

# MULTI-JURISDICTIONAL PRE-DISASTER MITIGATION PLAN, UPDATE 2012

*Yellowstone County  
City of Billings  
City of Laurel  
Town of Broadview*

YELLOWSTONE COUNTY DISASTER AND  
EMERGENCY SERVICES  
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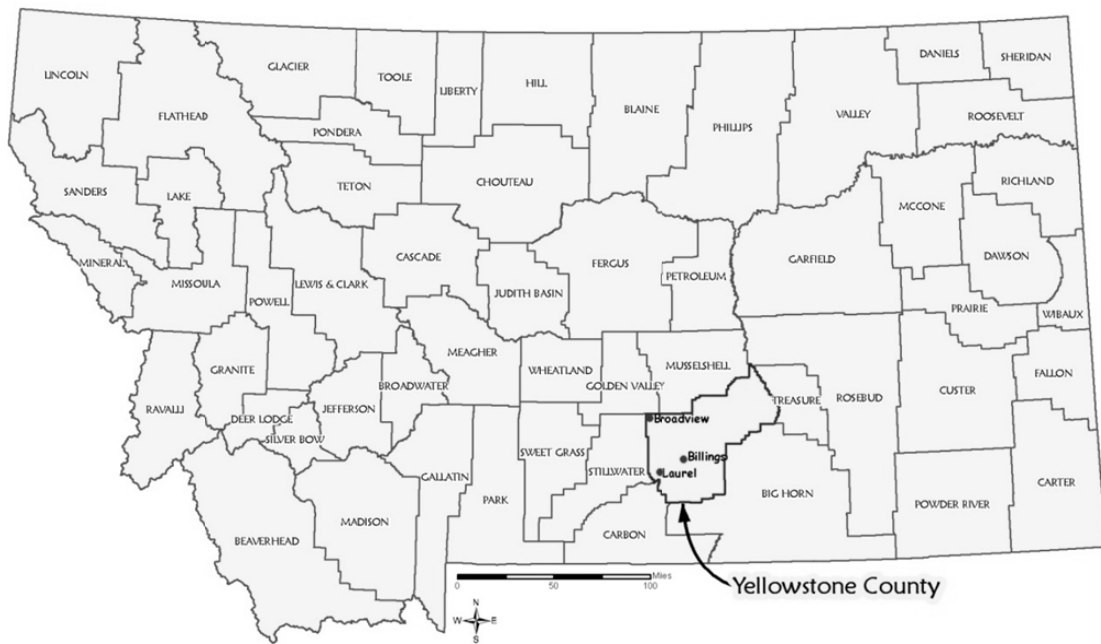
January 2012

Atkins Project #: 100013850

ATKINS

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PRE-DISASTER MITIGATION PLAN,  
UPDATE 2012**

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Prepared for:

**YELLOWSTONE COUNTY DISASTER AND EMERGENCY SERVICES**  
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Date: January 2012  
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## Executive Summary

Yellowstone County is not immune from the possibility of a serious hazard event of emergency or catastrophic proportions. Natural and manmade hazards pose an ongoing potential threat to the health, welfare, and security of our citizens, properties and infrastructure. The Yellowstone County multi-jurisdictional Pre-Disaster Mitigation Plan (PDM) Update represents a coordinated effort and ongoing commitment to reduce or eliminate potential hazard-related losses and damages before they occur or recur. Additionally, successful completion and subsequent updates of the multi-jurisdictional PDM will ensure Yellowstone County's continued eligibility to apply for grants to fund planning efforts and thorough evaluation of potential mitigation activities.

The 2012 PDM Update builds on the original 2004 PDM Plan with updated data on risks posed by hazards and updated list of projects that can mitigate those hazards. These updates were reviewed by the Local Emergency Planning Committee (LEPC) PDM Task Force and presented in community planning session, to obtain and reflect the wishes of the community on the best means to reduce impacts from natural and man-caused hazards. In addition to the meetings, historical hazard data was researched to make sure that no potential hazards were missed in the initial process. HAZUS (the latest FEMA August 2009 data) and other Geographical Information Systems data was collected and examined in the identification process.

Each identified natural hazard was profiled, including information about its characteristics, history, probability, magnitude, mapping, vulnerabilities, data limitations, and other key documentation as available. Where applicable, the vulnerabilities to jurisdictions in terms of property damage and potential for casualties were quantified based on historic recorded losses. The losses were converted to an average annual loss based on either the historic record or on models that estimate future potential losses. Below is a summary of each natural hazard displaying the frequency of a major event, estimated annualized losses, potential for casualties, and a risk factor based on a sum of these three factors. This is compared to the priorities set for these same hazards in the 2004 PDM Plan.

### Risk Assessment Summary for Natural Hazards

Hazard	Frequency w/ Major Damages <sup>1</sup>	Estimated Annualized Losses <sup>2</sup>	Potential Casualties	Vulnerability Quotient	2004 Rank
Weather-Extreme Wind & Thunderstorms	10 years	\$657,000	very high	13	3
Flooding	25 years	\$1,116,000	high	12	1
Tornado	25 years	\$1,260,000	high	12	4
Wildfire	20 years	\$356,000	moderate	10	2
Severe Winter Storms	10 years	\$37,000	high	9	5
Landslide	10 years	\$50,000	low	8	9
Flooding - Major Dam Failure	>500 years	<\$250,000	moderate	6	7
Earthquake	50 years	\$0	low	5	10
Volcano	>100 years	\$5,000	very low	3	11
Drought	25 year (cycles)	na	very low	--	6
Expansive Soils	na	na	very low	--	8

## Plan Mission

The mission of the Yellowstone County multi-jurisdictional PDM is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property, and the environment from potential hazards. This can be achieved by increasing public awareness, documenting the resources for risk reduction and loss-prevention, and identifying activities to guide Yellowstone County towards building safer, more sustainable communities.

## Goals and Objectives

The plan goals describe the overall direction that Yellowstone County agencies, organizations, and citizens will take to work toward mitigating risk from hazards. The goals and objectives of this PDM are to create a disaster resistant county by reducing the threat of hazards to life, property, emergency response capabilities, economic stability, and infrastructure while encouraging the protection and restoration of natural resources and the environment. The goals are stepping-stones between the broad direction of the plan mission and the specific recommendations outlined in the action items.

**Protection of Life and Property:** Implement activities that assist in protecting lives by making homes, businesses, infrastructure, critical facilities, and other property more resistant to losses from hazards. Reduce losses and repetitive damages for chronic hazard events while promoting insurance coverage for catastrophic hazards. Improve hazard assessment information to make recommendations for discouraging new development and encouraging preventative measures for existing development in areas vulnerable to hazards.

**Public Awareness:** Develop and implement education and outreach programs to increase public awareness of the risks associated with hazards. Provide information on tools, partnerships opportunities, and funding resources to assist in implementing mitigation activities.

**Natural Systems:** Balance watershed planning, natural resource management, and land use planning with hazard mitigation to protect life, property, and the environment. Preserve, rehabilitate, and enhance natural systems to serve hazard mitigation functions.

**Partnerships and Implementation:** Strengthen communication and coordinate participation among and within public agencies, citizens, non-profit organizations, business, and industry to gain a vested interest in implementation. Encourage leadership within public and private sector organizations to prioritize and implement local, county, and regional hazard mitigation activities.

**Emergency Services:** Establish policy to ensure mitigation projects for critical facilities, services, and infrastructure. Strengthen emergency operations by increasing collaboration and coordination among public agencies, non-profit organizations, business and industry. Coordinate and integrate hazard mitigation activities, where appropriate, with emergency operations plans and procedures.

## Action Plan

The Yellowstone County PDM includes resources and information to assist county residents, public and private sector organizations, and other interested in participating in planning for hazards. The mitigation plan provides a list of activities that may assist Yellowstone County in reducing risk and preventing loss from future natural hazard events. The action items for each mitigation goal address multi-hazard issues, as well as activities for flood, landslide, severe winter storms, severe summer storms, windstorms, wildfire, earthquake, and volcanic eruption hazards. The 2012 updates to each of the objectives/action items listed under the eight major goals set by Yellowstone County in 2004 are provided in Section 5.0, Multi-Jurisdictional Hazard Mitigation Strategy.

### **Specific Pre-Disaster Mitigation Objectives**

- Increase Hazard Awareness
- Reduce Impacts of Flooding
- Reduce the Impact of Wildfires and Structure Fires on the Community
- Improve Emergency Communications
- Enhance Hazard Mitigation through Improved Countywide Mapping and Zoning
- Protection of Public Health and Property from Disasters
- Grow and Develop Partnerships
- Enhance Emergency Services

### **Mitigation Actions**

Proposed projects to mitigate hazards in Yellowstone County are quite diverse. At the preliminary public meetings and at committee meetings areas of concern were identified and ranked according to which were the most urgent mitigation concerns for Yellowstone County. These projects all fit with the overall goals of the Yellowstone County PDM Plan.

#### Construction Projects

- West Billings Flood Mitigation Project: Construction of two small storage features on Cove and Little Cove Creeks and improving flood conveyance through the West Billings area.
- Arrow Island Weir Project: Bank Stabilization project north of Huntley.

#### Feasibility Studies

- Highway 3 Stormwater Controls: Study options for mitigating stormwater runoff from Highway 3 near the Airport.
- Riverside Park Levee Repair: Study to assess options for controlling bank erosion and protection of buried pipelines near Riverside Park in Laurel.
- Zoo Montana Flood Mitigation: Assess potential for flooding zoo and address options for managing zoo animals in the event of a flood.
- Purchase of Knife River Pit: Examine the option for creating stormwater retention basin in the Knife River Pit to mitigate potential flooding downstream of the West Billings area.

#### Public Education

- Floodplain Awareness: Continued community outreach on the potential for flooding in flood prone areas.
- Firewise Demonstrations: Continued community outreach on wise building practices in the wildland urban interface.
- Severe Storm Education: Continued community outreach on preparation and safety during severe storms.
- School Safety: Interaction with public safety officials and schools on school population planning for emergencies.

#### Hazard Preparedness

- Wildland Fire Mapping
- Public Alert System
- Enhanced Rural Communication/Montana Interoperability Project
- Modification of floodplain regulations to require property setbacks
- Establish Tornado Shelter at the Broadview Elementary School

### **Plan Maintenance**

The PDM Plan shall be reviewed annually by the LEPC to track the progress of PDM projects and make additions or changes to the Mitigation Plan portion of the PDM Plan. Every 5 years the PDM Plan shall be updated to reassess the risks posed by hazards and complete a thorough review of PDM projects.

(INSERT SIGNED **Commissioner's Resolutions: Four Jurisdictions**)

## PREFACE

### 1 Commissioner's Resolutions: Four Jurisdictions

The Yellowstone County Board of County Commissioners (BOCC) will be responsible for adopting the Yellowstone County Pre-Disaster Mitigation Plan. This governing body has the authority to promote sound public policy regarding hazards. The following Yellowstone County jurisdictions will also sign updated resolutions stating they have met, read and accepted the PDM for their respective locations: City of Billings – Billings City Council, City of Laurel – City Council of the City of Laurel, Town of Broadview – Broadview Town Council.

The signed resolutions for the 2012 PDM Update are provided in the preceding pages, following the Executive Summary.

### 2 Acknowledgements

The Pre Disaster Mitigation Plan Task Force was made up of the following people and agencies:

- Duane Winslow – Yellowstone County, Director of Emergency and General Services; Pre-Disaster Mitigation Project Manager,
- Joe Marcotte – Deaconess Billings Clinic, Safety Director,
- Dianne Lehm, Big Sky Economic Development Authority,
- Gregory Neil, Riverstone Health,
- Wyeth Friday, Yellowstone County Planning and Community Services,
- Patrick O'Neil, St. Vincent Healthcare,
- Maggie Lough, Lockwood Fire Council,
- Charlie Vandam, Atkins (formerly PBS&J).

The Yellowstone County PDM Plan Update was prepared by Atkins with direct input from the PDM Task Force, a subcommittee of the Yellowstone County LEPC. Funding for the 2012 PDM Update was made possible through a FEMA Pre-Disaster Mitigation Planning Grant administered through Yellowstone County and the Disaster and Emergency Services Division of the Montana Department of Military Affairs. The LEPC is responsible for the review and annual updates to the PDM Plan.

Once the Plan has been adopted, the County Disaster and Emergency Services Director will be responsible for submitting it to the State Hazard Mitigation Officer for review. This review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, Yellowstone County will gain eligibility for Hazard Mitigation Grant Program funds.

### 3 Authority

The 1988 Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 100-707, amended the Disaster Relief Act of 1974, Public Law 93-288. The Stafford Act constitutes the statutory authority for most Federal disaster response activities especially as they pertain to FEMA and FEMA programs. The Disaster Mitigation Act of 2000, Public Law 106-390 (DMA), amends the Stafford Act, placing new emphasis on coordinated mitigation planning and implementation efforts among state, local and Indian Tribal entities. The requirement for a state risk-based mitigation plan is continued as a condition of pre- and post-disaster assistance, while the new requirement for a local risk-based PDM is incentivized by grant funding for plan development made available through several hazard mitigation assistance programs. The requirements and procedures of 2007 Interim Final Rule can be found in the Code of Federal Regulations at Title 44, Chapter 1, Part 201 (44 CFR Part 201).

The Governor has the leadership role in the issuance of guidance to all state agencies to minimize the effects of hazards on the citizens of Montana. In state and federal recovery agreements following a Presidentially declared disaster, the Governor initiates updating of the state and local mitigation plans based on federal requirements or state and local needs. Montana's Disaster and Emergency Services

(MTDES) administers mitigation guidance and funding to state and local applicants following a Presidentially declared disaster.

Local governments play an essential role in implementing effective mitigation, both before and after disaster events. Local government will review all damages, losses, and related impacts to determine the need or requirement for mitigation action and planning whenever seriously affected by disaster, or when applying for state or federal recovery assistance. The Yellowstone County Board of County Commissioners and its appointees will be responsible for carrying out plans and policies related to the PDM. Local government must be prepared to participate in the post-disaster hazard mitigation process and the pre-mitigation planning as outlined in this document.

