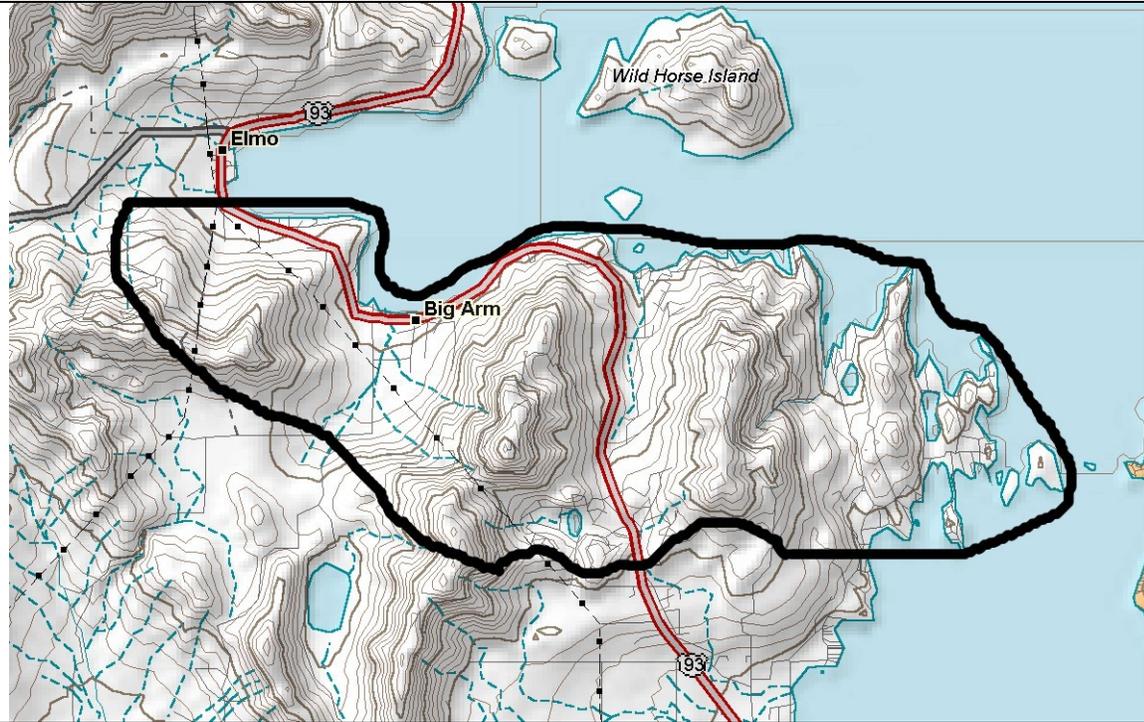
CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	50	(40%)
	Topography	Flat to Gentle slope	1		
	Weather	Average Moisture	2		
	Cond. Class	Class 1; Logged / thinned	1		
	Total:				
Values at Risk	\$ Valuation	\$1.03 mm / Sq. mile	1	44	(20%)
	Density	20.2 Residences / sq. mile	2		
	Other Values	Powerlines	1		
	Total:				
Protection Capability	Response	RFD close; BIA far	2	67	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
	Total:				
Ignition Risk	Man-caused	.063 fires / sq. mile / year	2	83	(10%)
	Lightning	.051 fires / sq. mile / year	3		
	Total:				
COMPOSITE SCORE:					57.2

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Big Arm / Rocky Point



GEOGRAPHICAL DESCRIPTION:

West shore of Flathead Lake. Includes Jette Meadows, Jette Lake, Kings Point, Matterhorn Road, Mellita Island Road. 42 Square Miles. Also some portions of Wild Horse, Cromwell, and Melita Islands.

LOCAL FIRE DEPARTMENT

Polson Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

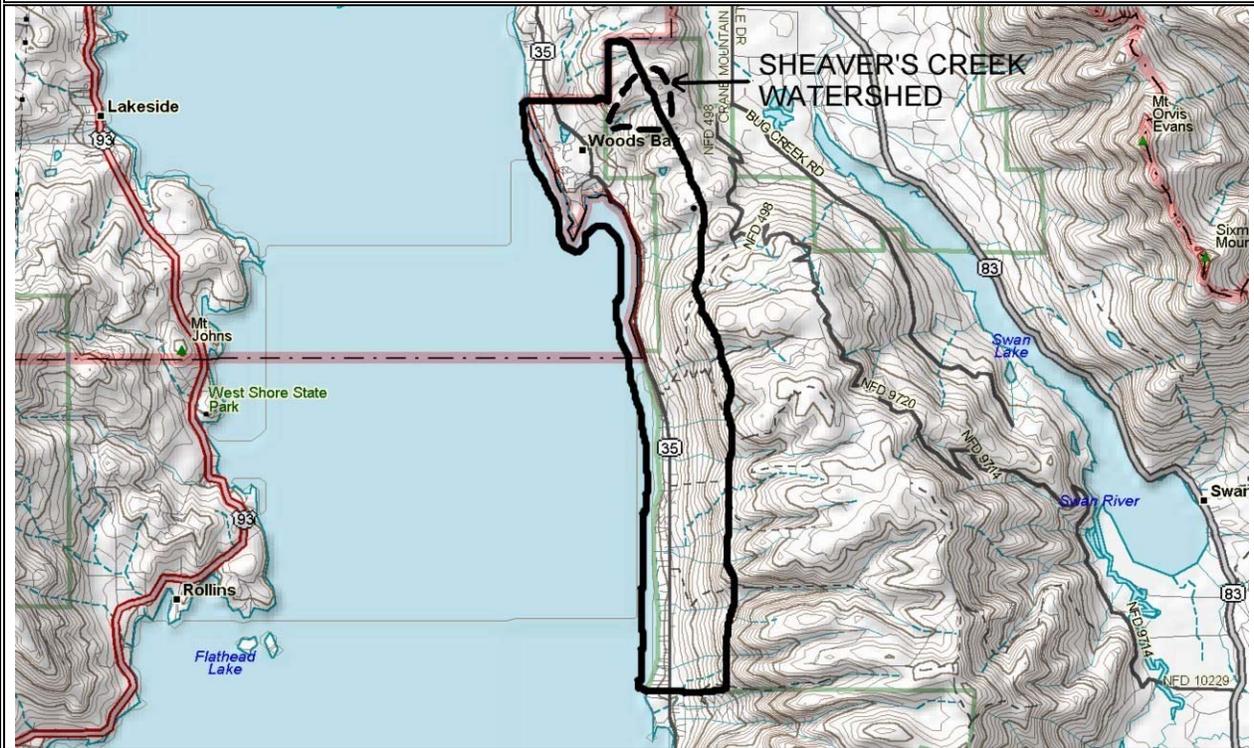
CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 10	3	92	(40%)
	Topography	Hilly terrain	3		
	Weather	Dry	2		
	Cond. Class	Class III; overcrowded w/ brush	3		
Total:			11		37
Values at Risk	\$ Valuation	\$4.12 mm / sq.mile	2	67	(20%)
	Density	26.7 Residences / sq. mile	2		
	Other Values	Recreation / Power Lines	2		
	Total:				
Protection Capability	Response	Average	2	89	(30%)
	Access	Poor; narrow, single-access roads	3		
	Water Sup.	Poor	3		
	Total:				
Ignition Risk	Man-caused	.087 fires / sq. mile / year	3	83	(10%)
	Lightning	.031 fires / sq. mile / year	2		
	Total:				
COMPOSITE SCORE:					85.7

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: East Shore - North



GEOGRAPHICAL DESCRIPTION:

East shore of Flathead Lake / north boundary of Lake County. Includes Woods Bay, Highway 35. Narrow band of housing along Hwy 35 and Flathead Lake. 20 Square Miles. Sheaver's Creek Watershed.

LOCAL FIRE DEPARTMENT

Bigfork Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

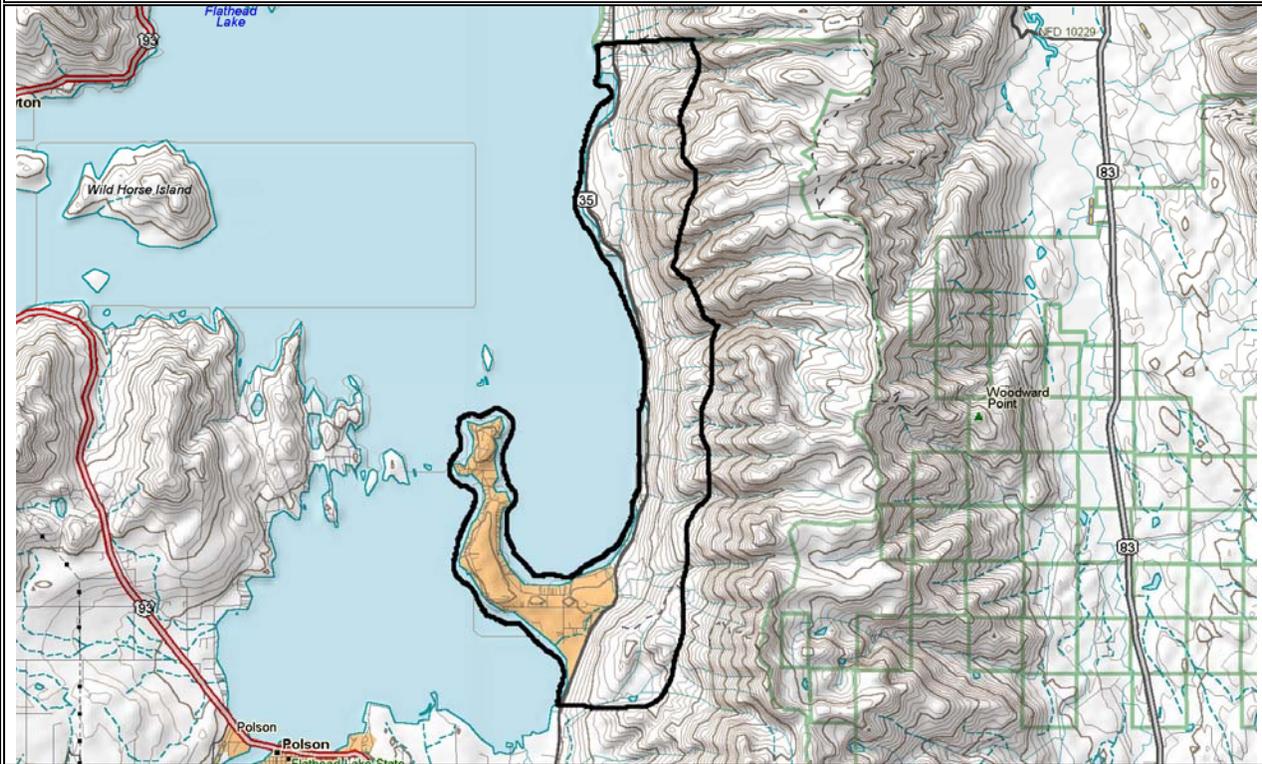
DNRC Kalispell Unit and USFS Flathead NF

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 8	1	67	(40%)
	Topography	Steep slopes, west aspect	3		
	Weather	Average Moisture	2		
	Cond. Class	Class II; Some Regen. & ladder	2		
Total:			8		26.8
Values at Risk	\$ Valuation	\$6.0 mm / sq. mile	3	100	(20%)
	Density	40 Residences / sq. mile	3		
	Other Values	Commercial & recreation; watershed	3		
	Total:				
Protection Capability	Response	Good	1	44	(30%)
	Access	Average	2		
	Water Sup.	Good	1		
	Total:				
Ignition Risk	Man-caused	.025 fires / sq. mile / year	1	33	(10%)
	Lightning	.012 fires / sq. mile / year	1		
	Total:				
COMPOSITE SCORE:					63.3

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: East Shore - South



GEOGRAPHICAL DESCRIPTION:

Southeast shore of Flathead Lake. Includes Finley Point, Yellow Bay, Blue Bay. West-Facing slope of Mission Range. 37 Square Miles.

LOCAL FIRE DEPARTMENT

Finley Point / Yellow Bay Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

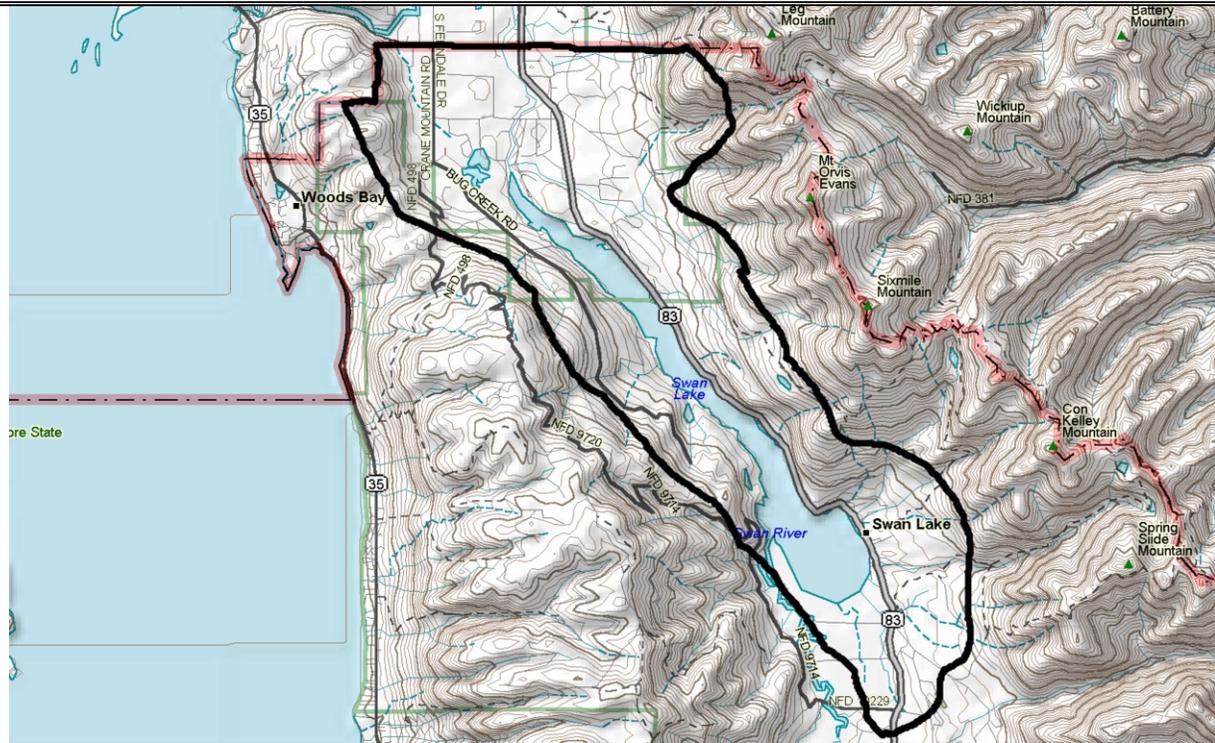
CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 9	2	67	(40%)
	Topography	Flat to Steep, west aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class II; some regen. & Ladder	2		
	Total:				
Values at Risk	\$ Valuation	\$3.42 mm/ sq. mile	2	78	(20%)
	Density	20.6 Residences / sq. mile	2		
	Other Values	Commercial & recreation	3		
	Total:				
Protection Capability	Response	Average	2	56	(30%)
	Access	Average	2		
	Water Sup.	Good	1		
	Total:				
Ignition Risk	Man-caused	.027 fires / sq. mile / year	1	33	(10%)
	Lightning	.016 fires / sq. mile / year	1		
	Total:				
COMPOSITE SCORE:					62.5

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Ferndale / Swan Lake



GEOGRAPHICAL DESCRIPTION:

Ferndale area south, encompassing Swan Lake. Adjacent to north boundary of Lake County. Valley bottom between Mission and Swan ranges. 49 Square miles.