#### **4 Caveats and Data Limitations**

The data and figures in the 2012 Plan Update were derived from multiple sources. Care was taken in the compilation of data and preparation of maps to best reflect historic conditions or areas of potential risks but shall not be used to depict specific boundaries nor specific values or costs. This is a planning document intended to provide guidance to local jurisdictions on means to mitigate hazards, more detailed studies are needed to develop actual costs and define precise boundaries.

Final population figures from the recently conducted 2010 U.S. Census were only available county geographic area not for smaller subdivisions of the county. The city population data will be incorporated in future plan updates as the data become available. Where applicable, 2009 U.S. Census Bureau estimates have been incorporated into the 2012 PDM update.

General note: direct comparisons among various sources of the same information can yield varying results. Contributing factors to the differences among data sources include: geographical information datasets vary in terms of scale, spatial and attribute accuracy, completeness and currency of information. Additional factors that can influence results include cartographer queries and the methodology used for data analysis (trends and calculated estimates).

## **Abbreviations**

BOCC	Board Of County Commissioners
CRP	Conservation Reserve Program
CWPP	Community Wildfire Protection Plan
DES	Disaster and Emergency Services
DMA	Disaster Mitigation Act
DNRC	Montana Department of Natural Resources and Conservation
DOI	U.S. Department of the Interior
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
GIS	Geographic Information Systems
HAZUS	HAZard United States
HUD	U.S. Department of Housing and Urban Development
LEPC	Local Emergency Planning Committee
MBMG	Montana Bureau of Mines & Geology
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resource Conservation Service
NWS	National Weather Service
MTDES	Montana Disaster and Emergency Services
PDM	Pre-Disaster Mitigation
SHELDUS™	Spatial Hazard Events and Losses Database
USFS	U.S. Forest Service
USGS	U.S. Geological Survey
WUI	Wildland Urban Interface

## **Glossary of Terms**

**Acceleration:** The rate of change of velocity with respect to time. Acceleration due to gravity at the earth's surface is 9.8 meters per second squared; i.e., every second that something falls toward the surface of earth, its velocity increases by 9.8 meters per second.

**Asset:** Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, or recreational features like parks, dunes, wetlands, or landmarks.

**Base Flood Elevation (BFE):** Elevation of the base flood in relation to a specified datum, such as the National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as the standard for the National Flood Insurance Program.

**Base Flood:** Flood that has a 1 percent probability of being equaled or exceeded in any given year; also known as the 100-year flood.

**Bedrock:** The solid rock that underlies loose material, such as soil, sand, clay, or gravel.

**Bio-Terrorism:** Intentional, criminal, malicious acts using biological agents to cause harm to large numbers of people.

**Building:** A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

**Community Rating System:** An NFIP program that provides incentives for communities to complete activities that reduce flood hazard risk. Upon completing specified activities, the insurance premiums of policyholders in these communities are reduced.

**Computer-Aided Design And Drafting (CADD):** A computerized system enabling quick and accurate electronic 2-D and 3-D Drafting (CADD) drawings, topographic mapping, site plans, and profile/cross-section drawings.

**Contour:** A line of equal ground elevation on a topographic (contour) map.

**Critical Facility:** Facilities that are critical to the health and welfare of the population and that are especially important following hazard events. Critical facilities include, but are not limited to, shelters, police and fire stations, and hospitals.

**Debris:** The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage to other assets.

**Digitize:** To convert electronically points, lines, and area boundaries shown on maps into x, y coordinates (e.g., latitude and longitude, universal transverse mercator (UTM), or table ordinates) for use in computer applications, such as Geographical Information Systems.

**Displacement Time:** The average time (in days) which the building's occupants typically must operate from a temporary location while repairs are made to the original building due to damages resulting from a hazard event.

**Duration:** How long a hazard event lasts.

**Earthquake:** A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.

**Erosion Hazard Area:** Anticipated shoreline retreat/loss area over a given period of time. The projected inland extent of the area is measured by multiplying the average annual long-term recession rate by the number of years desired.

**Erosion:** Wearing away of the land surface by detachment and movement of soil and rock fragments, during a flood or storm or over a period of years, through the action of wind, water, or other geologic processes.

**Essential Facility:** Elements that are important to ensure a full recovery of a community or state following a hazard event. These would include; government functions, major employers, banks, schools, and certain commercial establishments, such as grocery stores, hardware stores, and gas stations.

**Extent:** The size of an area affected by a hazard or hazard event.

**Fault:** A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plane of fracture.

**Federal Emergency Management Agency (FEMA):** Independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery. This agency is now included with the office of Homeland Security as of 2003.

**Fire Potential Index (FPI):** Developed by USGS and USFS to assess and map fire hazard potential over broad areas. Based on geographic information, national policy makers and on-the-ground fire

managers established priorities for prevention activities in the defined area to reduce the risk of managed and wildfire ignition and spread. Prediction of fire hazard shortens the time between fire ignition and initial attack by enabling fire managers to pre-allocate and stage suppression forces to high fire risk areas.

**Flash Flood:** A flood event occurring with little or no warning where water levels rise at an extremely fast rate.

**Flood Depth:** Height of the floodwater surface above the ground surface.

**Flood Elevation:** Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or Mean Sea Level.

**Flood Hazard Area:** The area shown to be inundated by a flood of a given magnitude on a map.

**Flood Insurance Rate Map (FIRM):** Map of a community, prepared by the Federal Emergency Management Agency that shows both the special flood hazard areas and the risk premium zones applicable to the community.

**Flood Insurance Study (FIS):** A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.

**Flood:** A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal waters, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

**Floodplain:** Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

**Frequency:** A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average, and would have a 1 percent chance – its probability – of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

**Fujita Scale of Tornado Intensity:** Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs, while and F5 indicated severe damage sustained.

**Functional Downtime:** The average time (in days) during which a function (business or downtime service) is unable to provide its services due to a hazard event.

**Geographic Area Impacted:** The physical area in which the effects of the hazard are experienced.

**Geographic Information Systems (GIS):** A computer software application that relates physical features on earth to a database to be used for mapping and analysis.

**Ground Motion:** The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with distance from the causative fault or epicenter, but soft soils can further amplify ground motions.

**Hazard Event:** A specific occurrence of a particular type of hazard.

**Hazard Mitigation:** Sustained actions taken to reduce or eliminate long-term risk from hazards and their effects.

**Hazard Profile:** A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

**Hazard:** A source of potential danger or adverse condition. Hazards in this how-to series will include naturally occurring events such as floods, earthquakes, tornadoes, tsunamis, coastal storms, landslides, and wildfires that strike populated areas. A natural event is a hazard when it has the potential to harm people or property.

**Hazard:** The process of identifying hazards that threaten an area.

**HAZUS:** Abbreviation for HAZards United States. A GIS-based nationally standardized earthquake loss (and other hazard parameters) estimation tool developed by FEMA.

**Hydrology:** The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.

**Infrastructure:** Refers to the public services of a community that have a direct impact on the quality of life; includes communication technology such as phone lines or Internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports; highways, bridges, tunnels, roadbeds, overpasses, railways, bridges, rail yards, depots; and waterways, canals, locks, seaports, ferries, harbors, drydocks, piers and regional dams.

**Intensity:** A measure of the effects of a hazard event at a particular place.

**Landslide:** Downward movement of a slope and materials under the force of gravity.

**Lowest Floor:** Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.

**Magnitude:** A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.

**Mitigate:** To cause to become less harsh or hostile; to make less severe.

**Mitigation Plan:** A systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards typically present in the state and includes a description of actions to minimize future vulnerability to hazards.

**National Flood Insurance Program (NFIP):** Federal program created by Congress in 1968 that makes flood insurance available in communities that enact minimum flood plain management regulations in 44 CFR §60.3.

**National Geodetic Vertical Datum of 1929 (NGVD):** Datum established in 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.

**National Weather Service (NWS):** Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to Federal and state entities in preparing weather and flood warning plans.

**Planimetric:** Describes maps that indicate only man-made features like buildings.

**Planning:** The act or process of making or carrying out plans; the establishment of goals, policies and procedures for a social or economic unit.

**Probability:** A statistical measure of the likelihood that a hazard event will occur.

**Recurrence Interval:** The time between hazard events of similar size in a given location, based on the probability that the given event will be equaled or exceeded in any given year.

**Repetitive Loss Property:** A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least \$1000 each have been paid within any 10-year period since 1978.

**Replacement Value:** The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot, and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

**Richter Scale:** A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

**Risk:** The possibility of loss or injury; the estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

**Riverine:** Of or produced by a river.

**Scale:** A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on the earth's surface.

**Scarp:** A steep slope.

**Scour:** Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.

**Seismicity:** Describes the likelihood of an area being subject to earthquakes.

**Special Flood Hazard Area (SFHA):** An area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps with shaded zone designations that include the letter A or V.

**Stafford Act:** The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-107 was signed into law November 23, 1988 and amended the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most Federal disaster response activities, especially as they pertain to FEMA and its programs.

**State Hazard Mitigation Officer (SHMO):** State government representative; is the primary point of contact with FEMA, other state and Federal agencies, and local units of government in the planning and implementation of pre- and post-disaster mitigation activities.

**Structure:** Something constructed. (See Building.)

**Substantial Damage Hazard:** Damage of any origin sustained by a structure in a Special Flood Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage.

**Surface Faulting:** The differential movement of two sides of a fracture; the location where the ground breaks apart; characterized by length, width, and displacement of the ground.

**Technological Hazards Terrorism:** Incidents that can arise from human activities such as the manufacture, transportation, storage, and use of hazardous materials. Intentional, criminal, malicious acts including biological, chemical, nuclear, and radiological weapons, arson, incendiary, explosive, and armed attacks, industrial sabotage and intentional hazardous materials releases.

**Tectonic Plate:** Torsionally rigid, thin segments of the earth's lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.

**Topographic:** Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include manmade features.

**Tornado:** A violently rotating column of air extending from a thunderstorm to the ground.

**Vulnerability Assessment:** The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future build environment.

**Vulnerability:** Describes how exposed or susceptible to damage an asset is; depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one community element is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooded, it will affect not only the substation, but a number of businesses as well. Indirect effects can be much more widespread and damaging than direct effects.

**Wildfire:** An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

**Zone:** A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

## 1.0 INTRODUCTION

Yellowstone County is not immune from the possibility of a serious hazard event of emergency or catastrophic proportions. Natural, technological, and manmade hazards pose an ongoing potential threat to the health, welfare, and security of our citizens, properties and infrastructure. The Yellowstone County multi-jurisdictional PDM represents a coordinated effort and ongoing commitment to mitigate potential hazard-related losses and damages before they occur or recur. Additionally, successful completion and subsequent updates of the multi-jurisdictional PDM qualifies Yellowstone County to apply for grants to fund planning efforts and thorough evaluation of potential mitigation activities.

Mitigation activities normally occur before an emergency or disaster, or directly on the heels of a disaster. Mitigation plans can include action items such as building dikes, adopting flood plain and/or zoning regulations, and requiring a water supply for homes built in wildland fire areas. The primary purpose for mitigation is to eliminate or reduce the probability and/or effects of a disaster, based on a risk-based analysis of each identified hazard. Mitigation strategies consist of short- and long-term actions to postpone, reduce or eliminate the negative impacts of a natural or manmade hazard event

It is important to note that while mitigation planning can convey an estimation of potential economic, social and infrastructural damages and losses to a community, there may be other intangible losses (such as cultural, historic, environmental) that are difficult to quantify. Furthermore, other post-disaster costs such as response and recovery costs are not addressed through pre-disaster mitigation planning

In compliance with FEMA requirements, the following PDM updates the previous Yellowstone PDM of 2004, and consists of a multi-jurisdictional assessment of each identified hazard, and updated recommendations for hazard mitigation planning actions moving forward. The 2012 PDM Update identifies opportunities and suggestive actions, which could reduce the impact of future disasters or emergencies. County agencies with an emergency assignment in the Emergency Operations Plan (see <http://www.co.yellowstone.mt.gov/des> for more information) have general responsibility for mitigation planning and implementation.

### 1.1. Purpose

The purpose of this multi-jurisdictional PDM is to systematically identify potential hazards in Yellowstone County, Montana and use this information in developing proactive and post-hazard event strategies to minimize suffering, loss of life, and damage to property resulting from hazardous or potentially hazardous conditions. The PDM has been prepared in compliance with federal, state and local hazard mitigation planning requirements published under 44 CFR Part 201 in order to be eligible to apply for and to receive hazard mitigation assistance.

Requirements under the FEMA Disaster Mitigation Act of 2000 include: identifying and describing potential hazards and impacts upon the county; developing programs, activities, strategies, and recommendations for mitigation; monitoring and promoting pre- and post-disaster mitigation measures; and eliminating or minimizing conditions which would have an undesirable impact on our citizens, the economy, environment, and well-being in Yellowstone County.

The scope of the Yellowstone County PDM Update is county-wide, including the jurisdictions of the cities of Billings and Laurel and the town of Broadwater. The PDM Update does not include the Crow Reservation within Yellowstone County. The PDM is not necessarily limited to Federal, State, or locally declared disasters or emergencies. If or when local situations and incidents of hazard events produce a requirement for mitigation actions, activities, and strategies, they will be developed and incorporated into the PDM. This plan does not intend to replace existing preparedness and operational documents, nor does it address the costs associated with response to hazard events and subsequent recovery efforts. Rather, the PDM provides a risk-based assessment of mitigation strategies, goals, objectives and priorities, which can serve to strengthen and improve the effectiveness of local operational procedures.

## 1.2. Project Area Location, Land Use, Economy, Population

Located in south central Montana, Yellowstone County is Montana's most populous county with 147,972 residents, according to the 2010 census. This represents a population density estimated at 55 persons per square mile. Since the 2000 census, Yellowstone County's population grew by 18,620, a 14.4 percent increase.