LOCAL FIRE DEPARTMENT

Ferndale and Swan Lake Rural Fire Districts

WILDLAND FIRE PROTECTION AGENCY

DNRC Kalispell Unit and USFS Flathead NF

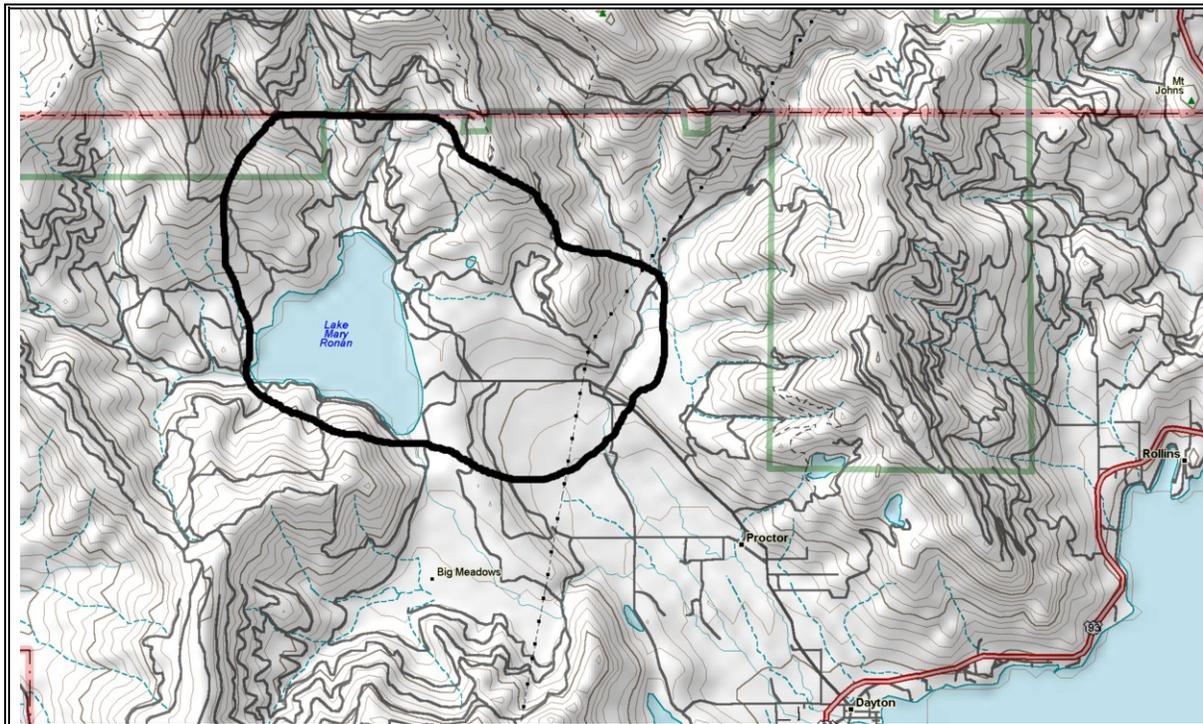
RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 8	1	50	(40%)
	Topography	Residences at Valley bottom	1		
	Weather	Moist	1		
	Cond. Class	Class III; ladder fuels & brush	3		
	Total:				
Values at Risk	\$ Valuation	\$3.12 mm / sq. mile	2	67	(20%)
	Density	17.5 Residences / sq. mile	2		
	Other Values	Recreation / Fishery	2		
	Total:				
Protection Capability	Response	Good	1	44	(30%)
	Access	Good	1		
	Water Sup.	Average	2		
	Total:				
Ignition Risk	Man-caused	.032 Fires / sq. mile / year	1	33	(10%)
	Lightning	.019 fires / sq. mile / year	1		
	Total:				

COMPOSITE SCORE: 49.9

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Lake Mary Ronan



GEOGRAPHICAL DESCRIPTION:

Lake Mary Ronan basin, northwest corner of Lake County. Starts at about Dayton Creek Rd., mm. 4 on Hwy. 352. 14 Square Miles.

LOCAL FIRE DEPARTMENT

Chief Cliff Volunteer Fire Company

WILDLAND FIRE PROTECTION AGENCY

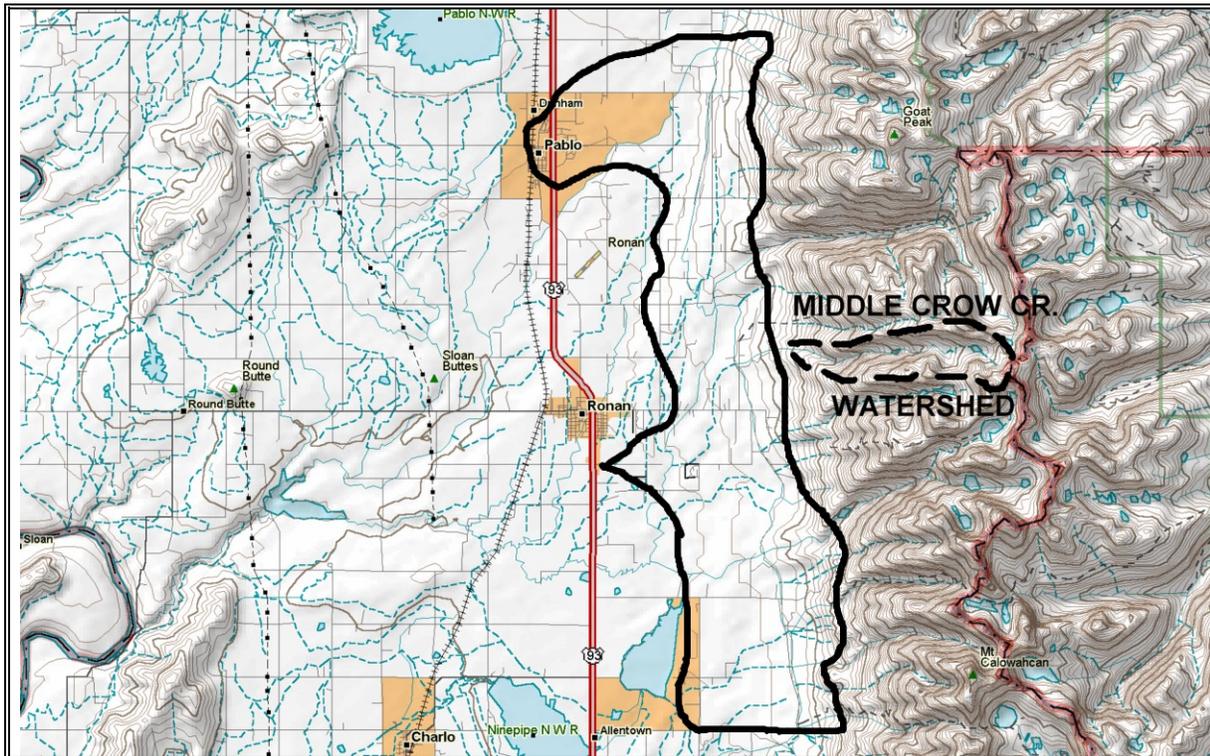
DNRC Kalispell Unit

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 6	3	92	(40%)
	Topography	Some slopes; SW Aspect	2		
	Weather	Dry	3		
	Cond. Class	Class 3; Doug. Fir encroachment	3		
	Total:				
Values at Risk	\$ Valuation	\$0.90 mm / sq. mile	1	44	(20%)
	Density	6.1 residences / sq. mile	1		
	Other Values	Recreation, Power Lines	2		
	Total:				
Protection Capability	Response	RFD Close; DNRC far	3	78	(30%)
	Access	Average	2		
	Water Sup.	Average	2		
	Total:				
Ignition Risk	Man-caused	.044 fires / sq. mile / year	1	50	(10%)
	Lightning	.037 fires / sq. mile / year	2		
	Total:				
COMPOSITE SCORE:					74.2

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Mission Front - North



GEOGRAPHICAL DESCRIPTION:

Lower, west-facing slope of Mission Range from roughly Pablo to Ninepipe area. 50 Square Miles. Middle Crow Creek Watershed supplies Ronan Public Water Supply.

LOCAL FIRE DEPARTMENT

Ronan Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

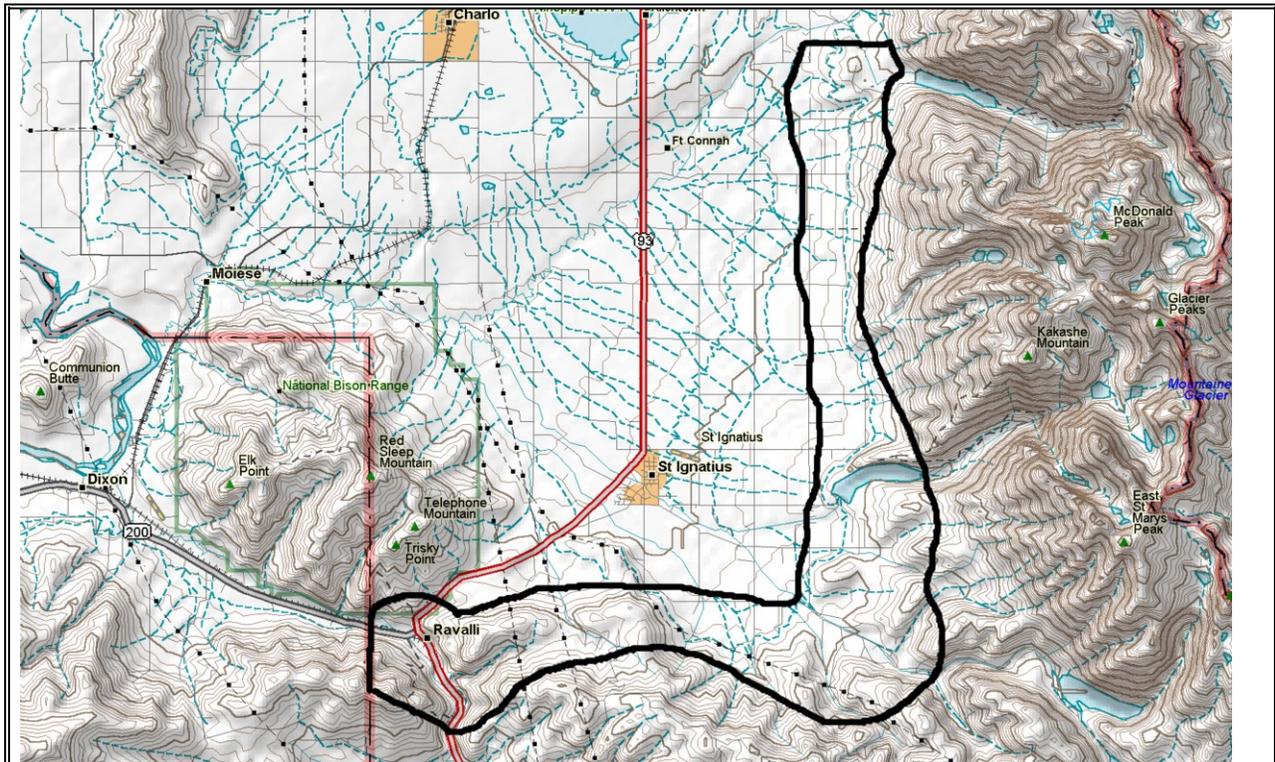
CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	50	(40%)
	Topography	Mostly Flat	1		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Mature, even-aged	1		
	Total:			6	50
Values at Risk	\$ Valuation	\$1.42 mm / sq. mile	1	67	(20%)
	Density	22. 2 Residences / sq. mile	2		
	Other Values	Commercial; Crow Cr. Watershed	3		
	Total:			6	67
Protection Capability	Response	Good	1	56	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
	Total:			5	56
Ignition Risk	Man-caused	.077 fires / sq. mile / year	3	83	(10%)
	Lightning	.031 fires / sq. mile / year	2		
	Total:			5	83
COMPOSITE SCORE:					58.5

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Mission Front - South



GEOGRAPHICAL DESCRIPTION:

Lower, west-facing slope of Mission Range from Ninepipe area to Saint Mary's Lake Road, and west to Ravalli. 37 Square Miles.

LOCAL FIRE DEPARTMENT

St. Ignatius Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

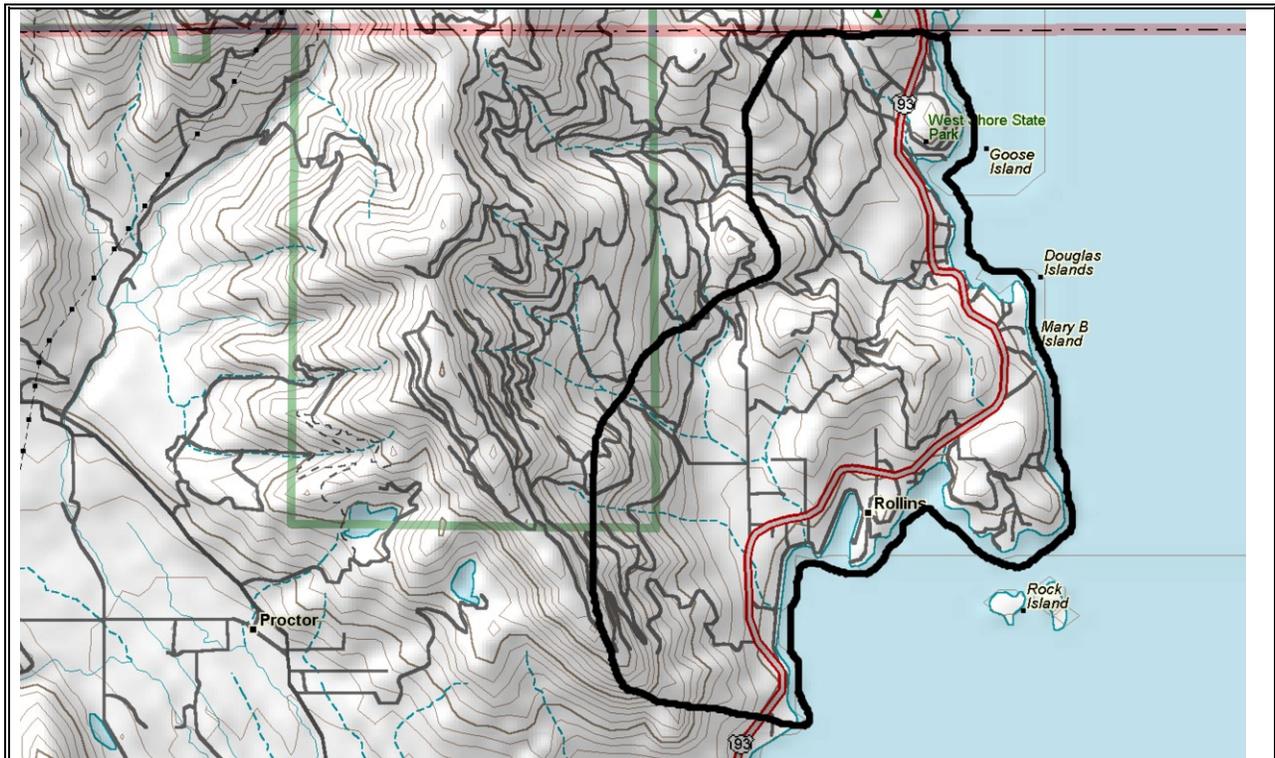
CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	50	(40%)
	Topography	Development mostly on flats	1		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Managed Forest	1		
	Total:				
Values at Risk	\$ Valuation	\$0.44 mm / sq. mile	1	33	(20%)
	Density	5.4 Residences / sq. mile	1		
	Other Values	None	1		
	Total:				
Protection Capability	Response	Average	2	67	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
	Total:				
Ignition Risk	Man-caused	.099 fires / sq. mile / year	3	83	(10%)
	Lightning	.046 fires / sq. mile / year	2		
	Total:				
COMPOSITE SCORE:					55

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Rollins



GEOGRAPHICAL DESCRIPTION:

West Shore of Flathead Lake at northern boundary of Lake County. Includes Rollins, West Shore State Park, Goose Bay. 15 Square Miles.