Established in 1883, Yellowstone County derives its name from the Yellowstone River, which is an English translation of "*Roche Jaune*", the name used by the early French trappers. The Yellowstone River roughly bisects the county, flowing from southwest to northeast. Of the fifty-six counties in Montana, Yellowstone County is the largest farm producing area, with the main products including sugar beets, wheat, beans and livestock.

**Land Use:** Yellowstone County is located in the Great Plains province of Montana but the topography of the county is characterized by breaks and drainages feeding the Yellowstone River. Rangeland is the predominant land use covering over 50 percent of the county comprised of brush, grass and mixed rangelands. Agricultural lands for crops, pasture and confined feed areas reflect about one-quarter, or 26 percent of the total acres in the county. Forested lands comprise 16.7 percent of the land use group types, while all residential and commercial/industrial uses in combination make up less than 2 percent of the county-wide total.

**Table 1. Land Use in Yellowstone County**

Yellowstone County Grouped Land Uses	Acres	Percent of Total Acres
Rangeland: Brush, Grass, Mixed	921,124	54.4
Agriculture: Crop, Pasture, Feed	441,022	26.0
Forest: Evergreen, Deciduous	283,543	16.7
Residential: Urban, Mixed Urban	18,840	1.1
Water: Stream, Reservoir, Wetland, Lake	16,853	1.0
Transportation/Utilities	6,581	0.4
Commercial/Industrial/Mine/Quarry	5,961	0.4
<i>Total Acres:</i>	<i>1,693,923</i>	<i>100</i>

Source: Montana Natural Resource Information System (<http://maps2.nris.mt.gov>).

Urban and residential development within the County is focused along the Yellowstone River Valley, with very low residential densities located outside the valley. Billings has the highest concentration of development with potential future growth occurring in the suburban and exurban areas near Billings and Laurel.

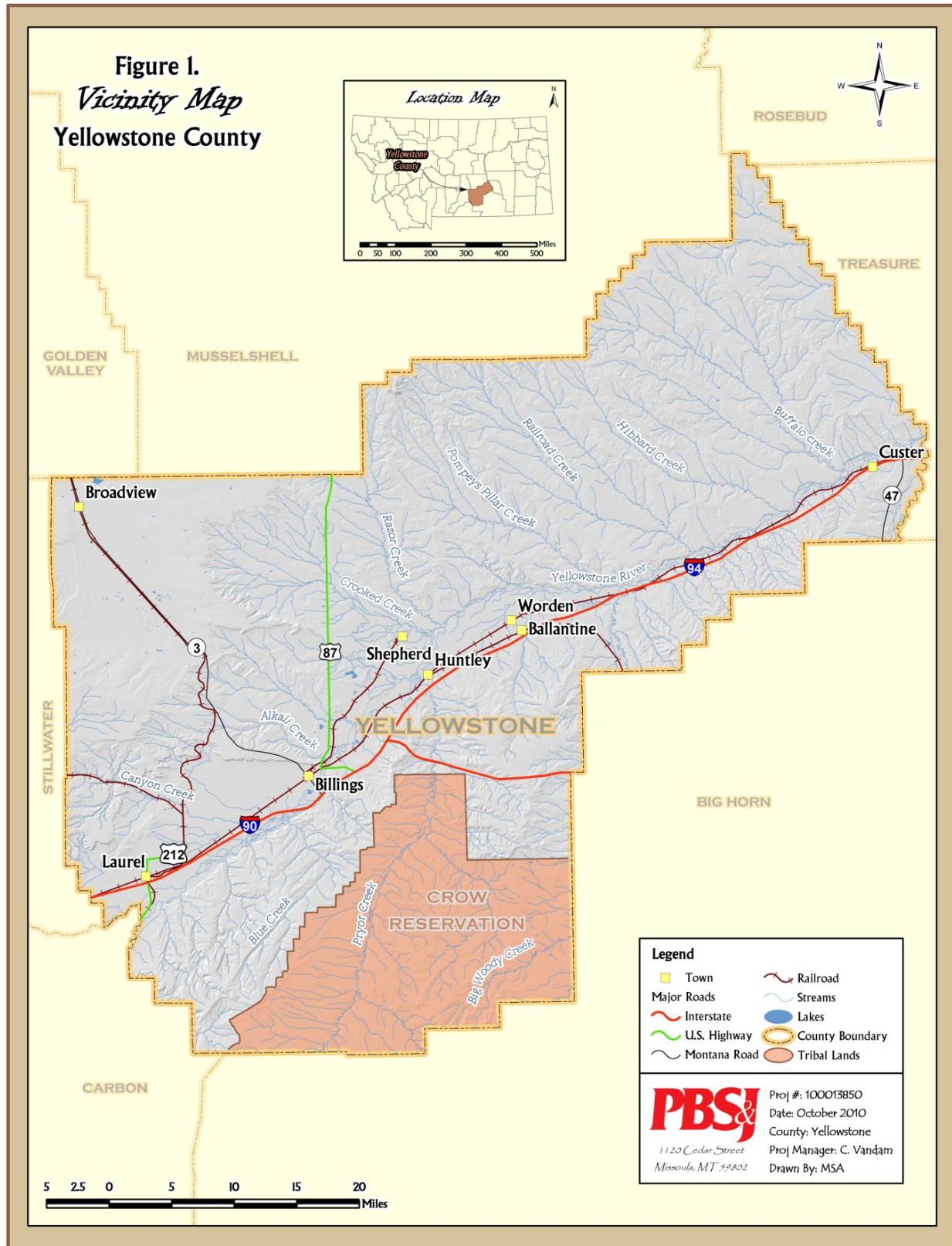
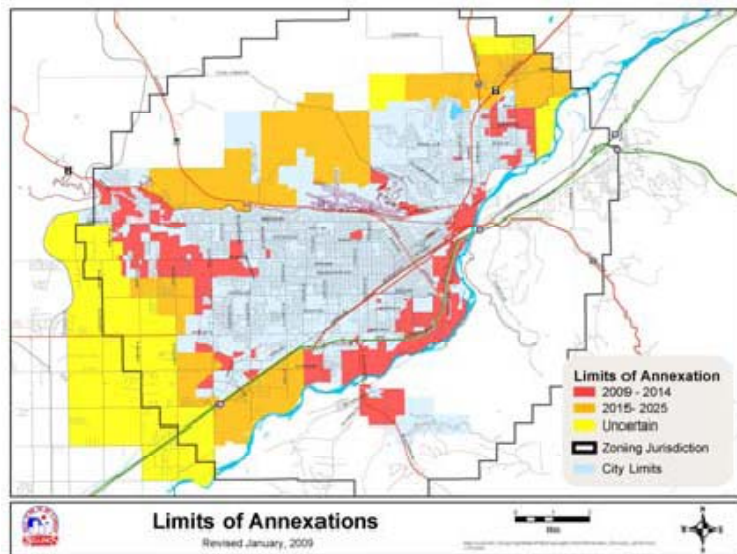


Figure 1. Vicinity Map Yellowstone County



**Future Land Use Trends:** Residential, commercial and industrial growth will be dependent on water and sewer availability. Existing development is concentrated along the Yellowstone River with the majority of the development in the southwest portion of the County in and around the City of Billings. As of 2007, 73 percent of the population lived within the City of Billings, while the City only contained 1.5 percent of the land area (Yellowstone County, 2008). Yellowstone County and City of Billings 2008 Growth Policy Update estimates land use patterns for the next 20 years will continue in and around Billings at an expected growth rate of 1.5 percent annually. The Housing Needs

Assessment expects approximately 430 new residential units per year within the City of Billings alone (City of Billings, 2010). Projected annexations by the City of Billings will be to the south and west in the near term and primarily to the north and southwest in the longer term (through 2025) (Yellowstone County, 2008).

The Yellowstone Growth Policy recommends, and subdivision regulations enforce, restrictions on development within areas of known natural hazards. Subdivision regulations adopted by the City of Billings, City of Laurel, and Yellowstone County prohibit buildings within known hazard areas, including designated floodplains and flood hazard areas and areas that are susceptible to rock fall or landslides. In addition, these jurisdictions require new developments to have sufficient water to meet fire suppression needs and ensure secondary access is available for egress and ingress.

**Economy:** Yellowstone County has one the nation’s largest regional trade areas extending over 125,000 square miles and serving almost 400,000 people. Retail trade represents about 14 percent of labor income within the County, second only to manufacturing labor income at 19 percent (BBER, 2009). Major employers include the three oil refineries in the county: ConocoPhillips in Billings, ExxonMobil in Lockwood and the CHS Refinery in Laurel. A Western Sugar Cooperative refinery that manufactures sugar from sugar beet crops is also located in Billings. About 350 Montana farmers supply sugar beets to the refinery, which has a direct impact of \$50 million per year on the County’s economy (Yellowstone County, 2008).

Billings is also the medical and educational center for the region. The two hospitals employ over 3,400 people and have almost 560 beds. Health care labor income represents about 13 percent of basic industries in the County. Other significant labor industries include: federal government (13 percent), mining (9 percent) transportation (7 percent), and state government and higher education (6 percent) (BBER, 2009).

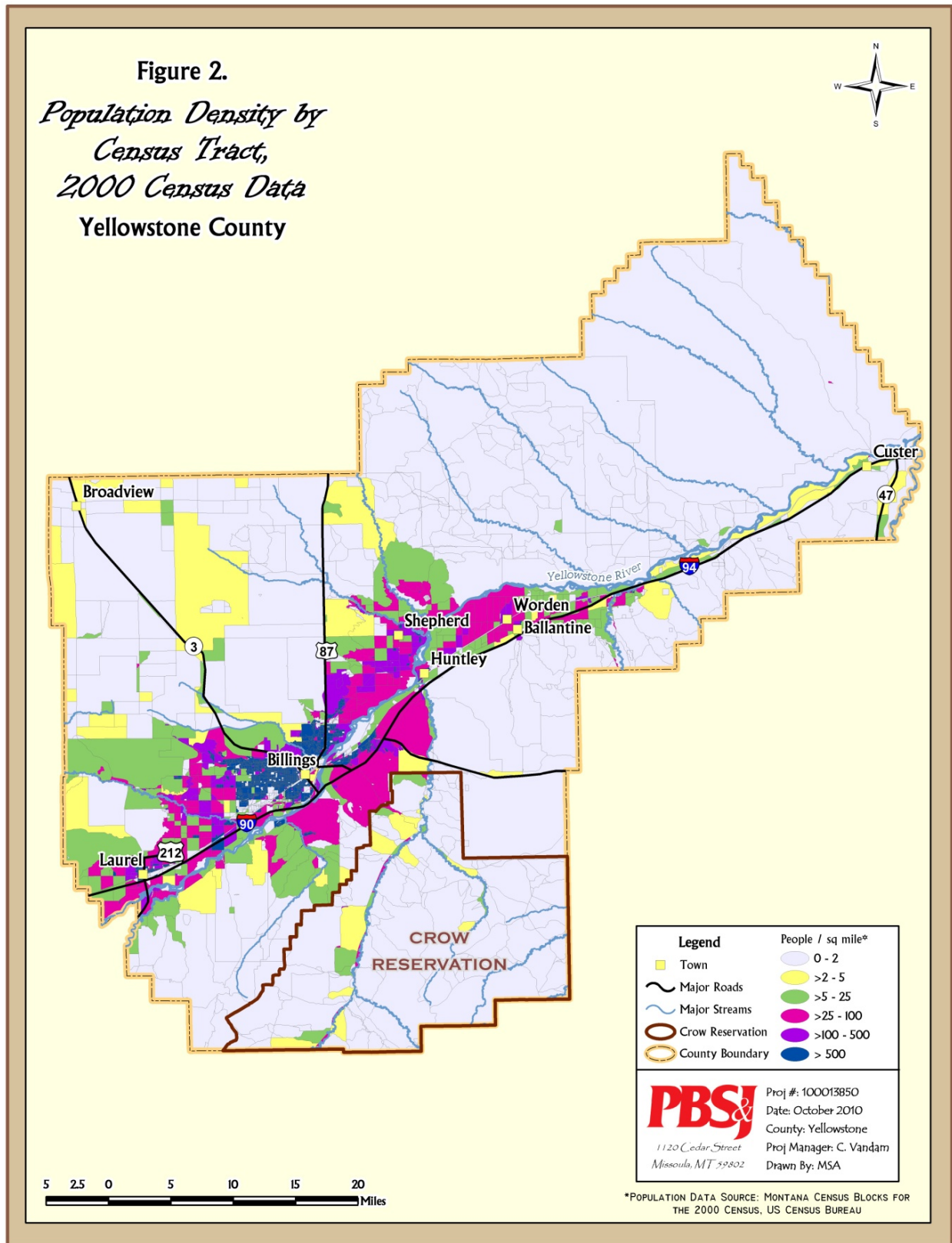
In 2008, Yellowstone County had a total personal income of \$5.6 billion, accounting for 16.6 percent of total income in the state. This represents a 178 percent increase in the \$3.1 billion total person income total in 1998 (BEA, 2010). Per capita personal income for Yellowstone County households in 2008 was \$38,927, 5<sup>th</sup> highest county in the state. The 1998-2008 average annual growth rate of per capita personal income was 4.8 percent comparable average annual growth rate for Montana (4.9 percent) but higher than the nation growth rate of 4.0 percent (BEA, 2010).

**Population:** The 2010 population count of 147,972 represents a 14.4 percent growth from the 2000 census counts. **Table 2** shows the population estimates for each of the incorporated communities within the county and population estimates for the entire county. Growth rates for Billings (15 percent) exceeded the county rate, while Laurel's population grew by 7 percent, and Broadview stayed about the same as the 2000 population census count. **Figure 2** displays the relative density of population throughout the county based on 2000 population census at the census tract level.