LOCAL FIRE DEPARTMENT

Rollins Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

DNRC Kalispell Unit

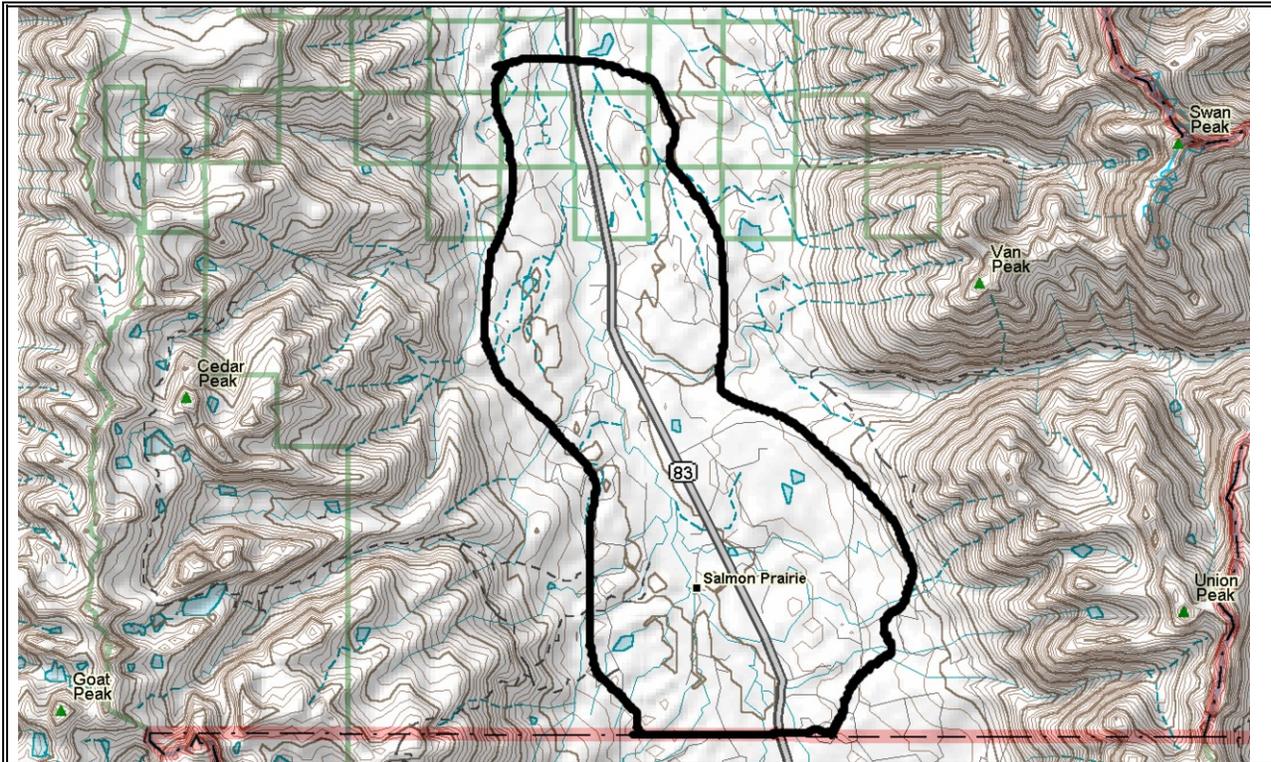
RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Model 9	2	58	(40%)
	Topography	Some slopes; east aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class 1; Managed Stands	1		
Total:			7		23.2
Values at Risk	\$ Valuation	\$4.88 mm / sq. mile	3	67	(20%)
	Density	23.5 residences / sq. mile	2		
	Other Values	None	1		
Total:			6		13.4
Protection Capability	Response	RFD close; DNRC far	2	55	(30%)
	Access	Good	1		
	Water Sup.	Poor on hillsides	2		
Total:			5		16.5
Ignition Risk	Man-caused	.047 fires / sq. mile / year	1	67	(10%)
	Lightning	.054 fires / sq. mile / year	3		
Total:			4		6.7

COMPOSITE SCORE: 59.8

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Salmon Prairie



GEOGRAPHICAL DESCRIPTION:

Swan Valley between Mission and Swan mountain ranges, at southern boundary of Lake County. 28 Square Miles.

LOCAL FIRE DEPARTMENT

Swan Fire Service Area

WILDLAND FIRE PROTECTION AGENCY

DNRC Swan Unit

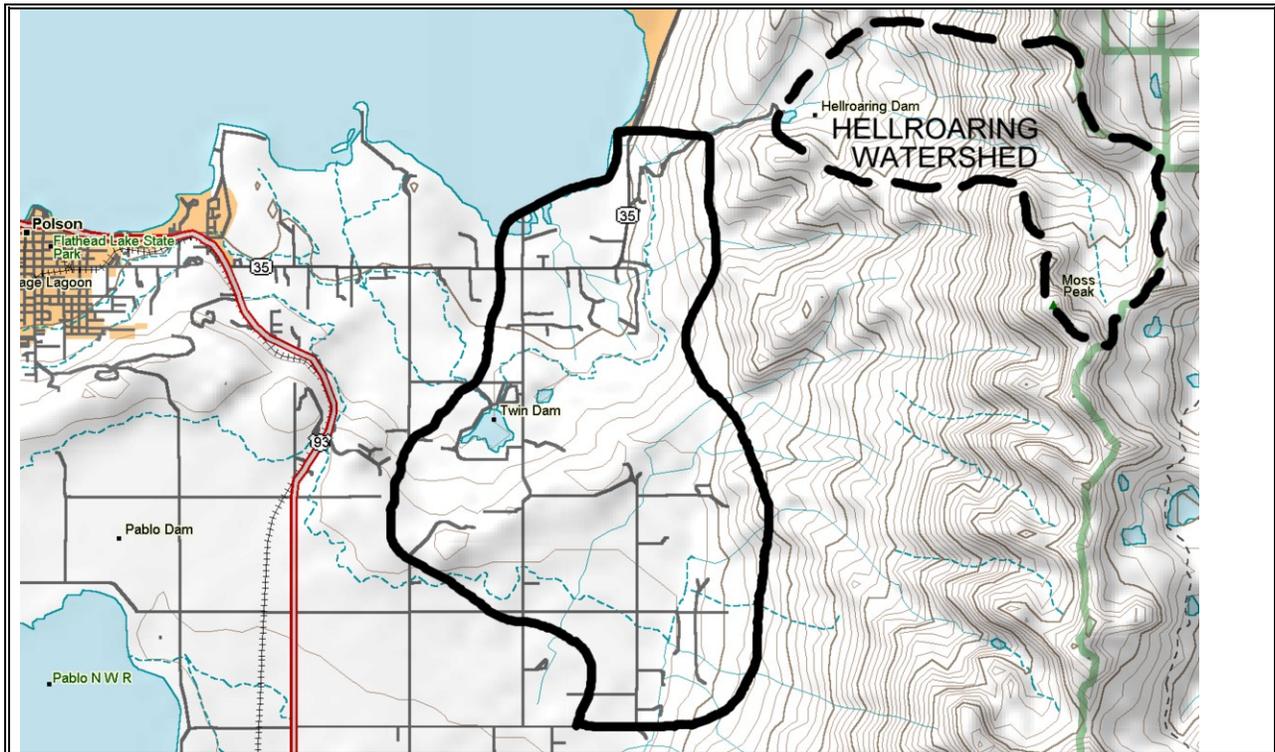
RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 2 & 9	2	58	(40%)
	Topography	Flat	1		
	Weather	Dry	3		
	Cond. Class	Class 1; Managed stands	1		
		Total:	7		23.2
Values at Risk	\$ Valuation	\$0.52 mm / sq. mile	1	44	(20%)
	Density	4.7 Residences / sq. mile	1		
	Other Values	Grizzly Bear Habitat, Bull Trout	2		
			Total:		
Protection Capability	Response	Good	1	55	(30%)
	Access	Good	1		
	Water Sup.	Poor	3		
			Total:		
Ignition Risk	Man-caused	.041 fires / sq. mile / year	1	67	(10%)
	Lightning	.061 fires / sq. mile / year	3		
			Total:		

COMPOSITE SCORE: 55.2

PLANNING AREA RISK ASSESSMENT WORKSHEET

PLANNING AREA: Turtle Lake



GEOGRAPHICAL DESCRIPTION:

Southeast corner of Flathead Lake, south to Pablo area along foothills of Mission Range. 12 Square Miles. Includes Hellroaring Creek Watershed (Polson Public Water Supply; Inactive)

LOCAL FIRE DEPARTMENT

Polson Rural Fire District

WILDLAND FIRE PROTECTION AGENCY

CS&KT Fire Management / BIA

RISK ASSESSMENT SCORING

Component	Scoring Factors	Comments	Risk Level (1-3)	Rough Score (%)	Weighted Score (%)
Hazard	Fuel Type	Fuel Models 8 & 2	1	50	(40%)
	Topography	Some slopes; west & south aspect	2		
	Weather	Average Moisture	2		
	Cond. Class	Class I; Mature, even-aged stands	1		
	Total:				
Values at Risk	\$ Valuation	\$1.12 mm / sq. mile	1	55	(20%)
	Density	23.7 Residences / sq. mile	2		
	Other Values	Municipal Watershed	2		
	Total:				
Protection Capability	Response	Good	1	44	(30%)
	Access	Good	1		
	Water Sup.	Average	2		
	Total:				
Ignition Risk	Man-caused	.084 fires / sq. mile / year	3	100	(10%)
	Lightning	.050 fires / sq. mile / year	3		
	Total:				
COMPOSITE SCORE:					54.2

CHAPTER 6: MITIGATION

Crucial to the implementation of this Community Wildfire Protection Plan (CWPP) will be the identification and implementation of a comprehensive program directed at reducing the potential for loss of lives, property and natural resources in Lake County due to wildfire. This Plan is intended to establish a general system that provides guidance to County officials, fire professionals, and residents in carrying out an effective loss mitigation program.

The strength of the Lake County wildfire loss mitigation plan lies in the reliance on an annual planning process to identify needs and to establish work projects on a continuous, recurring schedule. With ever-increasing population and subsequent land development, priorities for loss prevention work may change from year to year. This document does not propose specific mitigation activities, rather it provides a protocol for planning and a range of alternative solutions for cooperators to utilize in accomplishing long-term goals.

The objectives of this Mitigation Plan are:

- To establish a system for identifying and prioritizing loss mitigation work activities.
- To provide a framework for conducting an ongoing risk reduction program.
- To provide a range of various management tools for accomplishing long-term community protection goals.

6.1 MITIGATION PLANNING PROCESS

The key to an effective loss reduction program is the adoption of an integrated planning process that clearly identifies the steps needed to be taken in order to produce a workable plan. Further, the process should provide continuity and a seamless routine that continues year after year in the pursuit of established goals.

The annual planning process adopted by Lake County relies heavily on the involvement of all stakeholders with an interest in wildfire-related matters in the County. Collaboration in this effort will involve the State and Federal Wildland Fire Protection Agencies, the County office of Emergency Management, the Lake County Commissioners, the Confederated Salish and Kootenai Tribes, and the Rural Fire Districts of the County. In addition, and most importantly, the citizens of Lake County will be involved through extensive outreach/education programs as well as through regular public meetings held to present mitigation program details and to solicit comments.

Responsibility for managing the mitigation planning process lies with the Lake County Hazardous Fuels Coordinator position, which is under the supervision of the County Emergency Service Director. The Coordinator will receive direction and guidance from the Hazardous Fuels Advisory Committee, and the Local Emergency Planning Committee (LEPC).

Efforts will be made to ensure that Lake County's risk mitigation program activities are coordinated with similar work being planned in adjacent counties and other planning jurisdictions. The Seeley-Swan Fire Plan, completed in 2004, covers a portion of Lake County in the Swan River area. One of the goals of that plan is to complete hazardous fuels reduction work on 10% of lands in the planning area classified as "High-Risk", annually. The Lake County Hazardous Fuels Coordinator will work with the Swan Ecosystem Center to ensure that

mitigation work conducted under the two fire protection plans is completed in a cost-effective and mutually beneficial manner.

The net result of the planning process is the development and approval of an Annual Operating Plan, or Action Plan, that follows a general format provided for in this document. Besides serving as an annual update to the main plan, the operating plan will be used to provide a means of documenting plan activities, identification of emerging issues, evaluation of past work projects, and to establish an annual work plan based on priorities set by involved stakeholders. As a County-wide planning effort, the Annual Operating Plan must be approved by the County Commissioners, or their designee, as well as by all other governmental agencies involved with wildfire management in the County.

PRIORITIZING MITIGATION WORK

The Healthy Forests Restoration Act’s provision for Community Wildfire Protection Plans (CWPP) requires that communities identify and prioritize hazardous fuels treatments as part of the planning process. Currently, the Lake County Community Wildfire Plan risk assessment methodology provides a foundation for assessing hazards and risk. Priorities for selecting mitigation work projects will be determined on an annual basis, through consensus of the parties involved in the planning process.

The previous chapter of this Plan provided an assessment of the potential for wildfire loss to identified Wildland-Urban Interface areas in the County. The risk assessments were made based on the conditions existing during 2004, thus, the relative ranking of the Planning Areas in terms of risk level are made in light of those conditions. However, the components of wildfire risk and the preparedness of the county’s resources are not static. It will be necessary to fine-tune this plan’s recommendations annually to adjust for changes in the components of risk, population density, infrastructure modifications, and other factors. The following table summarizes the Planning Area risk assessments, and ranks them from highest to lowest relative level of risk.

PLANNING AREA RISK ASSESSMENT SUMMARY					
NAME	WEIGHTED COMPONENT SCORES				COMPOSITE SCORE
	Hazard	Values	Protection	Fire Risk	
Big Arm / Rocky Point	37	13.4	27	8.3	85.7
Lake Mary Ronan	37	8.8	23.4	5	74.2
East Shore – North	26.8	20	13.2	3.3	63.3
East Shore – South	26.8	15.6	16.8	3.3	62.5
Rollins	23.2	13.4	16.5	6.7	59.8
Mission Front- North	20	13.4	16.8	8.3	58.5
Arlee	20	8.8	20.1	8.3	57.2
Salmon Prairie	23.2	8.8	16.5	6.7	55.2
Mission Front - South	20	6.6	20.1	8.3	55
Turtle Lake	20	11	13.2	10	54.2
Ferndale/Swan Lake	20	13.4	13.2	3.3	49.9

The Risk Assessment is only one of the many criteria that could be used to set priorities for mitigation work activities, and should not be interpreted as a rigid, sequential schedule for accomplishment of the overall risk reduction program. Other factors must also be considered during the planning cycle to ensure that only the most worthwhile and cost-effective projects are undertaken. Priorities will be assigned to projects that provide the greatest benefits to communities within the Wildland-Urban Interface, or secondarily, to surrounding landscapes. Risk reduction projects will initially be targeted at areas with residential development, and then moving farther out into adjacent forested lands.