**Table 2. Census Estimates by Year for Yellowstone County and Incorporated Communities**

Total Population	Yellowstone County	Billings	Broadview	Laurel
2010 (Census 2010)	147,972	na	na	na
2009	144,797	105,845	153	6,750
2008	142,602	103,959	152	6,654
2007	140,047	101,798	151	6,539
2006	138,239	100,185	151	6,446
2005	136,493	98,656	150	6,356
2004	134,559	96,894	150	6,361
2003	133,054	95,332	150	6,351
2002	131,771	94,037	150	6,339
2001	130,608	92,916	150	6,330
2000	129,527	91,950	150	6,298
April 1, 2000 (Est. Base)	129,348	91,777	150	6,294
April 1, 2000 (Census 2000)	129,352	89,847	150	6,255

US Census, 2010, annual estimates for each year, the 2010 population is actual population count from 2010 census, the city and subdivision level data was not available at the time of writing.  
na: not available



**Figure 2. Population Density by Census Tract, 2000 Census Data Yellowstone County**

## 1.3. Infrastructure and Facilities

### Buildings and Improvements

**Table 3** provides a snapshot of the built environment throughout Yellowstone County. There is over \$10 billion in improvement value and almost \$5 billion in property value, based on the Department of Revenue market value of property. The average improvement value will be used to assess potential losses, where property types can be identified within hazard zones, such as floodplains.

**Table 3. Improvements and Property Value by Land Type**

Property Type	Properties	Improvement Value			Land Value			Property
		Value	Average	% of Total	Value	Average	% of Total	Total \$
agricultural	5,724	8,737,602	\$1,526	0.09%	96,306,630	\$16,825	2.07%	\$105,045,958
commercial	5,734	2,409,286,759	\$420,176	23.46%	1,197,030,776	\$208,760	25.70%	\$3,607,061,700
condominium	4,876	660,652,705	\$135,491	6.43%	118,577,238	\$24,319	2.55%	\$779,452,563
exempt	2,768	858,656,078	\$310,208	8.36%	711,882,964	\$257,183	15.29%	\$1,570,849,250
industrial	160	210,315,869	\$1,314,474	2.05%	95,082,391	\$594,265	2.04%	\$308,116,039
residential	47,502	6,039,311,918	\$127,138	58.81%	1,949,285,506	\$41,036	41.86%	\$7,989,291,007
vacant	8,280	4,267,074	\$515	0.04%	392,097,342	\$47,355	8.42%	\$396,365,440
other	459	78,797,979	\$171,673	0.77%	96,792,080	\$210,876	2.08%	\$175,762,862
<b>Totals</b>	<b>75,503</b>	<b>10,270,025,984</b>	<b>\$136,021</b>		<b>4,657,054,927</b>	<b>\$61,680</b>		<b>\$14,931,944,818</b>

Source: MDOR, 2010

### Critical Facilities

Critical facilities are of great concern because they provide the immediate services and products that are vital to preserve the well being of the community including public safety, emergency response, and/or disaster recovery actions.

Critical facilities include 911 centers, emergency operations centers, police stations, fire stations, public works facilities, sewer and water facilities, hospitals, roads and bridges, and emergency shelters. Critical facilities also include those facilities that are vital to the continued delivery of community services (such as law enforcement buildings, public services buildings, courthouses and juvenile service buildings), or facilities that house large vulnerable populations (such as jails, nursing homes, primary and secondary schools).

Critical facilities have been mapped to identify whether these facilities could be located with hazard zones (see **Figure 3**). Facilities located within hazard zones are discussed within the Hazard Assessment section of the PDM Update. A list of critical facilities is included in **Appendix D**.

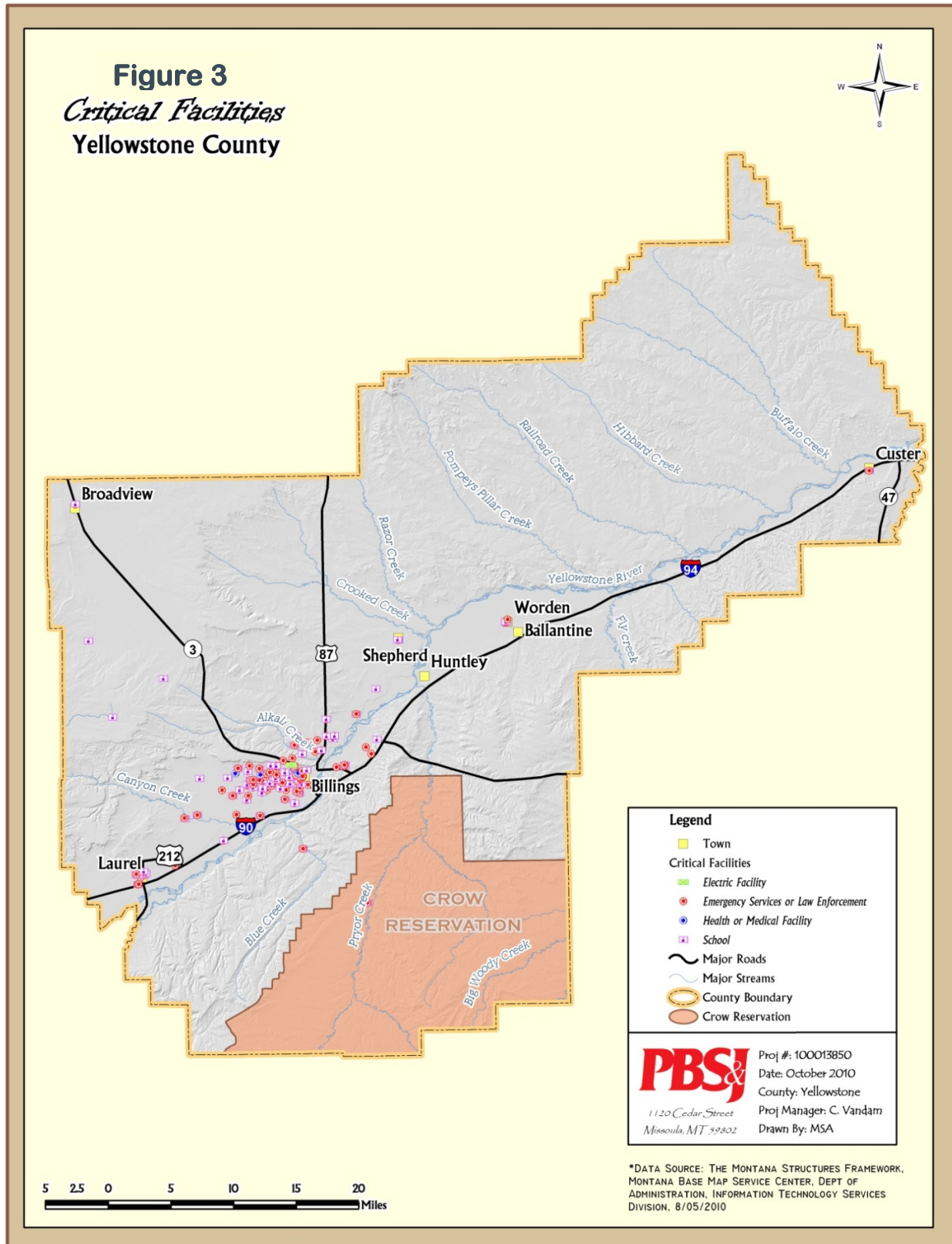


Figure 3. Critical Facilities, Yellowstone County

## 1.4. Plan Organization

The Yellowstone County multi-jurisdictional PDM follows the planning guidance requirements and recommendations of the Federal Emergency Management Agency and consists of five major components:

**1. Preface/Introduction, FEMA requirement §201.6(c)(5):** The executive summary and various preface materials found at the beginning of this PDM document describe the purpose, scope, and authority under which the multi-jurisdictional plan was prepared. The introduction provides an overview of the jurisdictions assessed in the PDM as well as a brief description of each major component of FEMA's mitigation planning guidance requirements. Copies of the signed resolution adopted by each jurisdiction are included, with PDM resolution updates to occur every five years.

**2. Planning Process, FEMA requirements §201.6(a)(3), §201.6(b), §201.6(c)(1):** This section documents the steps taken to elicit and provide opportunities for multi-jurisdictional public participation (through meetings, planning sessions, web presence, community newspaper articles, etc.), defines participating/contributing individuals and agencies, and includes information on existing plans/reports/studies as well as any updated information sources that were reviewed and incorporated into the PDM (**Appendix D**).

**3. Assessments, Vulnerabilities, FEMA requirements §201.6(c)(2)(i and ii), §201.6(c)(2)(ii) (A, B, and C):** This portion of the document is comprised of three major areas: the first identifies potential hazards and describes each in terms of magnitude/severity, duration, frequency, probability and extent. The second is an inventory of assets, including structures, critical facilities, population and infrastructure. The third section compares the first two data sets and prior occurrences of hazard events to estimate potential losses. Maps are provided to graphically depict data.

**4. Mitigation Strategies, FEMA requirements §201.6(c)(3)(i, ii, iii, and iv):** This section describes mitigation goals and objectives developed as part of the planning process and further refined by the assessments and vulnerabilities analysis. Specific actions and projects under consideration are targeted towards reducing the effects of each hazard to existing and new building and infrastructure. A benefits-cost review is conducted to prioritize, implement and administer mitigation strategies, including descriptions for any actions unique to a particular jurisdiction.

**5. Maintenance: FEMA requirements §201.6(c)(4)(i, ii, and iii):** The Plan Maintenance Section of this document details the formal process that will ensure that the Yellowstone County PDM remains an active and relevant document. This includes a schedule for monitoring and evaluating the PDM annually and producing a plan revision every five years. Yellowstone County is dedicated to involving the public directly in the continual review and updates of the PDM. Copies of the plan will be catalogued and kept at the Billings Public Library, the Yellowstone County Clerk and Records Office, and the Yellowstone Disaster and Emergency Services (DES) Office. The plan will also include the address, email address, and phone number of Yellowstone County DES which will be responsible for keeping track of public comments on the plan.

Finally, the plan maintenance section includes an explanation of how Yellowstone County government intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as the County Comprehensive Land Use Plan, Capital Improvement Plans, and Building Codes.

**Other Documentation:** In addition to the five major pre-disaster mitigation planning components described above, numerous tables, figures and appendices are included to provide supporting documentation for the planning process, such as prior resolutions, planning participation, meeting notes, related plans reviewed by the task force in preparation of this document, and a glossary of terms. Maps are provided in the flow of text to facilitate easy understanding of each hazard, variously illustrating features such as the location of potential higher risk areas, population density, etc.

## 2.0 MULTI-JURISDICTIONAL PLANNING PROCESS AND PUBLIC INVOLVEMENT

### 2.1. Documentation of Planning Process

Pre-Disaster Mitigation Planning is an ongoing and collaborative process, with the various stages of planning operating concurrently. At any given time, planning to plan, risk analysis, updating the situation assessment, research, coordinating, disaster response or other activity is occurring. Documentation of the process provides a clearer guide to successful planning and future plan updates, offering Yellowstone County a consolidated review of mitigation measures that have been successfully implemented over time, as well as updating or reworking those mitigation strategies that may require modification.

The original PDM plan was a multi-jurisdictional plan that included Yellowstone County, and the three incorporated cities and towns in the county: City of Billings, City of Laurel, and Town of Broadview. The 2004 Plan included close coordination with the Local Emergency Planning Committee, which included members representing all four jurisdictions. The 2012 PDM Update is also a multi-jurisdictional plan for Yellowstone County, the cities of Billings and Laurel, and the Town of Broadview. For the 2012 Update, the LEPC reviewed the plan update process and also reviewed a final draft of the plan. The LEPC includes representations from all four of the jurisdictions participating in the plan. The PDM Task Force Committee of the LEPC worked directly with Atkins in the development of each phase of the plan.

The original planning process for the first Yellowstone County PDM was initiated in 2004 and consisted of a core team of local representatives working on development of the plan. The core team collaborative effort included local, state, and federal agency representatives, as well as community representatives, local business leaders, and educators. In addition to the core team preparing the plan, residents, businesses, and other interested parties were kept apprised of the progress through open public meetings and the Yellowstone County Pre-Disaster Mitigation website. The 2004 PDM Plan established the foundation for pre disaster mitigation planning within the county.

The PDM Plan was reviewed at least once per year by the LEPC. The LEPC meetings provide an opportunity to discuss the progress of the action items and maintain the partnerships that are essential for the sustainability of the mitigation plan. Yellowstone County addresses statewide planning goals and legislative requirements through its Comprehensive Land Use Plan, Capital Improvement Planning, and Montana Building Codes. The Pre-Disaster Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs.

The planning process continued between 2004 and 2010, and consisted of annual reviews of the PDM by members of the LEPC to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process included a schedule and timeline, and identified the local agencies and organization participating in the plan evaluation. In 2009, Yellowstone County received grant funding to update the PDM Plan and selected Atkins to complete the Plan Update in 2010. Through the Yellowstone County LEPC, a PDM task force was established to assist Atkins in the development of risk assessment and mitigation strategies in the Plan. In the summer of 2010, an LEPC task force (members listed in **Appendix C**) held meetings with a planning consultant (Atkins) to review the 2004 PDM in anticipation of the 2012 update process. Available meeting notes are provided in **Appendix C**.

Federal Emergency Mitigation Agency guidance documents were collected and reviewed by the consultant, and updated population, structural, infrastructure and hazard events datasets were collected and revised maps were prepared for integration into the 2012 Yellowstone County PDM update. FEMA crosswalk recommendations from the 2004 PDM were also reviewed and incorporated. Several new studies and news of recent hazard-related events were collected, reviewed and incorporated into the PDM update.

The LEPC task force participants held a teleconference in October 2010 to discuss loss estimation methodologies and additional data collection sources. The LEPC task force reviewed results of the risk assessment portion of the updated draft plan in November 2010. A draft PDM Plan was prepared in January 2011 and reviewed by the Task Force and the LEPC. Following advertised notices, the draft final PDM Update was presented in public input sessions in communities of Billings, Laurel and Broadview. After incorporating the input from the jurisdictional meetings and public participation, the LEPC task force will then review the preliminary update of the 2012 PDM before forwarding it on to FEMA's State Hazard Mitigation Officer (SHMO) for review.

**2012 Plan Development Participation:** Atkins held meetings with the task force members of the Yellowstone County LEPC. LEPC is composed of individuals representing disaster and emergency services, government officials, first responders, neighboring communities and counties, collaborating agencies, nonprofit organizations, and private industry. Yellowstone County, City of Billings, and City of Laurel have representation on the LEPC and were involved in review of the PDM. Representatives from the Town of Broadview, including the Mayor, School Superintendent, and Public Works Director, provided comments to the plan during the January 10, 2012 Town Council meeting. Public meetings were also held in each of the jurisdictions to involve the jurisdiction in the planning.

The PDM Task Force Members include:

- Duane Winslow, Director of Yellowstone County Emergency & General Services
- Joe Marcotte, Billings Clinic Safety Director, LEPC Chair
- Dianne Lehm, Big Sky Economic Development Authority
- Gregory Neil, Riverstone Health
- Wyeth Friday, Yellowstone County/City of Billings Planning
- Patrick O'Neil, St. Vincent Healthcare
- Maggie Lough, Lockwood Fire Council
- Charlie Vandam, Atkins/PBS&J

Areas addressed by the 2012 plan development update process included the following:

- Evaluate potential natural and manmade disasters in Yellowstone County and its jurisdictions to include a revised hazard assessment,
- Recommend and prioritize hazard mitigation measures,
- Determine necessary updates to the existing Yellowstone County Pre-Disaster Mitigation Plan,
- Incorporate all suggestions from FEMA's Plan Crosswalk, make consistent with the Montana Multi-Hazard Mitigation Planning Guidance, and incorporate all new FEMA requirements for PDMs,
- Follow any requirements of the Local Multi-Hazard Mitigation Planning Guidance,
- Incorporate the West Billings flood control, stormwater and groundwater recharge measures into the plan as a component of the plan document.

The following schedule presents the process followed for the completion of the PDM Update:

- September 9, 2010: PDM Task Force Meeting, discussed schedule and coordination of plan development. Introduction of PDM plan update to LEPC, asking for their involvement in review and recommendations of draft update to the jurisdictions in the future.
- October 14, 2010: Teleconference with PDM Task Force to review the community profile and hazard assessment approach and methodology.
- November 19, 2010: PDM Task Force meeting to review and reaffirm goals and update plan objectives/projects.
- January 13, 2011: Posting of Draft PDM Update on County website and presentation of PDM Update to LEPC asking for comments and suggestions.
- February 1-3, 2011: Public Meetings in Billings, Laurel, and Broadview.
- May 12, 2011: Presentation of Final Draft PDM Update to LEPC

- July 12, 2011: LEPC Votes to recommend adoption of PDM Update to Yellowstone County, City of Billings, City of Laurel, and Town of Broadview.
- January 10, 2012: Plan comments obtained from Town of Broadview representatives during the Town Council meeting.

## 2.2. Public Involvement

The Draft PDM Update was presented in three public meetings located in each jurisdiction covered by the plan. These meetings were publicized through local newspapers and on the Yellowstone County web site to encourage participation. In each meeting, displays were set up that showed the results of the risk assessment and estimated annualized losses from high priority hazards. Atkins presented the results of the risk assessment and identified the proposed mitigation plan. Participants were encouraged to ask questions and offer suggestions for mitigating potential disasters. Public comment cards were distributed to all meeting participants and were encouraged to write down comments or suggestions. In addition, Yellowstone County posted the PDM update on the County's website and offered means for the public to comment electronically through the website.

The Public Meetings were held in the following locations:

- Billings Community Center, Tuesday February 1, 2011, 7:00-9:00
- Laurel School District Administration Building, Wednesday February 2, 2011, 7:00-8:00
- Broadview Community Center, Thursday February 3, 2011, 7:00-8:00

## 2.3. Review and Coordination with other Studies and Plans

Yellowstone County recognizes that hazard resistant communities integrate hazard mitigation in multiple planning efforts. The Yellowstone County and City of Billings Growth Policy (2008) identifies protection from wildfire, flooding, and landslide/rockfall hazards as one of the key strategies in addressing new growth. The Growth Policy provides guidance to regulations governing subdivisions and zoning. The subdivision regulations and zoning regulations for all jurisdictions were reviewed to ensure consistency with the goals and projects identified in the PDM Update. The Growth Policy and Billings Housing Needs Assessment were reviewed to assess future growth and impacts on mapped hazards areas.

There are many specific plans and actions that address specific hazards and mitigation of those hazards. Yellowstone County and all fire jurisdictions within the county have adopted a Community Wildfire Protection Plan (CWPP) that identifies goals and objectives for reducing hazards associated with wildfire. The PDM Update incorporates the goals and objectives of the CWPP plan and includes a risk assessment of the wildfire throughout the county to compare against other hazards.

Yellowstone County recently completed a preliminary flood insurance study that updates floodplain maps and converts the maps into digital flood insurance rate maps. While these maps have not been finalized, the preliminary maps were used to define the flood hazard areas throughout the county. More detailed study of flood hazards and preliminary design for flood mitigation has been completed on the West Billings area. A summary of the West Billings project is included in **Appendix F** to the PDM Plan Update. The West Billings floodprone area was included in the assessment of potentially vulnerable properties in the risk assessment.

Emergency Action Plans for Anita Dam and Cooney Dam were reviewed to assess potential impacts from dam breach. The Seismic Hazard Susceptibility Study for Southwest Montana was used to determine the susceptibility and potential frequency of earthquakes in Yellowstone County. In addition an earthquake prediction model recreating a historic earthquake event in the region was performed to identify potential damage, injuries, and fatalities throughout the county.

## 2.4. Compliance with National Flood Insurance Program (NFIP)

Yellowstone County, City of Billings and City of Laurel all participate in the National Flood Insurance Program (Town of Broadview does not participate in NFIP because there are no designated floodplains within the jurisdiction). The three participating jurisdictions have completed flood studies and have adopted floodplain regulations to ensure new and substantially remodeled structures meet the minimum floodplain management regulations. Currently all jurisdictions are participating in the digital conversion of the flood insurance rate maps. The new flood maps will include new flood hazard studies for Blue Creek and Pryor Creek as well as new models of the and floodplain boundaries for the Yellowstone River. Preliminary DFIRM maps have been prepared, the maps are currently under review. Yellowstone County and the City of Billings have enacted subdivision regulations that establish "no-build zones" within the regulatory 100 year floodplain, to restrict encroachment of new structures within the flood fringe areas. In addition, Yellowstone County completed a new flood hazard study on Cove and Little Cove Creek in the West Billings area and have completed preliminary design for increased storage and improved flood conveyance to reduce the areal extent of the floodprone areas (see Section 4.3 and **Appendix F**).

## 3.0 MULTI-JURISDICTIONAL HAZARD RISK ASSESSMENT

In accordance with §201.6(c)(2) of the Rule a risk-based assessment was conducted to evaluate local risks to vulnerable populations and also examine the risk presented by natural and manmade hazards. The risk assessment includes a detailed description of each hazard that could affect Yellowstone County and its jurisdictions along with an analysis of the vulnerability to the hazard. Hazards that were identified as unique to a particular jurisdiction are also addressed. The goal of the risk assessment process is to determine which hazards present the greatest risk and what areas are cumulatively the most vulnerable to hazards.

### 3.1. Hazard Profile: Historic Occurrence, Risks, Estimated Losses

The hazard risk assessment requires collecting and analyzing information about what hazards have historically impacted the community and what hazards may present risks in the future. Identifying historical and possible future hazards was accomplished through interviewing local officials, local emergency planning and response staff, the general public, researching historical data, and FEMA/GIS-based datasets and mapping.

Damage and casualties, in both location and severity, will vary between hazards. Hazards were identified and profiled through several different means. A history of past events and their impacts was compiled to assess the potential for future events. Where possible, hazard zones are mapped to demonstrate specific areas where risks are greatest. Where loss data or forecast models are available, loss estimates are calculated. For most hazards, the loss estimate method uses the total documented losses adjusted to 2010 dollars and divided by the period of record. These losses have been adjusted to an annual average, or annualized loss, to be able to make relative comparisons of economic impact of the hazards. For example, if there were \$50 million in losses from storm events over a period of 25 years, the predicted future loss from storms will be \$2 million per year. The loss estimates are crude numbers and the intent is to make relative comparisons between hazards rather than identifying precise annual cost from the hazard.

The hazards considered in the Plan Update, the background sources for past occurrences and damage, along with loss estimation methodology is shown in **Table 4**. The PDM Task Force concluded there were no new additions to the list of potential hazards.

**Table 4. Potential Hazards, Rank, Data Sources, Methods**

Hazard Type	Hazard Event	Data Sources	Location Specific	Loss Estimation Methods
WATER	Flooding	<i>Preliminary Flood Insurance Study (FEMA)2010</i>	yes	<i>Structures within 100-year or mapped flood prone zones, FEMA Loss Estimation Models</i>
	Dam Failure	<i>2004 PDM Plan/Dept Natural Resources &amp; Conservation (DNRC)</i>	yes	<i>Not Assessed</i>
WILDFIRE	Wildfire	<i>Community Wildfire Protection Plan</i>	yes	<i>Structures within medium and high treatment areas</i>
WEATHER	Wind and Hail Storm	<i>Spatial Hazard Events &amp; Losses Database (SHELDUS)</i>	county	<i>SHELDUS Storm Event Data</i>
	Tornado	<i>SHELDUS</i>	county	<i>SHELDUS Storm Event Data</i>
	Winter Storm	<i>SHELDUS</i>	county	<i>SHELDUS Storm Event Data</i>
	Drought/ Insect Infestation	<i>Montana DNRC</i>	county	<i>Not Assessed</i>
GEOLOGIC	Expansive Soil	<i>Montana Bureau of Mines &amp; Geology (MBMG)</i>	yes	<i>Not Assessed</i>
	Landslide	<i>MBMG</i>	yes	<i>Not Assessed</i>
	Earthquake	<i>HAZUS</i>	county	<i>HAZUS Simulation Model</i>
	Volcanic Ash	<i>US Geological Survey (USGS)</i>	county	<i>Not Assessed</i>
MANMADE	Urban Fire	<i>2004 PDM Plan</i>	county	<i>Not Assessed</i>
	Transportation/ Mobile Incident	<i>US Department of Transportation (USDOT)</i>	county	<i>Not Assessed</i>
	Hazardous Materials Incident/ Accident-Fixed	<i>US Environmental Protection Agency (EPA) Triexplor Database</i>	county	<i>Not Assessed</i>
	Terrorism/ Bio-Terrorism	<i>2004 PDM Plan</i>	county	<i>Not Assessed</i>
	Civil Disturbance/ Riot/Labor Unrest	<i>2004 PDM Plan</i>	county	<i>Not Assessed</i>
	Enemy Attack	<i>2004 PDM Plan</i>	county	<i>Not Assessed</i>

### **3.1.1. Flooding: Regional, Flash, Ice Jams**

Flooding is an overflow of water onto land that is normally dry and is a natural event for rivers and streams. Excess water from snowmelt and/or rainfall can accumulate and overflow the riverbanks onto adjacent floodplains. Floods are the result of a multitude of naturally occurring and human-induced

factors, but they all can be defined as the accumulation of too much water in too little time in a specific area.

Floodplains are lowlands, adjacent to rivers, streams and lakes. Typically dry, floodplains are the defined areas that are covered with water during flood events and are subject to recurring floods. Floodplains are cited based on the probability an area can be flooded, such as the 100-year floodplain refers to the 1 percent chance each year an area along a stream or river can be flooded. Where mapped, the 100-year floodplain is often regulated prohibiting or conditioning the type of development that can be built within the 100-year floodplain. Buildings or other structures placed in these 100-year floodplains have a 1 percent or greater potential to be damaged by floods each year. Development in the floodplain can also change the pattern of water flow and increase flooding and flood damage on adjacent property by blocking the flow of water and increasing the width, depth, or velocity of flood waters (Source: FEMA, 2003).

During the 20th century, floods were the number-one natural disaster in the United States in terms of the number of lives lost and property damage. They can occur at any time of the year, in any part of the country, and at any time of the day or night (USGS, 2000). As much as 90 percent of the damage related to all natural disasters (excluding drought) is caused by floods and associated debris flows. From 1992 to 2001, floods cost the nation, on average, more than \$4.1 billion annually. Between 1972 and 2001, on average, 127 people a year were killed by floods (mostly by flash floods) (NDEC, 2010).

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.

Types of floods include regional floods, flash floods, ice-jam floods, storm-surge floods, dam- and levee-failure floods (see **Section 3.1.8**), and landslides (see **Section 3.1.10**) including debris and mudflow floods. The following descriptions of flood types were provided by the USGS (2000).

**Regional Floods:** Some regional floods occur seasonally when winter or spring rains coupled with melting snow fill river basins with too much water too quickly. Two key contributing factors are rainfall intensity and duration; topography, soil conditions and ground cover also play important roles. Urban development and frozen ground can reduce infiltration into the soil and thereby increasing runoff. Extended wet periods during any part of the year can create saturated soil conditions, after which any additional rain runs off into streams and rivers, until river capacities are exceeded.

**Flash Floods:** Flash floods can occur within several seconds to several hours, with little warning. Flash floods can be deadly because they produce rapid rises in water levels and have devastating flow velocities. A flash flood generally results from a torrential (short duration) rain or cloudburst on a relatively small drainage area. Chinook winds, warm dry winds that can gust to 100 mph and that are typical to the area, often lead to the rapid melting of snow and cause flooding.

**Ice Jam Floods:** Ice-jam floods occur on rivers that are totally or partially frozen. A rise in stream stage will break up a frozen river and create ice flows that can pile up on channel obstructions such as shallow riffles, log jams, or bridge piers. The jammed ice creates a dam across the channel over which the water and ice mixture continues to flow. This allows more jamming to occur, causing backwater upstream from the ice dam to rise and overflow the channel banks. Flooding moves downstream when the ice dam fails, and the water stored behind the dam is released. At this time the flood takes on the characteristics of a flash flood, with the added danger of ice floes that, when driven by the energy of the flood wave, can inflict major damage on structures. An additional danger of being caught in an ice-jam flood is hypothermia, which can cause death.