Alternative methods of setting priorities may be practical in many circumstances, upon agreement by the Fuels Reduction Advisory Committee. An example of this would be a situation where an opportunity exists to conduct cooperative fuel reduction activities in a low-ranking Planning Area adjacent to Federal, State or Tribal lands on which similar projects are being planned. Other factors to consider when setting work priorities include community interest, special properties needing protection, willingness of private landowners, and extraordinary events that may present special risk concerns. Emergent dead fuel accumulations resulting from insect and disease infestations, or localized weather-related events such as wind and ice storms may necessitate high priority fuels reduction work in a given year.

Initially, it may also be preferable to identify mitigation projects in an informal manner. Individual fire chiefs with responsibilities for interface area fire protection, in conjunction with wildland agency personnel, could each select one or two high priority units within their respective Planning Areas for demonstration projects. The list of proposed projects could then be narrowed down based on priorities indicated by the Planning Area Risk Assessment system, depending on funding limitations.

Two other important factors that must be taken into consideration when setting priorities for mitigation activities are: 1.) Public input and 2.) Coordination with other planning efforts. The success of any risk reduction strategy hinges upon the full cooperation and participation of landowners and residents. The public will be kept apprised on the status of the mitigation planning process, and input will be sought through informational press releases and public meetings. Contact with representatives from adjacent counties should be maintained to coordinate projects across county lines, where appropriate. The 2004 Seeley-Swan Fire Plan covers a small portion of Lake County in the Swan Valley, and separately makes recommendations for hazardous fuel treatment work.

ESTABLISHING WORK UNITS

Planning Areas will be further subdivided into smaller-scale "Work Units" during the annual planning process. Representatives from the County (Fuels Reduction Coordinator), the responsible Wildland Fire Protection Agency, and the local Fire District will work to identify subdivisions, neighborhoods, or housing clusters for targeting annual work projects. Work Units should be established based on a variety of criteria such as neighborhood / community identity, fuel hazard characteristics, administrative efficiencies (i.e.: fuels reduction contract administration), and expressed interest in mitigation efforts by residents. The size of the Work Units is variable, and should be based in part on criteria such as the number of concurrently open fuels treatment contracts that would be anticipated.

Breaking the Planning Areas down into sub-units enables fire management personnel to effectively perform a more intensive, site-specific risk analysis of high priority areas. As part of

the annual planning process, selected Work Units should be identified for conducting a house-by-house, or street-by-street risk assessment of Structural Vulnerability to wildfire loss. The Montana Risk Rating System, developed by the Department of Natural Resources, is an effective tool for determining which properties are at greatest risk within the Work Unit, and thus prioritized for any available mitigation work. The Risk Rating System may also be used at the subdivision level for setting priorities between Work Units within a particular Planning Area. Another risk rating system which may be utilized is provided for in NFPA 1144, "Standard for Protection of Life and Property from Wildfire", published by the National Fire Protection Association. It would be beneficial if this site-specific work is conducted (or directed) jointly by representatives from the responsible fire district, the wildland fire agency and the County (Fuels Reduction Coordinator).

IDENTIFYING SPECIFIC MITIGATION ACTIVITIES

Once the areas are identified that are most in need of loss prevention efforts, the planning group shall determine the most appropriate means for accomplishing the needed work. Strategies should be developed to address specific needs, using a variety of "tools" available to emergency management personnel. A number of these tools are listed in the "Mitigation Strategies" section of this chapter.

An important factor to consider when setting up mitigation work projects is the evaluation of past efforts. As part of the annual planning process, the Hazardous Fuels Advisory Committee will review the previous year's work projects and determine what, if any, changes should be made in methods and practices. Documentation of these issues will be included in the Annual Operating Plan, along with a detailed listing of proposed mitigation activities for the coming work season.

Since there are many land management agencies and hundreds of private landowners in Lake County, it is reasonable to expect that differing levels of participation will be experienced and varying degrees of accomplishment will be attained. A summary of the past year's accomplishments will also be included in the Annual Operating Plan.

ANNUAL PLANNING SCHEDULE

SEASON	PLANNING ACTIVITIES
Fall	First Planning meeting to be held at the conclusion of fire season. Review past season's mitigation work, fire occurrences, effectiveness of mitigation work, new housing developments, etc. Western States Grant Application Due (possibly others) Set objectives for the next Annual Operating Plan
Winter	Meet every two months to identify mitigation projects and set priorities Conduct public meetings regarding mitigation planning ; seek input Work with State, Federal and Tribal agencies to develop cooperative projects
Spring	Write specifications / prescriptions for fuels treatment projects Compile current list of private contractors qualified for performing mitigation work Update fire district/agency contact and equipment lists Submit Annual Operating Plan for approval by May 1
Summer	Implement hazardous fuels treatment work projects Conduct any risk rating or site-specific risk assessment projects planned Conduct fire prevention and homeowner awareness activities

6.2 MITIGATION STRATEGIES

As part of the implementation of this Community Wildfire Protection Plan, a variety of mitigation activities may be undertaken to reduce the potential for loss due to wildfire in the Wildland-Urban Interface areas of Lake County. The following mitigation strategies represent just a few of the tools available to the fire management community for achieving risk reduction goals; this list is not exclusive, and other appropriate mitigation activities should be identified and added to the “toolbox” for use in addressing specific needs.

Hazardous fuel reduction

Reducing hazardous fuels around homes, along transportation corridors and at a landscape-scale can significantly minimize losses to life, property and natural resources from wildfire. A core focus of mitigation strategies is to protect communities through the management of forest fuels occurring within and adjacent to wildland-urban interface areas. Removal of unnatural accumulations of dead and live vegetative matter, resulting from decades of effective fire suppression, will lead to reduced fire intensities while restoring fire-adapted ecosystems towards more natural conditions.

Research using modeling, experiments, and wildland urban interface case studies indicates that home ignitability during wildland fires depends on the characteristics of the home and its immediate surroundings. These findings have implications for hazard assessment and risk

mapping, effective mitigations, and identification of appropriate responsibility for reducing the potential for home loss caused by Wildland-urban interface fires. Wildland-urban ignition research indicates that a home's characteristics and the area immediately surrounding a home within 100 to 200 feet principally determine a home's ignition potential during a severe wildland fire. Jack Cohen with the Forest Service Rocky Mountain Research Station refers to this area that includes a home and its immediate surroundings as the *home ignition zone*.

There are many different options for the treatment of hazardous fuels in and around the wildland-urban interface, and different methods for conducting the work. These include thinning, trimming, commercial logging, on-site chipping, and prescribed burning. Given the wide variety in combinations of vegetation types, stand characteristics and topography, there is no single prescription for how to treat hazardous fuels. In general thinning tree density to so there is optimally 10 foot spacing between crowns, removal of lower branches to 12 feet above ground level (or one third the height of the tree) and removal of brush and other dead and down material is appropriate in the home ignition zone. Whatever the treatment method selected, disposition of the materials removed must also be addressed.

Treatment strategies can occur at multiple scales.

- Defensible space around individual homes
- Fuels reduction at the neighborhood, or subdivision level
- Thinning and biomass removal in the landscape adjacent to WUI communities
- Creation of fuel breaks or greenbelts to help limit wildfire intensity and rate of spread

Some additional factors that should be taken into consideration once an area has been prioritized for treatment dollars are :

- Predominate wind direction during high fire danger days
- Steepness of slope and aspect orientation of landscape in relation to wind flows and neighborhood location
- Type of fire behavior expected at treatment area, during average worst case conditions
- Access to areas best suited for treatment
- Neighbor cooperation in areas best suited for treatment
- Proximity to State, Federal, or Tribal lands that could be treated
- Willingness of landowners to make efforts on their own properties
- Organized groups of neighbors interested in neighborhood projects

The Annual Operating Plan shall provide a prioritized listing of Work Units proposed for hazardous fuels reduction projects, as well as the type and method of treatment.

Strategies to reduce structural ignitability

Structural ignitability, defined as the home and its immediate surroundings, separates the Wildland- Urban Interface (WUI) structure fire loss problem from other landscape-scale fire management issues. Highly ignitable homes can be destroyed during lower-intensity wildfires, whereas homes with low home ignitability can survive high- intensity wildfires.

Structural ignitability, rather than wildland fuels, is the principal cause of structural losses during wildland/urban interface fires. Key items are flammable roofing materials (e.g. cedar shingles)

and the presence of burnable vegetation (e.g. ornamental trees, shrubs, wood piles) immediately adjacent to homes, open wooden decks and porches, uncovered eaves, and unprotected openings in the structure.

The Annual Operating Plan will outline the efforts to be undertaken by fire management personnel each year in conducting public education campaigns directed at informing homeowners on how to reduce structural ignitability. In addition to general, county-wide efforts, high priority Work Units or entire Planning Areas will be targeted for intensive outreach programs that include neighborhood meetings or door-to-door contacts with residents.

There is a wide variety of informational materials available from state, federal and non-profit sources that can be purchased and distributed for this purpose. A listing of representative materials is included in Appendix B of this plan.

Regulatory Issues

Lake County has been one of the fastest growing regions in Montana over the past decade, and there is no indication that the trend will slow down. More and more housing developments are being constructed in the interface areas, leading to an increased potential for loss. Wildfire mitigation efforts must be supported by a set of policies and regulations at the county level that maintain a solid foundation for public and firefighter safety.

Those involved in the community protection planning effort should work with the County governing body as well as the planning department to evaluate the existing regulatory structure, and to make recommendations for any needed changes. For example, they may choose to consider and develop policy to address construction materials for homes and businesses located in high wildfire risk areas. Specifically, a county policy may be warranted concerning wooden roofing materials and flammable siding on new structures, especially where juxtaposed near heavy wildland fuels.

The subdivision review process provides a valuable opportunity for fire management officials to provide input on planned developments. The process should be reviewed to ensure the application of standard road widths and building regulations to ensure new houses can be protected while minimizing risks to firefighters and residents. Consideration should be given to defensible space, emergency access, evacuation routes, water supply, signage, utilities, driveway configuration, and vegetation management along roads.

Fire Prevention activities

Fire prevention involves education, enforcement and engineering programs directed at minimizing the risk from human-caused wildfires. Fire management agencies are involved with a number of programs related to fire prevention in a multi-jurisdictional manner. Opportunities exist for achieving more efficient delivery of fire prevention messages through coordination with the community fire loss mitigation planning effort. The Annual Operating Plan associated with this document, or the County Cooperative Action Plan (DNRC) should identify planned county-wide fire prevention activities, and the method of implementation.

Effective public outreach programs are crucial to the successful implementation of this community fire protection plan. Much of the subject matter related to wildfire risk reduction is of a relatively complex nature, and technical expertise needs to be developed. Annual planning efforts will identify any needs for providing training to individuals involved with the delivery of fire

prevention messages. The participating agencies should coordinate and share resources to produce a quality educational fire prevention program for the Wildland-Urban Interface homeowners in Lake County.

Fire response / emergency preparedness

The Lake County Fire Association has been very successful in developing policies and practices for ensuring close cooperation among emergency responders during wildfire events. The annual planning process provides a valuable mechanism for fire agencies to review fire occurrences and to identify changes or improvements needed to minimize the potential for structural losses due to wildfires. Recommendations for needed equipment, training, facilities and communications infrastructure should be addressed in the Annual Operating Plan.

High priority Planning Areas or Work Units identified in the planning process should be targeted for site-specific emergency planning efforts, and identified in the Annual Operating Plan. Fire chiefs, working in conjunction with County and wildland protection agency officials, should address issues such as evacuation plans, emergency access routes, water supply points, heavy fuels concentrations, staging area locations, critical protection sites, firefighter safety, hazardous materials, and strategic containment lines.

Evaluation and analysis of pre-attack planning criteria often helps to identify critical infrastructure elements that are in need of improvement. Depending on priorities, mitigation funding may be sought for the upgrading of bridges, roadways, water supplies or communications equipment needed for the enhanced protection of life and property.

Biomass / small diameter wood utilization

After the removal of merchantable timber, hazardous fuels reduction projects often result in a large quantity of forest materials left on site that need to be disposed of, often through burning or chipping. Burning of the slash may contribute to air quality degradation, as well as posing a risk factor from escaped burns. On-site chipping is an attractive alternative, however the expense may increase treatment costs substantially. A number of communities have purchased, or leased, chipping equipment that is loaned out to residents, or the chipping service may be provided by local non-profit groups.

The amount of residue can be reduced, and income may be generated, by identifying a local market for the small diameter woody materials. This issue should be investigated further by the planning group in a cooperative effort with county or regional economic development personnel.

6.3 FUNDING

Financial resources that can provide support for various wildland fire mitigation activities include various State and Federal grants administered through the Montana Department of Natural Resources, the US Department of the Interior, Bureau of Indian Affairs, the Natural Resource Conservation Service, and the Federal Emergency Management Agency. Specific grant programs include:

- Western States Wildland Urban Interface Grant
- National Fire Plan Community Assistance Program
- FEMA Hazard Mitigation Grant Program
- Environmental Quality Incentive Program (EQIP; NRCS)

Most of the Federal grant programs for hazardous fuels reduction work require a certain percentage of cost-sharing by the entity receiving the grant. The cost-share proportion can often be either in the form of “in-kind” services, or monetary. Lake County’s Hazardous Fuels Advisory Committee, and the Hazardous Fuels Coordinator, will oversee County-wide grant administration and will determine appropriate sources for matching cost-share requirements.

Grant applications may require submission of a copy of the applicant’s hazardous fuels mitigation plan that include a description of the “types and methods” of treatments proposed, as well as other criteria such as a prioritization process. Since the present Lake County Community Wildfire Protection Plan is comprised of two components, submittal for purposes of grant application will require that copies of the Annual Operating Plans be included as attachments to the main Plan document.

CHAPTER 7: MONITORING AND EVALUATION

Maintenance of this Community Wildfire Protection Plan is ensured through the adoption of its provisions for a continuing planning process; a process which relies on the completion of an Annual Operating Plan. When the plan is fully implemented, a recurring annual schedule of planning activities is undertaken that requires cooperators to continuously monitor and evaluate the plan's effectiveness.

The Lake County Hazardous Fuels Advisory Committee will oversee management of the planning process, and may delegate executive authority to the Hazardous Fuels Coordinator position. The Annual Operating Plan will be used to document activities carried out under this plan, and as such should be reviewed and authorized each year by governing officials and agency line officers (or their designated representatives).

This Community Wildfire Protection Plan should be re-evaluated and updated no later than the fifth year after it's adoption, and every five years thereafter. Amendments to the plan may be incorporated during the annual planning process, and will be documented in the Annual Operating Plan.