**History of Flood Events:** Yellowstone County has experienced major flooding of the Yellowstone River in 1918, 1943, 1944, 1967, 1974, 1975, 1991, 1996 and 1997 with total damages totaling conservatively \$65,000,000 during that period. Community impact due to flooding is typically widespread, affecting large

areas. Major floods of record occurred on Alkali Creek, Canyon Creek, and Cove Creek in 1937 and 1923. Blue Creek and Pryor Creek flooded severely in 1978. The 1978 and 1997 flood events were declared Presidential disasters. Yellowstone County historic flood events are profiled in **Table 5** with short descriptions of events from available information.

**Table 5. Summary of Yellowstone County Historic Flood Events**

Date	Hazard Type	Location	Hazard Event Description: Severity/Damages, Costs
June 1918	Flooding	Yellowstone River	Yellowstone River peak flow of 80,000 cfs.
June 11-12, 1937	Flooding	Billings	Flooding-hail-rainfall (2.78") event covered 60% of the City of Billings. One life lost, 300 people homeless, 2664 homes damaged, \$3 million cost (\$45m in 2010 \$), \$50,000 worth of records lost in Federal building, 8,000 acres of cropland lost at a cost of \$250,000, \$150,000 in road damage, \$200,000 in damage to fairgrounds, irrigation ditch damage at \$100,000 due to Billings Bench Water Association (BBWA) canal break by Highlands Golf Course, and BBWA flume broke at Alkali Creek. The population of Billings was 20,000 at the time.
August 22, 1965	Flooding	Laurel	Rain, hail, flooding in Laurel. Water from a cloudburst broke irrigation ditches above Laurel. Costs included \$113,000 damage to business district, \$56,000 damage to streets, \$106,000 damage to residential areas, with total damage of \$274,750. Rural area damage was \$55,000. (\$2.3m in 2010\$)
June 16, 1974	Flooding	County Wide	Flood Yellowstone River. \$20,000 road damage, 50 farms and 2640 acres of crop damage, six homes flooded, \$1.1 million total loss (\$4.9m in 2010\$), emergency declaration by county disaster committee. Peak flow for the Yellowstone River at Billings on June 19 = 69,500 cfs.
June 14, 1975	Flooding	Along River	Flooding Yellowstone River. Peak flow for the Yellowstone River at Billings on July 7 = 67,600 cfs.
May 1978	Flooding	County Wide	Flooding, tributaries of Yellowstone River. Over 7" rain fell in Yellowstone and Big Horn Counties. County, State, and Federal Disaster declaration (FDAA-558-DR-3). 62 public projects including 8 bridges over Blue Creek and Pryor Creek washed out. Total cost \$1.445 million: \$1.274 million reimbursed by federal government, total county cost was \$181,000 (total \$9.7m in 2010\$). Agricultural damage and private damage not included in cost. Several Blue Creek subdivisions flooded. Peak flow for the Yellowstone River at Billings on May 19 = 50,200 cfs.
June 17 & 21, 1991	Flash Flood	County Wide	Flash Flooding. Flooding between Billings and Roundup on HWY 87 North. County bridge washed out on Razor Creek. 1 death—woman in vehicle was washed away. Water poured off rims and homes below; Zimmerman Trail flooded, had rockslides. Basements in West Billings flooded. \$200,000 estimated damage to homes/businesses, \$41,000 damage to crops. (\$387K in 2010\$)

Date	Hazard Type	Location	Hazard Event Description: Severity/Damages, Costs
January 2-3, 1997	Urban/Small Stream	Worden	Flooding due to ice jams, Yellowstone River. Quick Chinook melted ice and caused ice to break, causing jams and flooding. Several farmsteads in Worden and residences in the Blue Creek areas received damage. City County drain in south Billings backed up from the river causing minor flooding.
01/03/97	Flash Flood	Billings	No information available
02/02/97	Urban/Small Stream	Laurel	No information available
June 6-12, 1997	Flood-Yellowstone River	County Wide	Flooding on Yellowstone River and Clarks Fork due to heavy snowpack and rains. County, State, and Federal Disaster declaration (FEMA 1183-DR-MT) for all counties along river drainage. \$1.4 million in damage: \$388,000 public damage, \$1 million in irrigation head gate system damage. Huntley dike damaged. River was 2 feet over flood stage (100-year flood) and prior protection (diking) was given to the water plant in Laurel and Lockwood. Storm on June 10 dropped 3" rain flooding a south side Billings subdivision (Kings Green). On July 20 <sup>th</sup> , another 1.6" rain caused \$170, 000 in county road damage including Zimmerman Trail. Airport closed; 60 mph winds and hail recorded. Sixth Street underpass flooded. County resolution 97-39 on July 29, 1997. Total expenses for the 1997 flooding were \$2,213,982 (\$3m in 2010). Peak flow for the Yellowstone River at Billings on June 12 = 82,000 cfs.
07/08/97	Flood-Yellowstone River	County Wide	Two and a half feet of water near Metra Park at intersection of main and first streets. No recorded losses (NCDC).
07/30/98	Urban/Small Stream	Billings	A strong thunderstorm produced street flooding on 14th street between Lewis and Clark. No recorded losses (NCDC).
07/31/98	Urban/Small Stream	Billings	Street flooding was reported throughout Billings. Several underpasses were flooded and about a dozen manhole covers were flooded off. No recorded losses (NCDC).
10/02/98	Urban/Small Stream	Billings	Localized street flooding was reported in downtown Billings between 30th and 27th streets on Montana Avenue and between 1st and 2nd streets on 27th avenue. No recorded losses (NCDC).
07/04/04	Urban/Small Stream	Billings	Street flooding was observed in downtown Billings with the 6th street underpass flooded overnight. Heavy rain caused rock slides along the Rimrocks and some basements were also flooded. 1.2 to 1.8 inches of rain fell across Billings on the evening of July 4th. No recorded losses (NCDC).
07/07/07	Urban/Small Stream	Billings Laurel	Two thunderstorm complexes moved across portions of South Central Montana during the early and late evening hours of the 7th. The hardest hit areas were Billings and Laurel where street flooding along with very strong winds were reported. No recorded losses (NCDC).

Recorded losses from the National Climatic Data Center indicate there has been \$65.3 million dollars (adjusted to 2010 dollars) in flood related losses throughout the county since 1937.

**Participation in the Flood Insurance Program:** Yellowstone County, the City of Billings, and the City of Laurel all participate in the National Flood Insurance Program (NFIP). The town of Broadview does not have a FEMA regulatory floodplain within its boundaries and therefore does not participate. **Table 6** shows the NFIP claims filed since the effective status of the program November, 1981. Since 1981 there have been 107 NFIP claims for flood damage, three of the claims have been for repetitive losses (DNRC, 2010a).

**Table 6. National Flood Insurance Claims**

NFIP Participants	Policies	Insured Amount	Claims/(Repetitive)	Losses Paid
Yellowstone County	136	\$30,070,300	56 / (3)	\$314,036
City of Billings	72	\$16,615,500	39 / (0)	\$199,163
City of Laurel	9	\$1,616,000	10 / (0)	\$97,490
<b>Totals</b>	<b>217</b>	<b>\$48,301,800.00</b>	<b>107 / (3)</b>	<b>\$610,689.00</b>

**Mapped Floodplains and Flood Prone Areas**

FEMA's Flood Insurance Rate Maps (FIRM) identify where there is a 1 percent occurrence of flooding (100-year floodplain) to impact property relative to a locale's major rivers and streams. Within Yellowstone County, the 100-year floodplain is mapped on the following rivers/streams:

Alkali Creek	Duck Creek Tributary
Blue Creek	Fivemile Creek
Canyon Creek	Italian Ditch
Clarks Fork Yellowstone River	Main Street Overflow
Cove Creek	Nutting Ditch
Dry Creek	West Main Street Overflow
Duck Creek	Yellowstone River

Source: Preliminary National Flood Insurance Study Yellowstone County (FEMA, 2010)

The probability of future flooding in Yellowstone County and its jurisdictions is very high. While most of the affected area is non-developed farm and ranch land, the communities of Laurel and Billings have experienced most of the damage to buildings and infrastructure. As the urban area expands more structures are built in areas potentially susceptible to flooding, reducing permeable land surface and further exacerbating stormwater runoff.

Yellowstone County, the City of Billings and the City of Laurel have completed preliminary Digital Flood Insurance Rate Maps (DFIRMs) for these communities. The DFIRMs were completed to update the flood hazard areas and to continue compliance with the NFIP. The 2010 Preliminary Flood Insurance Study identifies the following susceptible areas:

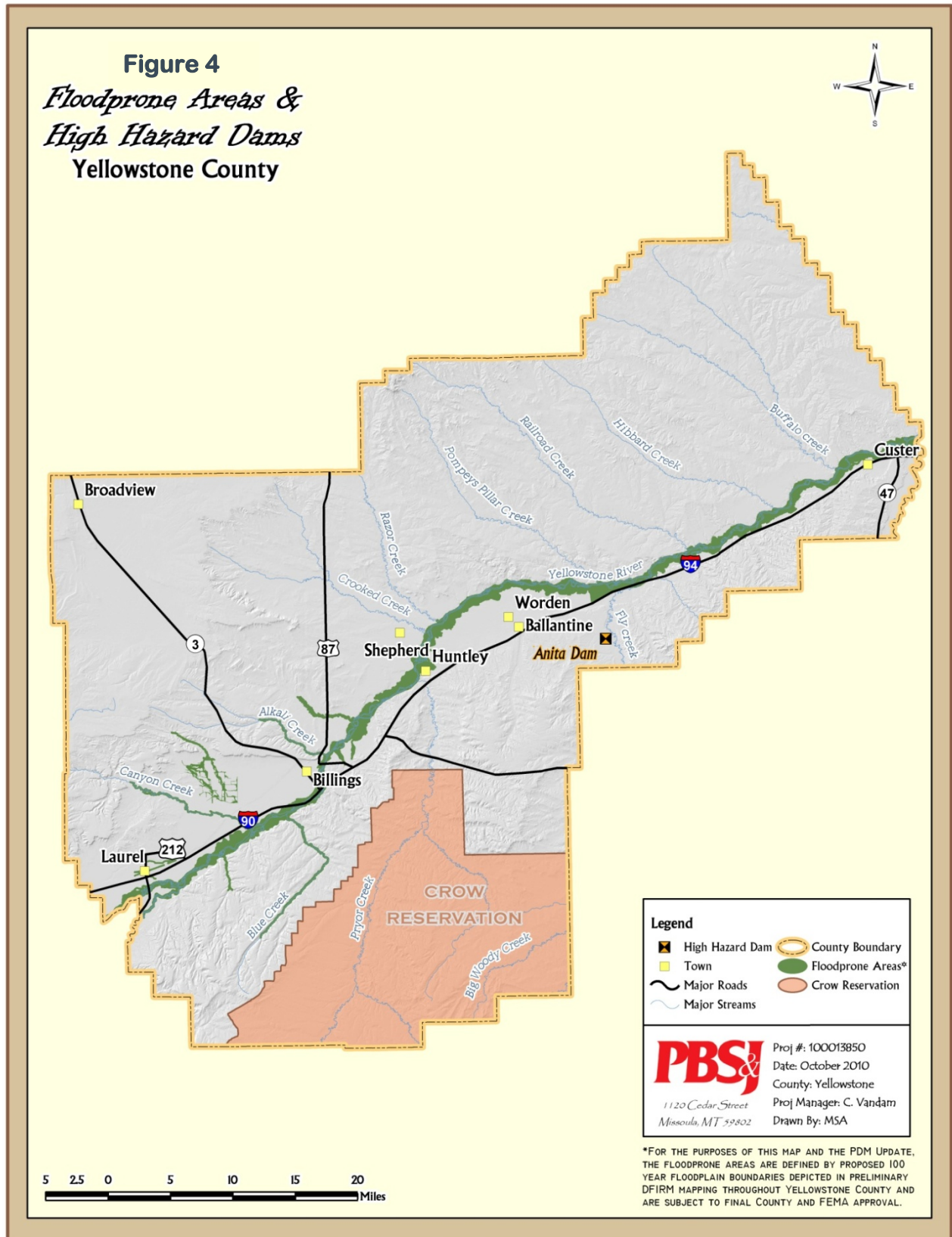
- Yellowstone River and Clarks Fork of the Yellowstone related to development within the floodplain and uncertified levees throughout the river's floodplain,
- Cove Creek and Little Cove Creek in West Billings, due to undefined flood channels and intersecting irrigation and drain ditches,
- Italian Ditch and Main Street in Laurel due to intersecting ditches and undersized culverts and crossings for roadways.

The weather patterns in the region suggest a continued propensity toward receiving large amounts of moisture over short periods of time, and rapid snow melt resulting from dramatic temperature changes. With the Yellowstone River running through Yellowstone County and the large number of smaller tributary streams feeding into the Yellowstone River, future flooding events will be inevitable.

*Critical Facilities in Floodplain:* Below is the list of critical facilities that are mapped within the 100-year floodplain or flood prone zones within the County:

- Emergency Shelter/School: Blue Creek School
- Airport: Wilcox (private, turf)
- Emergency Shelter: 48<sup>th</sup> Street Church of Christ
- Fire: Billings Fire Department Station 7

**Figure 4** displays the FEMA mapped floodplain areas. **Figure 5** displays the flood prone zones in the Cove Creek and Little Cove Creek area.