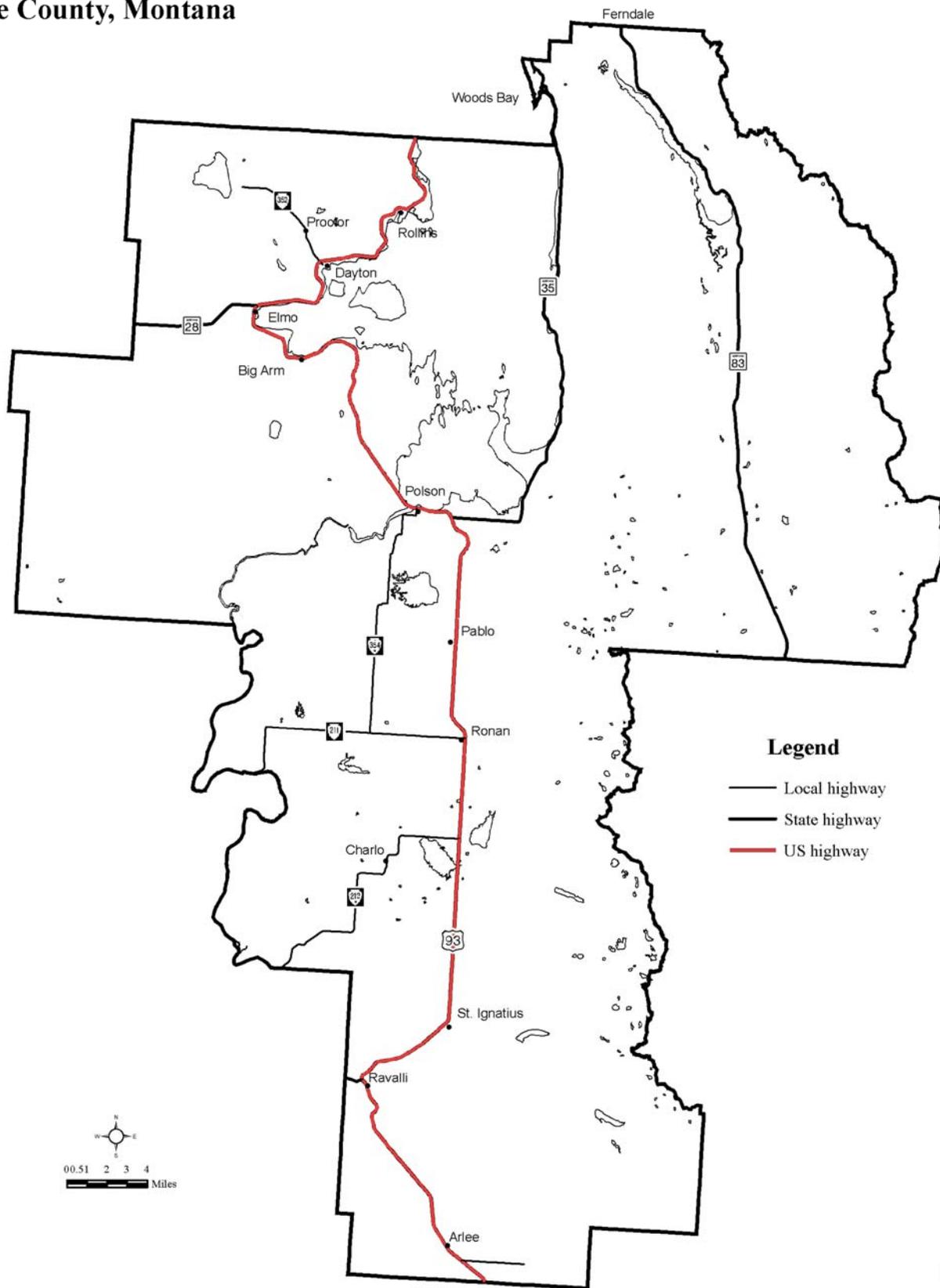
7.1 ANNUAL OPERATING PLAN OUTLINE

1. TITLE
2. DATE OF COMPLETION
3. REVIEW OF THE PAST YEAR'S ACTIVITIES
 - WILDFIRE LOSS MITIGATION PROJECTS
 - OTHER ACCOMPLISHMENTS
 - WILDFIRE OCCURRENCES
 - EFFECTIVENESS OF PAST MITIGATION EFFORTS
4. DISCUSSION OF EMERGING ISSUES / CHANGING CONDITIONS
5. MITIGATION OBJECTIVES
6. IDENTIFY PRIORITIES FOR MITIGATION WORK
7. WORK PLAN
 - HAZARDOUS FUELS TREATMENTS
 - REDUCING STRUCTURAL IGNITABILITY
 - FIRE PREVENTION
 - FIRE RESPONSE / EMERGENCY PREPAREDNESS
 - BIOMASS / SMALL DIAMETER WOOD UTILIZATION
 - COMMUNITY AWARENESS
8. DOCUMENTATION OF PLANNING ACTIVITIES
 - FIRE PLAN STEERING COMMITTEE
 - PUBLIC MEETINGS
9. APPROVALS

APPENDIX A - MAPS

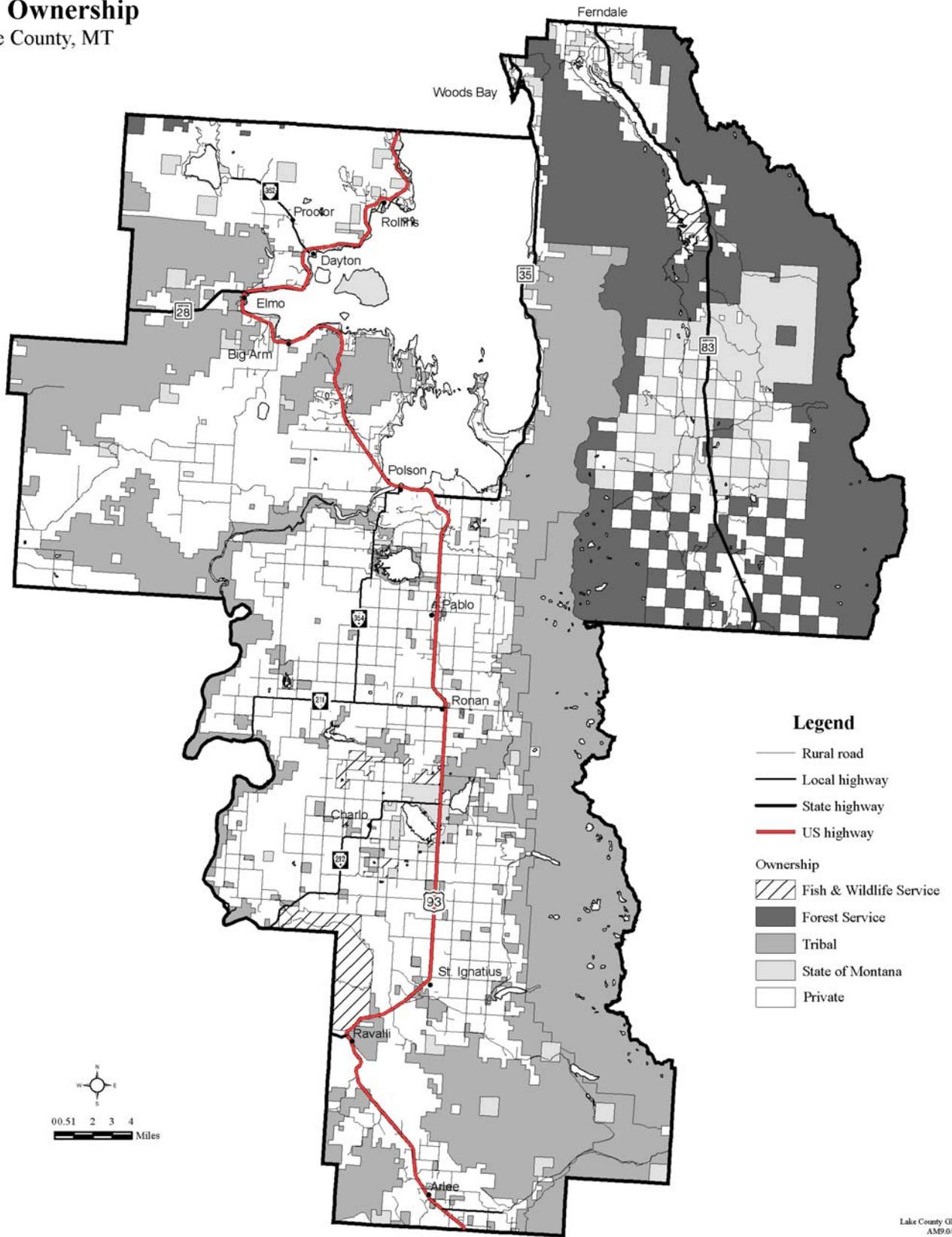
MAP #1	Lake County Base Map	pg. 60
MAP #2	Land Ownership	pg. 61
MAP #3	Wildland Fire Protection	pg. 62
MAP #4	Fire Districts	pg. 63
MAP #5	Wildland Fire Occurrence	pg. 64
MAP #6	Forest Land Cover	pg. 65
MAP #7	Residential Density	pg. 66
MAP #8	Residential Density in Forested Areas	pg. 67
MAP #9	Wildland-Urban Interface Planning Areas	pg. 68

Lake County, Montana



Land Ownership

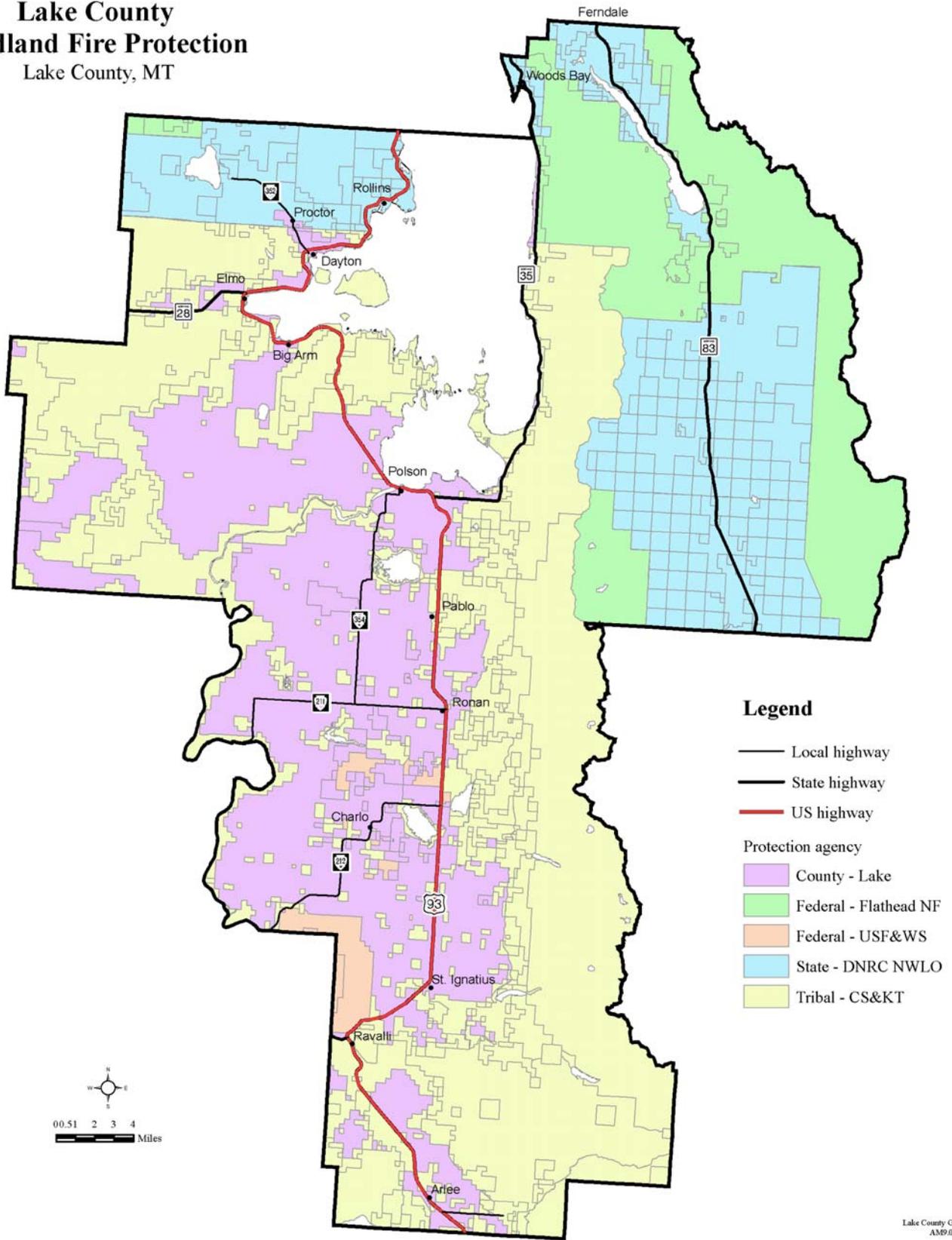
Lake County, MT



Lake County GIS Dept.
 AM9 0 Fireplan
 11/3/04

Lake County Wildland Fire Protection

Lake County, MT

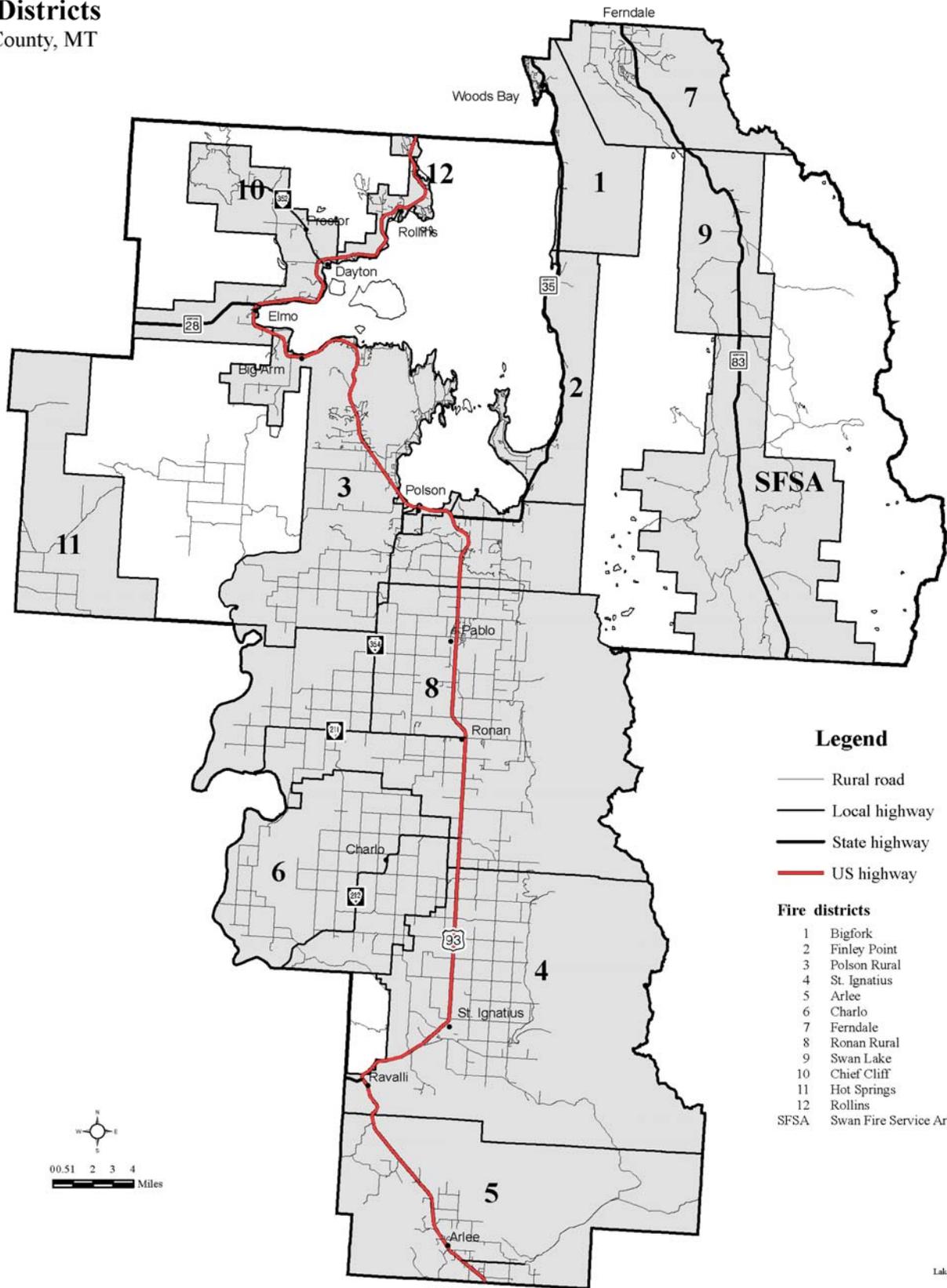


Legend

- Local highway
- State highway
- US highway
- Protection agency
 - County - Lake
 - Federal - Flathead NF
 - Federal - USF&WS
 - State - DNRC NWLO
 - Tribal - CS&KT