**Figure 4. Flood Prone Areas and High-Hazard Dams, Yellowstone County**

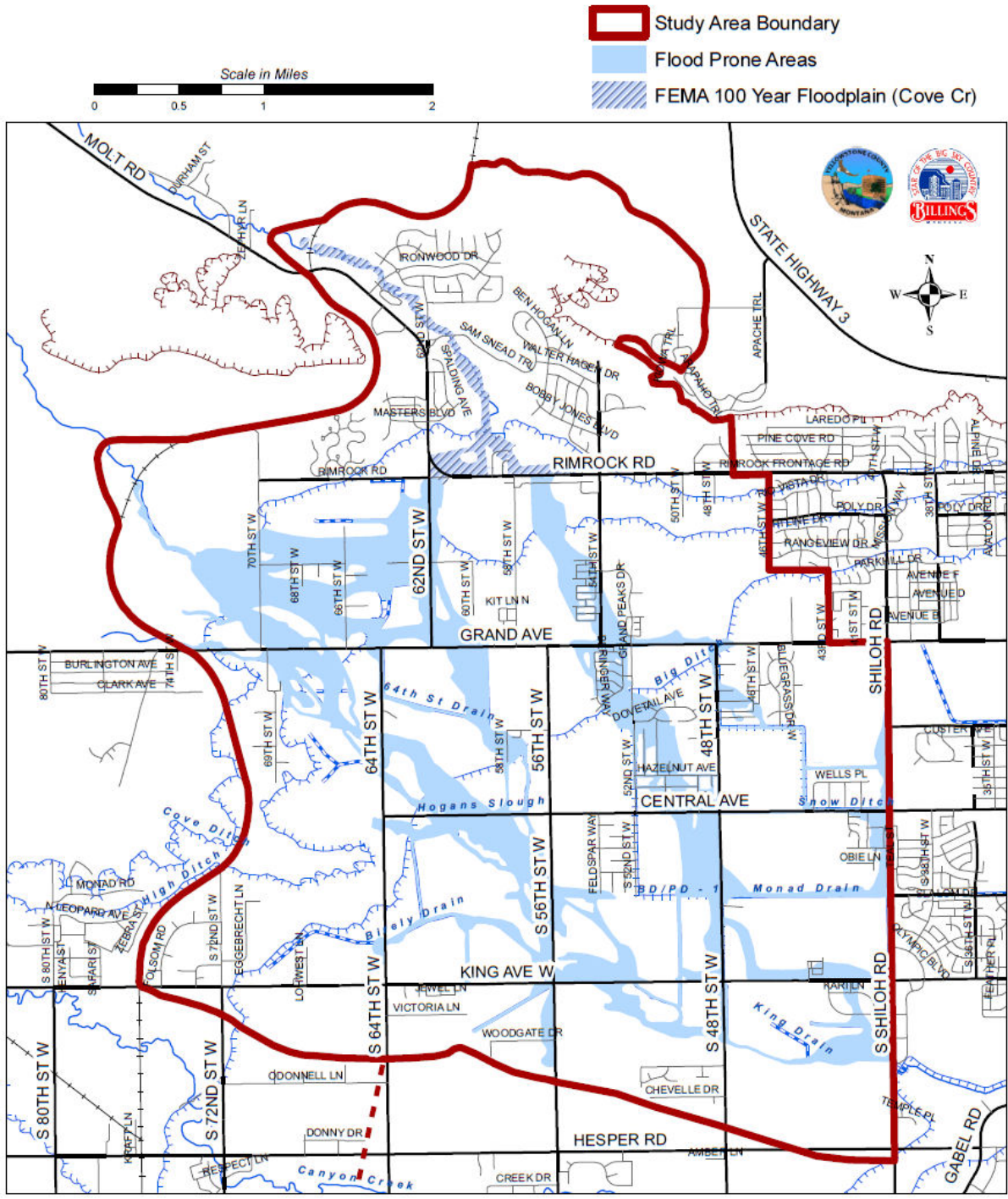


Figure 5. Flood Prone Areas in the West Billings Study Area

### Estimated Future Losses

The sum of the documented flooding losses shown in **Table 7** exceeds \$65 million. Even though these losses are adjusted to 2010 dollars, these losses underestimate the potential loss if a 100-year flood event were to occur today. The urban area footprint has expanded, development has occurred within flood prone zones, and Billings has five times the population in 2010 as it did during the 1937 floods. The NFIP has \$48m in property insured under that program, but a 1 percent flood event is expected to exceed the insured value of these properties and may exceed the cumulative losses from flooding to date.

Losses from flooding were estimated by counting parcels within the 100-year floodplain or mapped flood prone area on the Yellowstone River and select tributaries of the Yellowstone (see **Figure 5**). The boundaries for floodplain and flood prone zones were taken from draft DFIRMs for Yellowstone County and mapped flood prone zones in the West Billings area (PBS&J 2007). The flood prone areas were related to the State of Montana's Structures database that identifies locations of structures and type of structures. These points within the flood prone zones were assumed to be exposed to floodwaters in the event of a 100-year flood.

**Table 7** shows the number of property types at risk to flooding and estimated losses. The loss estimate was based on FEMA guidance for losses in the event of a flood and an average of 3 feet of water inside structures. Total exposed value of property (both public and private) is \$172million, with estimated damages of \$116m from a 1 percent flood event. Assuming the flood event occurs once every 100 years, the annualized losses \$1.12m.

**Table 7. Number of Property Types at Risk to Flooding and Estimated Losses**

Property Type	# Properties in 100-year floodplain	Average Improvement Value by Type	Value of Improvements in Floodplain	Estimated Structural Loss <sup>1</sup>	Estimated Content Loss <sup>2</sup>	Total Estimated Loss
Residential	1003	127,138	127,519,414	34,430,242	51,645,363	86,075,604
Commercial/Industrial	100	420,176	42,017,600	11,344,752	17,017,128	28,361,880
Exempt Properties	3	930,624	2,791,872	753,805	1,130,708	1,884,514
Total	1,106		172,328,886	46,528,799	69,793,199	116,321,998
Annualized Loss Estimate at 1% interval				465,288	697,932	1,116,322

<sup>1</sup> Estimated at 27% of Improvement Value Residential & Commercial Uses

<sup>2</sup> Estimated at 40.5% of Improvement Value Residential & Commercial Uses

The City of Billings, City of Laurel, and Yellowstone prohibit the development of future properties within the designated 100 year floodplain under the jurisdiction's subdivision regulations. Even within existing lots, new development within the 100 year floodplain will require floodplain permits which generally prohibit new structures unless they are able to meet flood proofing requirements. In addition, the subdivision regulations require flood hazard assessments in areas that may be subject to flooding but are outside regulated floodplains. Based on these regulations, it is unlikely new buildings would be constructed in areas subject to flooding.

### Summary of Vulnerability and Impact

Yellowstone County, the City of Laurel, and the City of Billings all have a **high** potential for structural damages from flooding and **high** potential for injuries/fatalities. There are over 1,100 known properties that are within flood hazard zones, representing about \$172 million in structural value. There have been \$65 million in documented losses to date. Future losses are estimated to be an average \$1.1 million per

year. The town of Broadview does not have mapped floodplain or areas determined to be floodprone, therefore is considered to have low potential for structural damages and injuries.

### **3.1.2. Wildfire**

Yellowstone County adopted a Community Wildfire Protection Plan (CWPP) in January 2005 (amended in February 2006) to identify the hazards and risks from wildfire and make recommendations for mitigation of wildfire hazards. The CWPP was prepared in response to the Healthy Forest Restoration Act (HFRA) in 2003 allowing the County to prioritize and receive federal assistance for fuel reduction projects within designated Wildland Urban Interface (WUI) zones. The CWPP is a more thorough and detailed analysis of the risks from wildfire and identifies where fuel reduction, on both private and public lands, could best mitigate impacts from wildland fires. This Plan Update incorporates the hazard/risk analysis and recommended mitigation plan from the CWPP by reference.

Community impact due to wildfire can vary greatly on the location of the event. Yellowstone County has very diverse terrain; some areas with sparse vegetation and others with an abundance of trees, scrub pine, and wild grasses. Wildfires impact farm and ranch land, livestock, structures, individuals and utilities.

Whether natural or human-influenced, wildfire is a raging, rapidly spreading fire. Wildland fires often begin unnoticed, and can spread quickly igniting grass, brush/scrub, trees and homes. Severe wildfire conditions have historically represented a threat of potential destruction within Montana. 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.

Lightning can present particularly difficult problems when dry thunderstorms move across an area suffering from seasonal drought. In northeast Montana, the railroad is a relatively common ignition source of wildfires. Multiple fires can be started simultaneously, as is often the case in Montana. In dry fuel areas, these fires can cause massive damage before containment. Dry grass, associated with farmland in CRP, is the primary fuel for Montana wildfires. The rate of spread of a fire varies directly with wind speed.

Because we live in wildfire dominant environments, wildfires are common occurrences and occur each year in various forms of severity. Drought and weather often combine to produce conditions that create severe wildfire events in which structures are threatened and lost. Some of the more significant fires events are presented below:

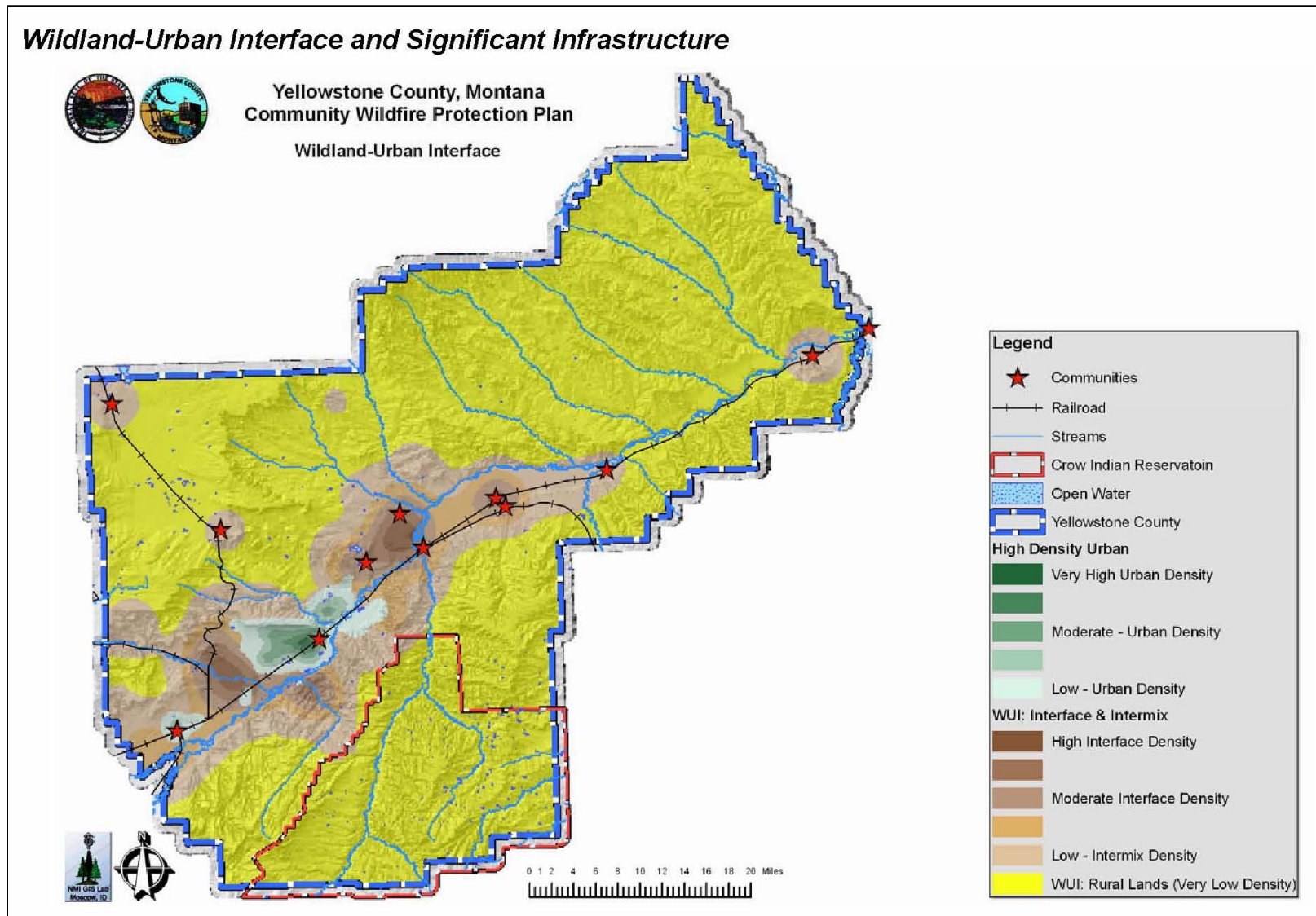
- August/September, 1984: **Hawk Creek Fire** in Northern Yellowstone County and Musselshell County burned 145,000 acres of range and timberland and destroyed 44 homes. The fires were related to extreme drought conditions throughout the county. County disaster declaration August 28, 1984, followed by a State declaration and a Federal agricultural designation (for rancher assistance only). County response cost \$51,000, City \$1,800.
- July, 2006: The **Pine Ridge Complex** and **Bundy Railroad Fire** ignited in July and together burned over 230,000 acres in eastern Yellowstone and extreme northern Big Horn Counties. These fires spread rapidly due to strong thunderstorm winds on July 12th. The Bundy Railroad Fire affected areas north of Pompey's Pillar, whereas the Pine Ridge Complex burned nearby south of Interstate 94. The **Emerald Hills Fire** in Lockwood burned 3800 acres in August, threatening several homes and causing evacuations.

### ***Mapped Wildfire Hazard Areas***

With more people choosing to build in woodland settings, forests, and remote mountain sites, increasing numbers of people are occupying areas prone to wildland fires, otherwise known as the Wildland Urban Interface (WUI). WUI's are defined as the zone where structures and other human development are in close proximity to undeveloped wildland or vegetative fuel. The Yellowstone County CWPP defines the WUI by four conditions: interface condition where high density development abuts wildland fuels; intermix condition where wildland fuels are scattered amongst and around low to high density development; occluded conditions where small islands of wildland fuels are located within developments, and rural

conditions where very low densities exist (ranches, resorts) within an area of wildland fuels (YCCWPPC, 2006). **Figure 6** depicts the mapped WUIs within Yellowstone County.