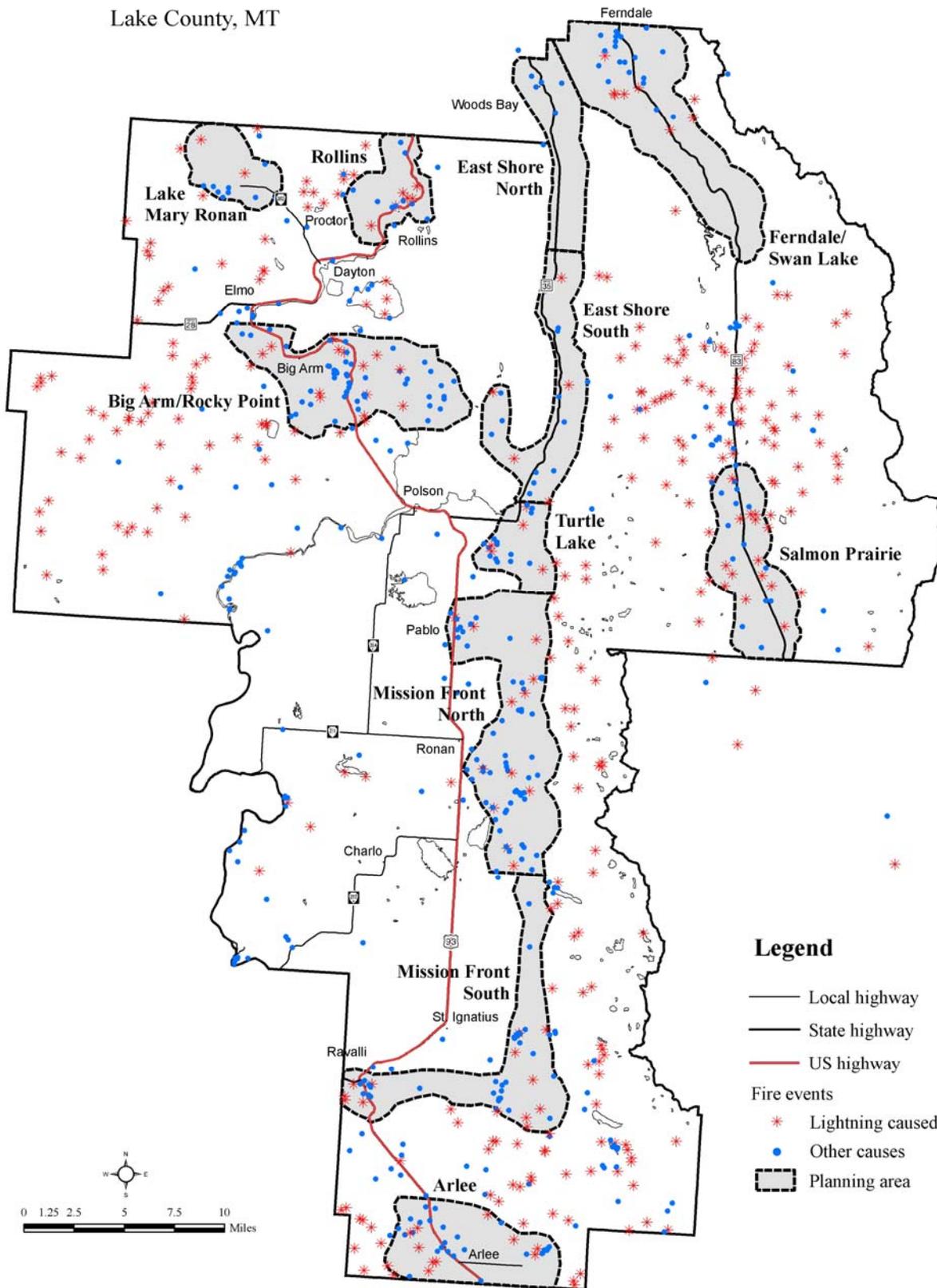
Lake County GIS Dept.
AMP/0/fireplan
11/1/04

Fire Districts
Lake County, MT



Lake County GIS Dept.
AMP/0/fireplan
11/3/04

Wildland Fire Occurrence 1983 - 2003 Lake County, MT



Legend

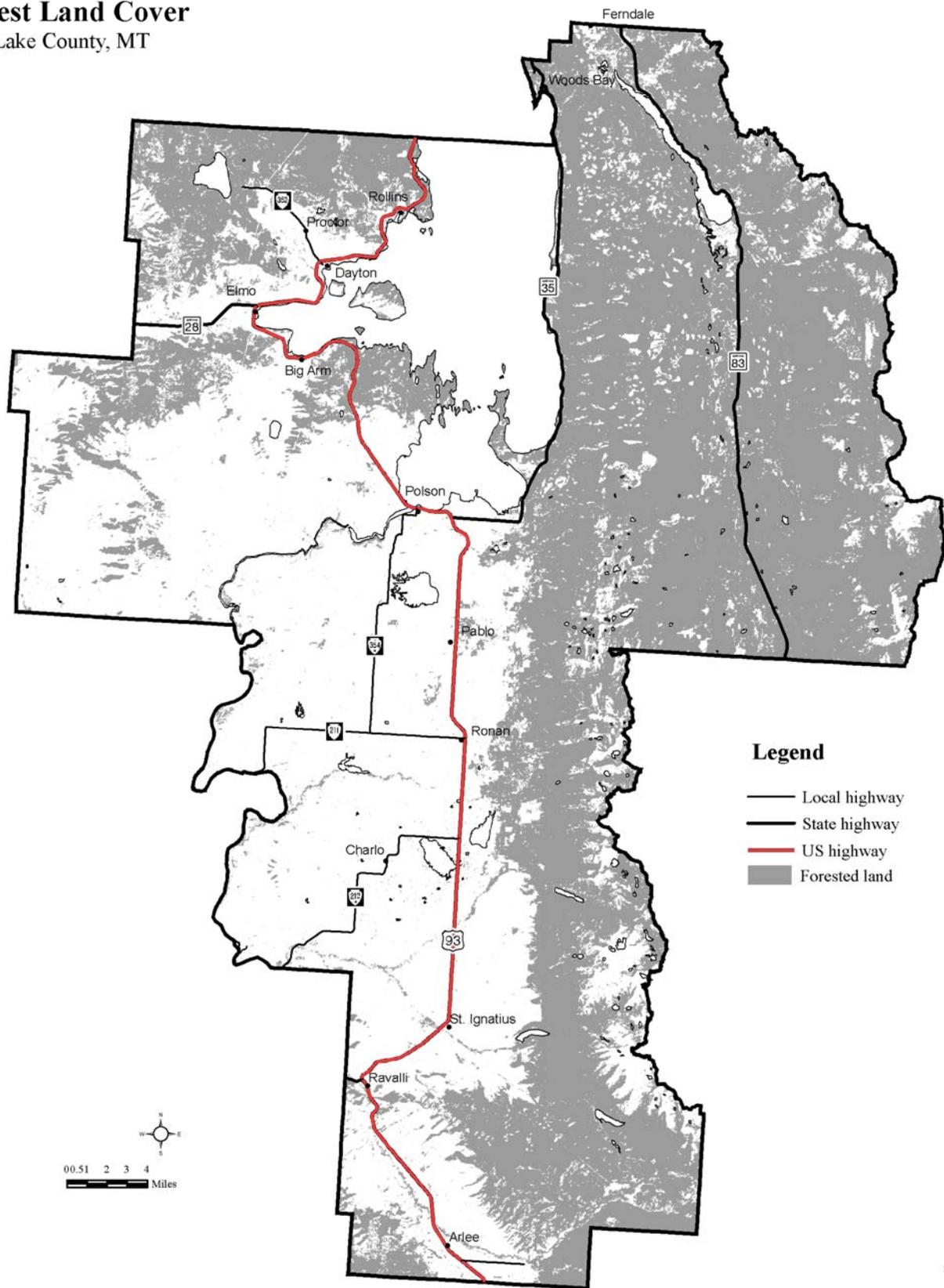
- Local highway
- State highway
- US highway

Fire events

- * Lightning caused
- Other causes
- ▭ Planning area

Forest Land Cover

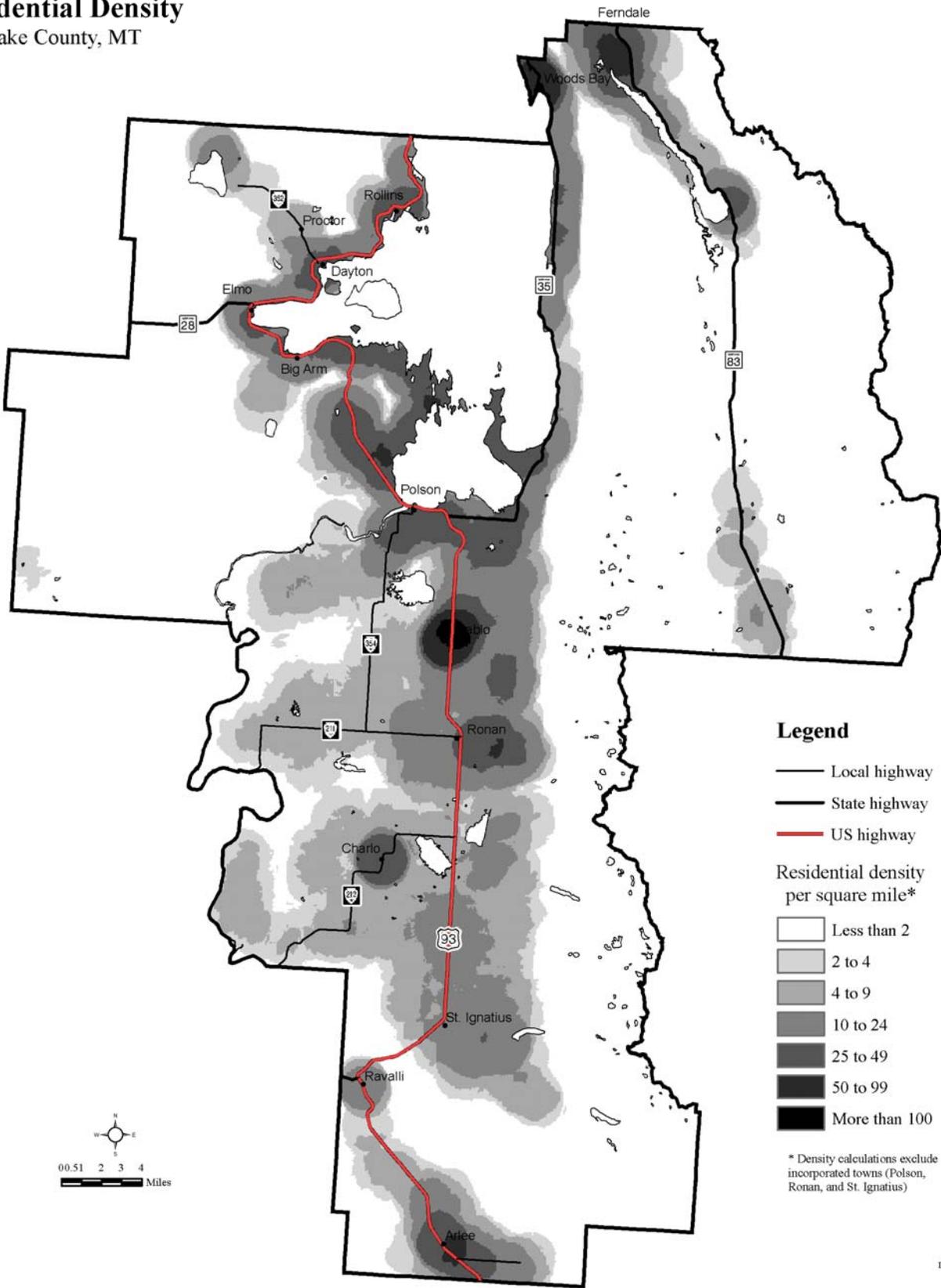
Lake County, MT



Lake County GIS Dept.
AM9.0/fireplan
9/7/04

Residential Density

Lake County, MT



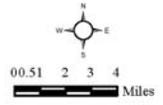
Legend

- Local highway
- State highway
- US highway

Residential density per square mile*

- Less than 2
- 2 to 4
- 4 to 9
- 10 to 24
- 25 to 49
- 50 to 99
- More than 100

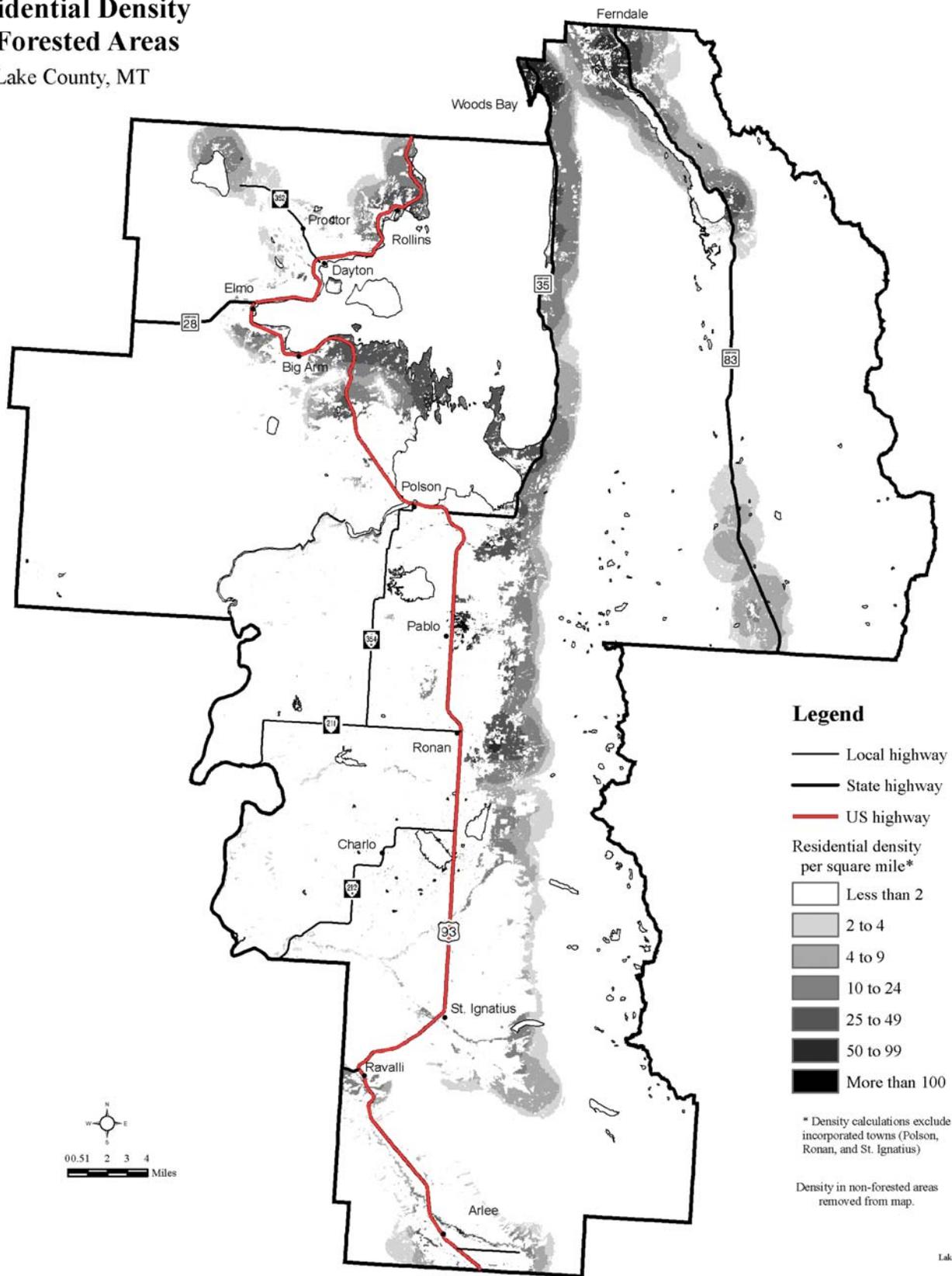
* Density calculations exclude incorporated towns (Polson, Ronan, and St. Ignatius)



Lake County GIS Dept.
AMB/0/breplan
9/7/04

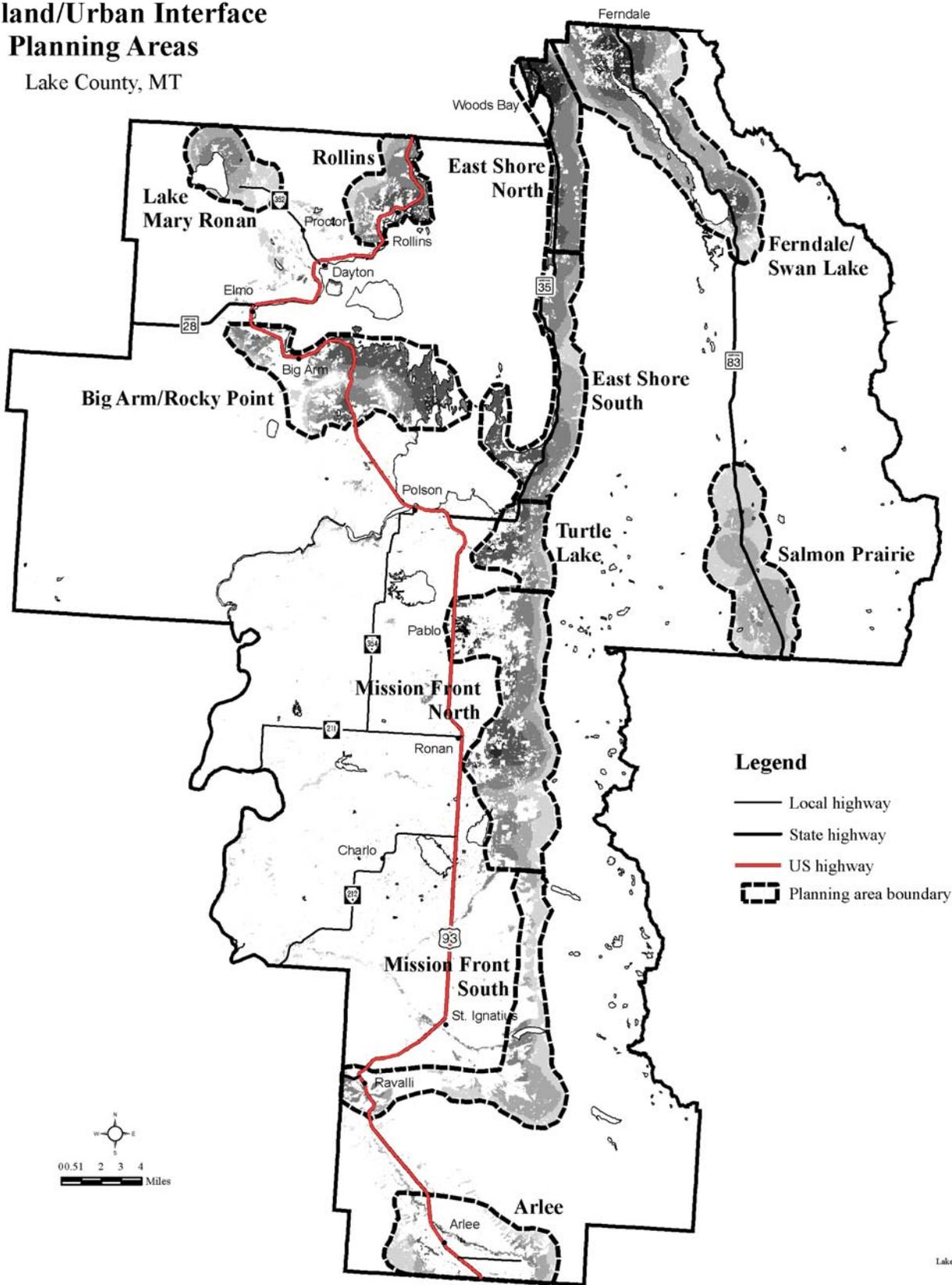
Residential Density in Forested Areas

Lake County, MT



Wildland/Urban Interface Planning Areas

Lake County, MT



Lake County GIS Dept.
AMB/0 fireplan
11/1/04

APPENDIX B: SAMPLE HOMEOWNER MATERIALS

- Pages 70-73 “Firewise Landscaping for Woodland Homes”
Keep Montana Green Association
- Pages 74-75 “Protect Your Home and Family from Wildfire”
Montana Department of Natural Resources and Conservation
- Pages 76-77 “Home Fire Safety News”
Montana Department of Natural Resources

Vegetation Management for Communities

Because wildfires usually spread from one home to another, the condition of your neighbor's landscape may put you at risk. Encouraging your neighbors to create fire-wise landscaping increases the fire safety of your home and your community. If you live in a planned community, encourage other homeowners to maintain a greenbelt around your community. This greenbelt can be a lawn or an arrangement of shrubs and low growing plants that can slow the spread of fire from the surrounding wildland.

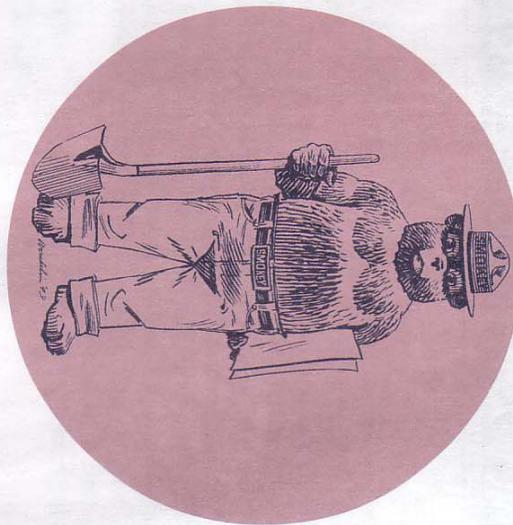
Your community can greatly reduce the risk of wildfire disasters through proper zoning, access and escape route planning, vegetation management, public education, and organized voluntary citizen action. In some high-risk forest and grassland areas, vegetation management practices such as prescribed burning and thinning can be effectively used to minimize the wildfire threat and ensure the health and long-term sustainability of these ecosystems.

Noxious weeds

Noxious weeds in Montana are non-native plants that seriously impact native plant communities and adversely affect wildlife, agriculture, and recreation. For assistance in identifying or controlling noxious weeds, contact your local extension service or weed control district.



Persons with disabilities who need an alternative, accessible format of this document should contact DNRC at the address shown. Phone 406 751-2269 or fax 406 751-2288.

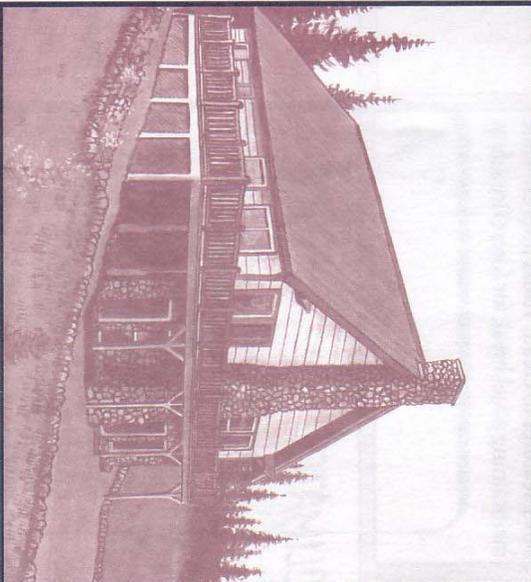


To make an appointment for an on-site evaluation of your home and property, or for a presentation addressing the issues and concerns of living in forested wildland, call or write:

5,000 copies of this public document were published at an estimated cost of \$0.21 per copy, for a total cost of \$1,050.00, which includes \$1,050.00 for printing and \$.00 for distribution.

FIREWISE

Landscaping
For Woodland Homes



You Need Defensible Space!
Become involved in fire
safety in your community.

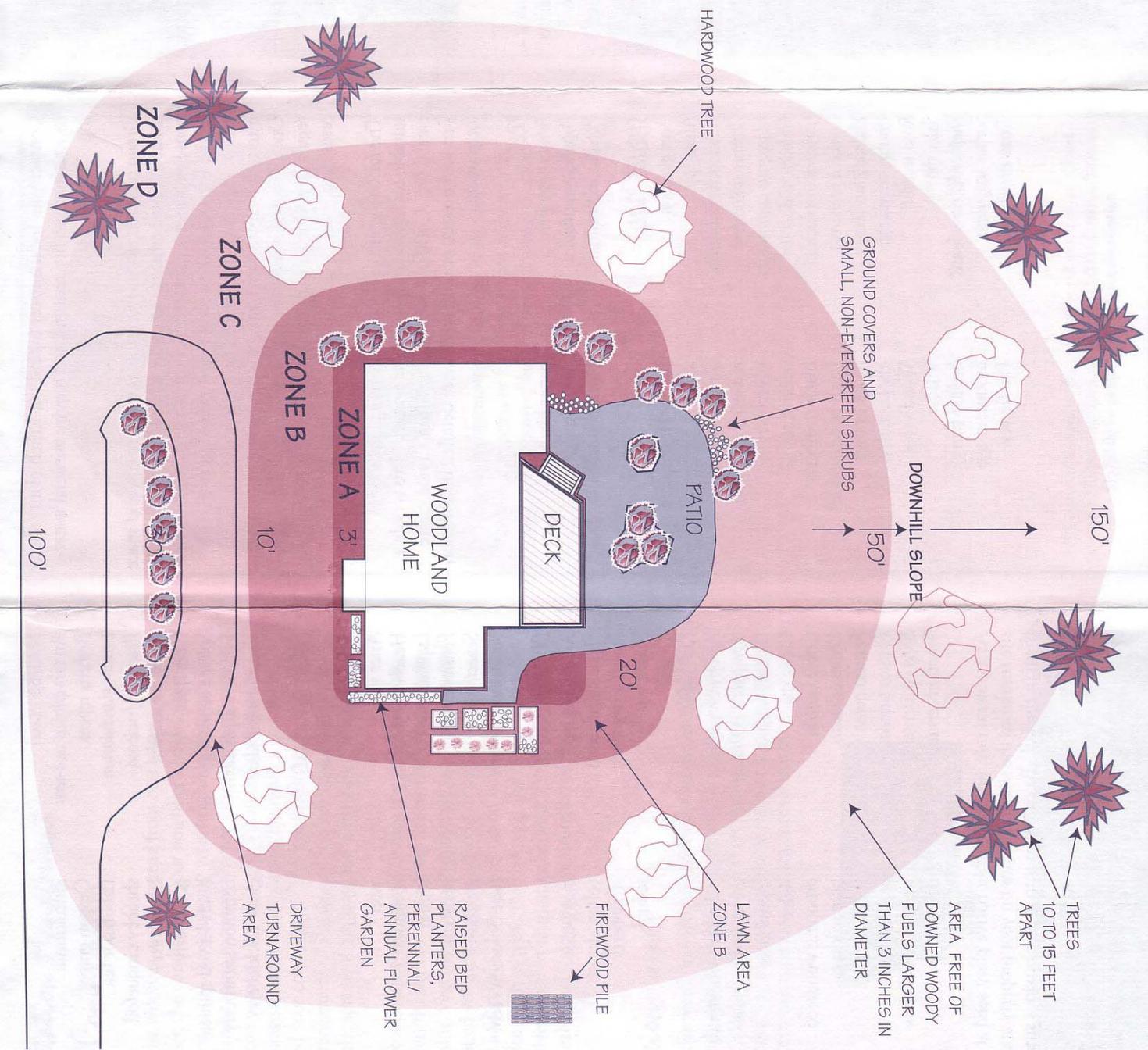
LARGE OR SMALL HARDWOOD TREE
 EVERGREEN TREE
 NON-EVERGREEN SHRUB
 HERBS, VEGETABLES, GROUND COVERS, ANNUAL OR PERENNIAL FLOWERS
 RAISED BEDS

N
 (North arrow pointing up)

EXPLANATION

Due to the slope, distances are increased on the north side of the house, which slopes downhill. Minimum distances are displayed on the south side of the house, where the terrain is flatter. The ZONES show the distances as measured from the house.

Steep Slope Zones	Flat Slope Zones
A: First 3 feet	A: First 3 feet
B: 3 to 20 feet	B: 3 to 10 feet
C: 20 to 50 feet	C: 10 to 30 feet
D: 50 to 150 feet	D: 30 to 100 feet



WOODLAND HOME ZONES

ZONE A

This area, closest to the house, is the most critical for fire protection. Have nothing flammable, including tall grass, evergreen trees, and shrubs, next to the house. Also, avoid trees that overhang the house or deck as well as leaves, brush, firewood piles, bark, mulch, and other burnables. Clean gutters, roof, and deck of flammable debris. This area does not have to be barren. Maintain a well-kept lawn, or use crushed brick or river stone gravel instead of mulch. Use raised beds, large decorative rocks, stone walkways, patios, or other features to create visual interest while maintaining a fuel break for forest fire safety.

ZONE B

Maintain a well-kept lawn, and avoid evergreens that catch fire easily and burn quickly. Occasional trees and shrubs should be at least 10 feet from the house and up to 20 feet away on the downhill side. Remove all downed woody fuel, such as logs or branches, and avoid using railroad ties or other flammable material in your landscaping. Freshly tilled flower beds, herb or vegetable gardens, rock gardens, stone walls, and driveways can also act as fire breaks.

ZONE C

Rake or use a leaf blower to remove needles, leaves, and twigs at least 20 feet from the house and up to 50 feet on the downhill side. Firewood and other burnables should be stored at least 30 feet from the house. Maintain surface vegetation at 3 inches high or less. This will help keep fire from spreading to or from your house. It also provides a space for fire fighters to defend your home from fire.

ZONE D

Space trees with 10 to 15 feet between tree crowns, and prune trees 10 to 15 feet up from the ground or one-third the total live crown height, whichever is less. Also, avoid fire ladders, where fire can climb from the ground into tree branches. Do this by pruning trees, spacing tall trees away from medium-sized trees, and using ground cover or small plants under tall trees. Shrubs should be well-maintained, kept free from dead material, and kept small. Control brush and weeds annually, and remove all downed woody fuels more than 3 inches in diameter.

CLIMATE

- Summer heat and lack of precipitation lower the moisture levels in plant tissues.
- Dry winds evaporate plant and soil moisture. By mid to late summer, dry vegetation, dead leaves, and brush accumulate, leaving conditions ripe for a wildfire.
- Winds directly contribute to the intensity of fires. In grass, fire can move as quickly as the wind can spread it.
- Grasses on south- and west-facing slopes that turn brown earlier are more susceptible to dry winds blowing from these directions. These sides of your property need a greater amount of clearance of flammable vegetation.
- Heat from a flame travels farther in warmer conditions than in cooler temperatures.

TOPOGRAPHY

Topography is another factor that contributes greatly to the severity and spread of wildfires.

- Fire spreads rapidly in narrow canyons. Proximity to canyon walls facilitates the spread of embers by the wind.
- Fire travels quickly up steep hills. Homes situated on hillsides must have a clearing of 150 feet or more that is free of downed woody fuels around the home. This reduces the fire's intensity and its rate of spread up a slope to a home. The steeper the hill, the faster fire travels, because rising heat preheats vegetation, dries it out, and makes it easier to ignite.

VEGETATION

Flammable vegetation is often responsible for the intensity and spread of wildfires. By removing flammable native or ornamental plants, you can create a more fire-resistant landscape.

- Plants that are not highly flammable may become so if dead leaves, twigs, and other plant litter are not removed. This litter provides added fuel for fires.
- Flammable shrubs such as juniper and sage brush have oily resins that make them highly combustible. Along with pines and conifers, these should be removed or trimmed.
- Homesites situated along heavily vegetated areas create urban forests, which provide a lot of fuel for wildfires to burn.

THE FIRESCAPE

A home in a woodland setting is a home surrounded by forest fire fuel and in real danger if a wildfire is on the loose.

Firewise landscaping can create a line of defense against the threat of wildfire by creating a safety zone or defensible space around your home.

The goal is to break the chain of flammable fuel between your home and the forest. Examine the yard. What can catch fire and carry it to the house? Do firefighters have a safety zone for battling the flames? Are you sure firefighters can safely find and reach your home?

WHAT ARE WE GOING TO DO WITH THIS PIECE OF LAND?

You can landscape for fire protection while maintaining a natural look to your surroundings. Work with the plants native to the site, using the patterns found in nature.

Also, consider hardness zones and planting sites when choosing new plants. Where plants and trees are placed in your yard is just as important as the species when planning fire safety.

ALL PLANTS BURN!

There are no fireproof plants, but some plants are more fire-retardant than others. Use these considerations when choosing plants and trees for your yard.

Choose plants and trees with:

- A high moisture content in the leaves (leaves stay moist)
- A low oil or resin content (avoid pines)
- Minimal litter and accumulating debris
- Limited foliage, and few dead branches
- A lower overall height
- An open, loose branching habit
- Easy maintenance and pruning
- Drought resistance

Contact your local nursery to find out which plants native to your area are fire-resistant and require minimal watering.

Group together plants with similar water needs, and space them in your landscape to create a "fuel mosaic" that will conserve water and protect against a "fire ladder." (A fire ladder is created when plants are arranged next to each other in a way that conducts flames from the ground up into taller vegetation, where it is more difficult to stop.) Once a firewise landscape has been installed, it must be regularly watered and maintained to preserve its fire resistance.

The following are examples of native plant species suitable for landscaping woodland homes. This is only a partial list. Contact your local extension service, State Service Forester, or nursery for more detailed information for your site.

TREES

Betula papyrifera
Populus tremuloides
Populus trichocarpa

paper birch
quaking aspen
black cottonwood

SHRUBS (Tall)

Acer glabrum
Alnus spp.
Amelanchier alnifolia
Cornus stolonifera

Rocky Mountain maple
alder
serviceberry
red-osier dogwood
silverberry

Elaeagnus commutata
Holodiscus discolor

oceanspray
black twinberry

Lonicera involucrata
Lonicera wuhanensis
Philadelphus lewisii
Prunus virginiana
Rosa woodsii

Utah honeysuckle
mock orange
chokecherry
Wood's rose
willow

Salix spp.
Shepherdia canadensis
Sorbus scopulina
Taxus brevifolia

buffalo berry
mountain ash
Pacific yew

SHRUBS (Low)

Arctostaphylos uva-ursi
Berberis repens
Ledum glandulosum
Potentilla fruticosa
Rhamnus alnifolia
Ribes spp.
Spiraea betulifolia
Symphoricarpos albus
Vaccinium globulare

kinnikinnik
Oregon grape
Laborador tea
shrubby cinquefoil
buckhorn
gooseberry
birch-leaved spiraea
common snowberry
globe huckleberry

FORBS (perennial)

Achillea millefolium
Arnica spp.
Aster spp.
Heuchera cylindrica
Lupinus spp.
Penstemon spp.
Senecio spp.
Smilacina racemosa

yarrow
arnica
aster
alumnroot
lupine
penstemon
groundsel
false Solomon's seal

GROUND COVERS

Anemaria spp.
Dryas drummondii
Fragaria virginiana
Sedum spp.

pussy-toes
yellow dryad
strawberry
sedum

GRASSES

Agropyron caninum
Agropyron cristatum
Bromus vulgaris
Carex spp.
Cinna latifolia
Elymus glaucus
Festuca ovina
Festuca subulata
Stipa occidentalis
Trisetum cernuum

pubescent wheatgrass
crested wheatgrass
brome grass
sedge
drooping woodreed
blue wildrye
sheep fescue
bearded fescue
western needlegrass
trisetum

As a general rule, one can gather native plant seed at a site similar to the site conditions on your property and sow them in the fall. Be careful not to gather noxious species.

PROTECT YOUR HOME AND FAMILY FROM WILDFIRES

People living on forested homesites should be prepared for wildfires.

The Department of Natural Resources and Conservation distributes this checklist to help residents of rural homesites reduce fire hazards endangering their property. By following the measures outlined here, homeowners will reduce the risk that an accidental fire will start on their property. They will also prevent fires that start elsewhere from spreading onto their homesites.

This information is provided as a public service. Following it will help you protect your home against wildfire. The guidelines are intended to be general. Often, other specific measures may be necessary or advisable for your particular home and property.

The Department of Natural Resources and Conservation cannot guarantee, and does not accept liability for, the fire safety of your home and property.

**LEARN TO LIVE
SAFELY WITH THE
THREAT OF
WILDLAND FIRES!**



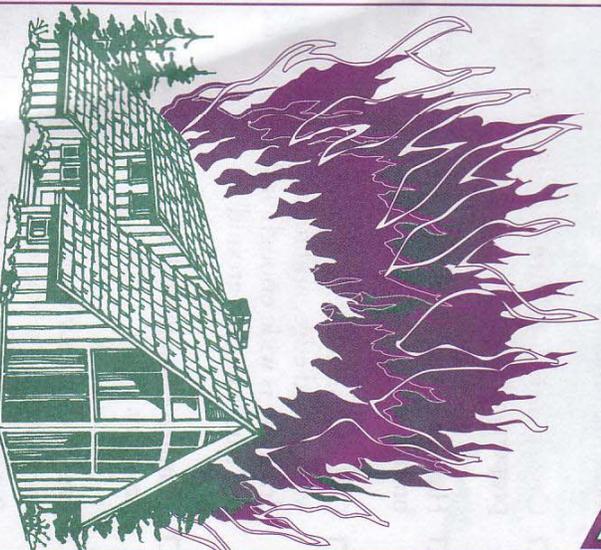
**FOR HELP
OR INFORMATION,
CALL THE**

Montana Department of
Natural Resources and Conservation



WILDFIRES

PROTECT YOUR HOME AND FAMILY FROM





FORESTED HOMESITE FIRE PREVENTION CHECKLIST



- Reduce the forest density around your home by thinning, or by harvesting posts, poles, and firewood. Space your trees so that there is 15 feet between the crowns. This spacing will reduce the chance that a fire will spread from tree to tree.
- Remove "ladder fuels." Prune dead branches from the lower portions of all trees and shrubs. On larger trees, prune all branches up to 10 feet above the ground. This will reduce the chance that a fire will spread from the ground to the tree tops.
- Dispose of all slash and flammable debris from your property. If you intend to burn debris, obtain a burning permit from your local fire officials.
- Construct fuel breaks around your property's boundaries.
- Have the power company cut overhanging branches away from power lines.
- Clear brush back 10 feet from your driveway or road edge, and make sure that your driveway is wide enough and adequate for fire trucks to turn around.
- Eliminate dumps and trash piles from your property.
- Ensure that your water supply is usable during a fire emergency, and keep garden hoses readily available. Keep rakes, shovels, and buckets in a handy location.

- Stack your firewood at least 100 feet away from the house, and not on the downhill side.
- Provide a 30-foot "safety zone" around your home by landscaping with fire-resistant plants and planting a lawn. If you live on a slope, the safety zone should be larger. Keep lawns watered and mowed, and remove the clippings. These measures will prevent fire from reaching your house.



- Clean needles, leaves, branches, and other flammable debris from the roof and gutters.
- The roof should be made of fire-resistant material. If you have a wood shake roof, install a sprinkler system on the roof.
- Provide a 15-foot clearance between your chimney and the nearest tree.
- Make sure your chimney extends 3 feet above your roof, and cover it with a mesh screen or spark arrestor.
- Locate the propane tank at least 10 feet away from the house, so that the tank can be shut down in case of fire.
- Keep storage areas clean, and do not allow oily rags, flammable materials, or newspapers to accumulate.
- Wet down fireplace or stove ashes, and dispose of them in a metal can.
- Display your name and house number in front of your property to assist firefighters in locating your home.
- To keep out hot embers, enclose open spaces beneath features such as decks, balconies, and stilts. Screening is sufficient.

Date of the last fire prevention check

Home Fire Safety News

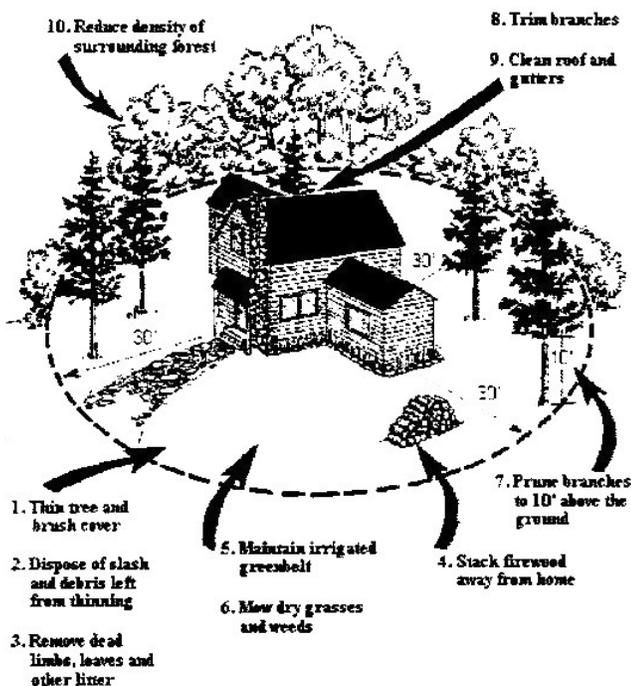


Wildland Fire Prevention

July 2000

Could your home survive a wildfire?

Many homes are destroyed by wildland fires each year. Often, these homes could have survived had the owners taken preventative action beforehand. Don't let your home become part of the fuel of a wildfire! Follow these fire prevention tips and become "Firewise."



Firewise Landscaping

Firewise landscaping can create a line of defense against the threat of wildfire by creating a safety zone or "defensible space" around your home.

The goal is to **break the chain** of flammable fuel between your home and the forest. Examine the yard. What can catch fire and carry it to the house? Do firefighters have a safety zone for battling the flames? Are you sure firefighters can safely find and reach your home?

You can landscape for fire protection while maintaining a natural look to your surroundings. Having firewise landscaping does not mean you are left with a barren landscape. Work with the plants native to the site, using the patterns found in nature. Also, consider hardiness zones and planting sites when choosing new plants.

There are no fireproof plants, but some plants are more fire-retardant than others. Use these considerations when choosing plants and trees for your yard.

Group together plants with similar water needs, and space them in your landscape to create a "fuel mosaic" that will conserve water and protect against a "fire ladder." (A fire ladder is created when plants are arranged next to each other in a way that allows flames to move from the ground up into taller vegetation, where it is more difficult to stop.) Once a firewise landscape has been installed, it must be regularly watered and maintained to preserve its fire resistance.

Be sure to visit the Firewise website at www.firewise.org

Firewise Checklist

- Display your name and house number in front of your property to assist firefighters and other emergency personnel in locating your home.

Within three feet of structures:

- Maintain an area of non-combustible material within 3 feet of structures—flowers, plants, concrete, gravel, mineral soil, etc.

Within 10 feet of structures (increase distance below structure if slope is greater than 10%):

- Maintain surface vegetation at 3" or less in height.
- Remove all downed trees, brush, limbs, etc.

From 10 to 30 feet of structures (increase distance below structure if slope is greater than 10%):

- Thin trees to 10 feet between crowns.
- Prune limbs of remaining trees to 15 feet in height or one-third of total live crown, whichever is less.
- Maintain surface vegetation at 3 inches in height or less.
- Remove all downed trees, brush, limbs, etc.

Thirty feet from structures and beyond:

- Thin trees to 10 to 15 feet between crowns.
- Prune limbs on remaining trees to 15 feet above the ground

Other Practices:

- Clear or reduce vegetation from alongside your driveway or road edge, and make sure your driveway is wide enough and adequate for fire trucks to turn around.

- Have the power company cut overhanging branches away from power lines.

- Dispose of all slash and flammable debris from your property. If you intend to burn, follow all applicable open burning regulations and requirements.

- Clean the roof and gutters of needles, leaves, branches, and other combustible debris.

- Provide a 15 foot clearance between your chimney and the nearest branches.

- Make sure your chimney extends 3 feet above the roof and is capped with an approved spark arrester.

- Your roof should be of fire-resistant material. A wood shake roof should be treated with UL approved fire retardant chemical or replaced.

- Enclose open spaces beneath features such as decks, balconies, and stilts to keep out hot embers.

- Locate the propane tank at least 10 feet from the structure and within a 10 foot clearing.

- Stack your firewood at least 100 feet from the house, and always on the uphill side.

- Ensure that your water supply is usable during a fire emergency. Keep garden hoses readily available.

- Keep storage areas clean. Do not allow oily rags, flammable chemicals, or newspapers to accumulate.

- Make sure your motorized garden equipment, such as lawnmowers and chainsaws, have approved and functioning spark arresters.

This checklist is provided to help reduce fire hazards endangering your property. By following the suggestions listed here, you can help yourself to reduce the risk that an accidental fire could start on your property, and also the risk that a fire starting elsewhere could cause damage to your property.

If you would like additional information, or if you have further questions, please contact your local USDA Forest Service, Montana DNRC, or Fire Department Office.

APPENDIX C – ANNUAL OPERATING PLANS