**Figure 7** depicts proposed treatment areas within WUIs where for community projects and Bureau of Land Management fuel treatments. The CWPP is the result of analyses, professional cooperation and collaboration, assessments of wildfire risks and other factors considered with the intent to reduce the potential for wildfires to threaten people, structures, infrastructure, and unique ecosystems in Yellowstone County, Montana. This multi-jurisdictional 2010 PDM update was prepared to be compatible with the 2006 Wildfire Plan and its recommendations for mitigation projects and implementation strategies. A copy of the 2006 Wildfire Plan Executive Summary can be found in **Appendix B**.



**Figure 6. Wildland-Urban Interface and Significant Infrastructure**

### Proposed Treatment Areas: Overview

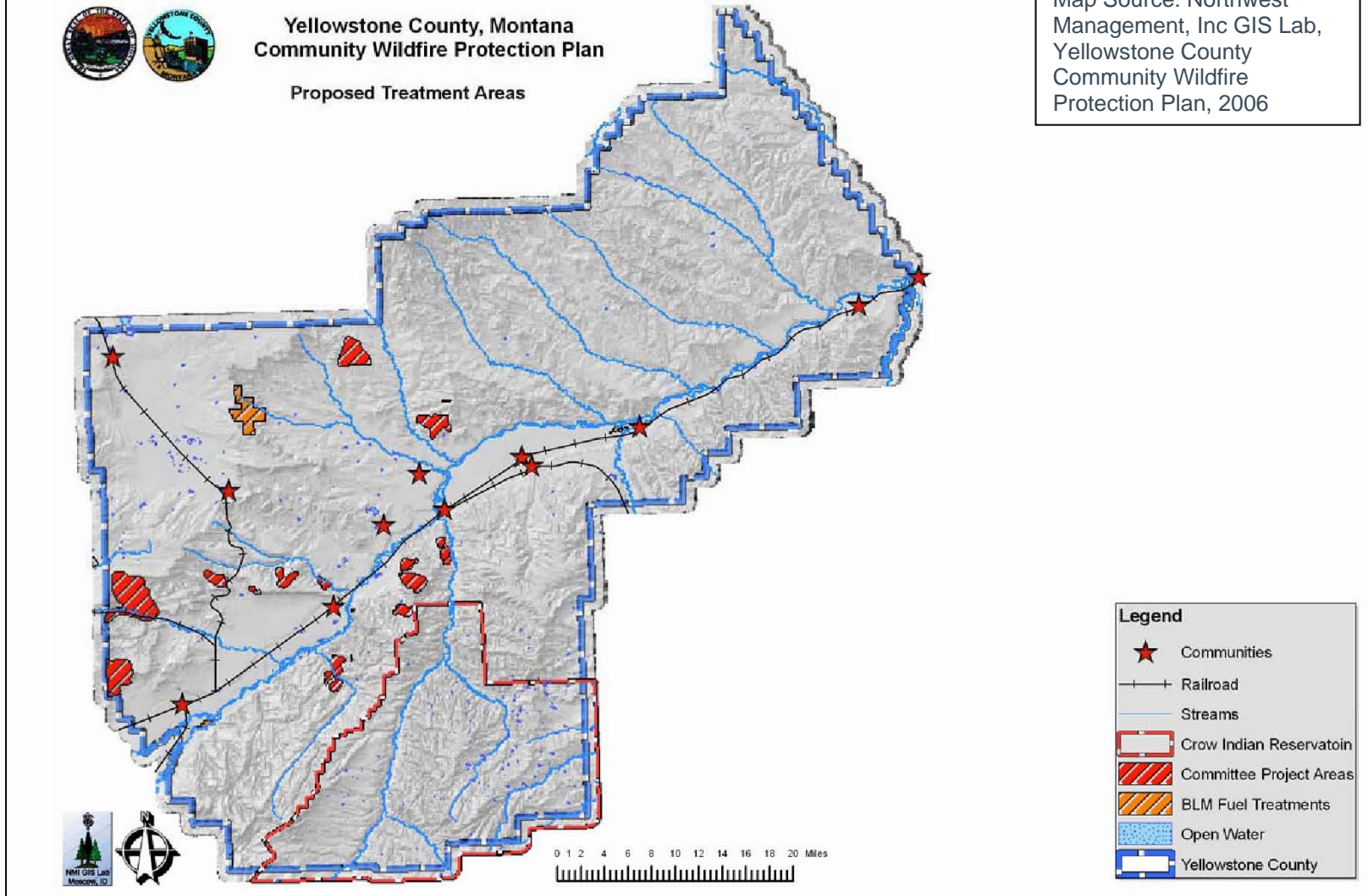


Figure 7. Yellowstone County Proposed Treatment Areas

### Estimated Future Losses

The CWPP identifies areas of high and moderate risk to wildfires. Most are concentrated residential development located in areas of high fuels. The CWPP makes recommendation for fuel treatment and protecting structures with a defensible space. A list of the areas and number of residences identified in the 2006 CWPP is shown on **Table 8** (YCCWPPC, 2006). The average value of a residential structure is taken from **Table 8**. The content is estimated to represent 30% of the structure value; therefore a loss to wildfire is estimated to be 1.3 times the average structure value (\$165,279).

Total exposed value of structures and content is \$178 million. Assuming that in an extreme fire year, there may be 4 percent of the structures burned, resulting in an estimated loss of 44 structures (similar to the Hawk Fire) or \$2.7 million. While fires occur every year, a severe fire resulting in structure loss is estimated to occur once every 20 years.

**Table 8. Proposed Treatment Areas Yellowstone CWPP**

Areas	Residential Structures	Project Priority	Ave Structure & Content Value	Total Value
Rehberg Ranch	92	H	\$165,279	\$15,205,668
Clapper Flats	55	M	\$165,279	\$9,090,345
Alkali Creek	245	H	\$165,279	\$40,493,355
Hills Estates	13	M	\$165,279	\$2,148,627
Buffalo Trails	138	M	\$165,279	\$22,808,502
Indian Cliffs	100	H	\$165,279	\$16,527,900
Pleasant Hollow	86	M	\$165,279	\$14,213,994
Cedar Ridge	47	M	\$165,279	\$7,768,113
White Buffalo	22	M	\$165,279	\$3,636,138
High Trails	25	M	\$165,279	\$4,131,975
Emerald Hills	234	H	\$165,279	\$38,675,286
Shadow Canyon	20	M	\$165,279	\$3,305,580
Totals	1077			\$178,005,483
<b>Annualized Loss Based 4% Damage on 20 Year Occurrence</b>				<b>\$356,011</b>

Source: Yellowstone County CWPP (2006)

### Summary of Vulnerability and Impact

Concentrated residential areas outside incorporated areas in Yellowstone County, including the Town of Broadview, have a **high** potential for structural damage and there is a **moderate** potential for injury/fatality from wildfire. There are over 1,000 properties that are located in areas where fuel treatment is necessary to reduce risks from wildfires. Estimated structure value of properties within these areas is approximately \$178 million. Future losses are estimated to be an average of \$356 thousand per year.

### 3.1.3. *Weather: Thunderstorms, Severe Wind, Hail*

A thunderstorm is a rain shower during which thunder is audible; since thunder comes from lightning, all thunderstorms have lightning. Of the estimated 100,000 thunderstorms that occur each year in the U.S., about 10 percent are classified as 'severe'. A thunderstorm is classified as 'severe' when it produces one or more of the following: tornado (discussed in **Section 3.1.4**), winds gusting in excess of 50 knots (57.5 mph), and/or hail three-quarter inch or greater. Structural wind damage may imply the occurrence of a severe thunderstorm; wind speeds can reach up to 100 mph and can produce a damage path extending for hundreds of miles.

A thunderstorm wind equal to or greater than 40 mph (35 knots) and/or hail of at least ½ inch is defined as 'approaching severe'. Damaging winds (storm in which trees are uprooted, considerable damage occurs) are classified as those exceeding 55-63 mph (48-55 knots). Wind with a speed from 64-73 mph (56-63 knots) is considered a violent storm that can cause widespread damage, according to the land Beaufort scale (NOAA, 2010).

Hail can form inside a thunderstorm, where there are strong updrafts of warm air and downdrafts of cold air. If water droplets are picked up by the updrafts, they freeze and then fall back down, repeating this cycle until ultimately falling to the ground as hail. Most hail is usually less than 2 inches in diameter; however, even small hail can cause significant damage to crops. Large stones fall at speeds faster than 100 mph (NOAA, 2010).

On a nation-wide basis, lightning causes an average of 80 fatalities and 300 injuries each year. Tornadoes cause an average of 70 fatalities and 1,500 injuries each year, produce wind speeds in excess of 250 mph, can be one mile wide and stay on the ground over 50 miles. Strong winds can exceed 100 mph, and can cause damage equal to a tornado. Hail causes more than \$1 billion in crop and property damage nation-wide each year (NOAA, 2010).

Atkins compiled storm losses from the Spatial Hazard Events and Losses Database (SHELDUS™) developed by the University of South Carolina's Hazards & Vulnerability and Research Institute at the. SHELDUS™ is a county-level hazard data set for the U.S. for 18 different natural hazard events types such as thunderstorms, hurricanes, floods, wildfires, and tornadoes. For each event the database includes the beginning date, location (county and state), property losses, crop losses, injuries, and fatalities that affected each county. **Table 9** displays storm events where there were documented injuries or fatalities and/or estimated damages to property and crops within Yellowstone County since 1960.

**Table 9. Storm Events with Estimated Damages Since 1960**

Date	Hazard Type	County	Injuries	Fatalities	Property Damage	Crop Damage
7/1/1960	Hail - Wind	Yellowstone	0	0	\$0	\$37,142
5/20/1961	Hail	Yellowstone	0	0	\$0	\$3,714
5/30/1961	Hail - Severe Storm/Thunder Storm	Yellowstone	0	0	\$790	\$7,902
6/29/1961	Hail - Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$790	\$7,902
5/20/1962	Hail - Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$3,466,685	\$0
7/16/1962	Hail - Severe Storm/Thunder Storm	Yellowstone	0	0	\$8,667	\$86,667

Yellowstone County Disaster and Emergency Services

Date	Hazard Type	County	Injuries	Fatalities	Property Damage	Crop Damage
6/6/1963	Hail - Severe Storm/Thunder Storm	Yellowstone	0	0	\$34,667	\$346,669
6/20/1963	Hail	Yellowstone	0	0	\$0	\$346,669
8/19/1963	Lightning	Yellowstone	0	0	\$1,156	\$11,556
4/24/1964	Severe Storm/Thunder Storm	Yellowstone	0	0	\$346,669	\$0
6/16/1965	Hail - Severe Storm/Thunder Storm - Tornado	Yellowstone	0	0	\$34,667	\$3,467
7/11/1965	Hail - Wind	Yellowstone	0	0	\$34,667	\$346,669
7/12/1965	Hail - Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$8,667	\$8,667
8/22/1965	Hail - Severe Storm/Thunder Storm	Yellowstone	0	0	\$346,669	\$346,669
7/8/1966	Lightning	Yellowstone	0	0	\$0	\$154,758
7/25/1966	Hail - Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$3,249,919	\$324,992
6/13/1968	Hail - Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$30,589	\$0
7/25/1968	Hail	Yellowstone	0	0	\$0	\$382,357
5/27/1970	Hail - Wind	Yellowstone	0	0	\$27,369	\$0
6/27/1970	Hail - Wind	Yellowstone	0	0	\$58,231	\$58,231
6/2/1971	Tornado - Wind	Yellowstone	0	0	\$26,000	\$0
10/1/1971	Severe Storm/Thunder Storm - Winter Weather	Yellowstone	0	0	\$18,571	\$18,571
6/30/1973	Hail - Wind	Yellowstone	0	0	\$75	\$750
7/26/1974	Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$722	\$0
8/7/1975	Hail - Wind	Yellowstone	0	0	\$417	\$4,167
7/27/1983	Hail - Wind	Yellowstone	0	0	\$108,333	\$1,083
9/18/1983	Severe Storm/Thunder Storm - Winter Weather	Yellowstone	0	0	\$5,702	\$570
8/29/1985	Hail - Severe Storm/Thunder Storm	Yellowstone	0	0	\$50,000	\$0
7/16/1986	Hail - Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$245	\$24,528
6/17/1987	Hail	Yellowstone	0	0	\$95	\$94,545
9/17/1989	Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$86,667	\$0

Date	Hazard Type	County	Injuries	Fatalities	Property Damage	Crop Damage
6/25/1990	Lightning	Yellowstone	0	0	\$82,540	\$825
5/19/1991	Hail	Yellowstone	0	0	\$78,787	\$0
6/24/1991	Hail	Yellowstone	0	0	\$78,787	\$7,879
7/14/1991	Hail - Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$78,787	\$78,787
6/28/1993	Lightning	Yellowstone	0	1	\$7,429	\$0
8/21/1993	Lightning	Yellowstone	0	0	\$74,285	\$0
7/9/1994	Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$72,222	\$0
7/4/1998	Hail	Yellowstone	0	0	\$7,898,686	\$1,974,672
7/4/1998	Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$1,316	\$0
7/27/1998	Severe Storm/Thunder Storm - Wind	Yellowstone	1	0	\$0	\$0
7/31/1998	Hail	Yellowstone	0	0	\$10,531,582	\$1,316,448
10/2/1998	Lightning	Yellowstone	1	0	\$13,164	\$0
6/21/1999	Severe Storm/Thunder Storm - Wind	Yellowstone	0	0	\$6,500	\$0
7/23/2006	Lightning	Yellowstone	1	0	\$0	\$0
7/4/2009	Lightning	Yellowstone	0	1	\$0	\$0
<b>Total Losses All Wind/Hail/Lightning Events</b>			<b>3</b>	<b>2</b>	<b>\$26,871,118</b>	<b>\$5,996,854</b>
Annualized Losses based on 50 Years of Storm Data					\$537,422	\$119,937

Source: SHELDUS 2010

### ***Estimated Future Losses***

Thunderstorms, wind and hail storms are a yearly occurrence in Yellowstone County. There is a high probability of severe weather to occur throughout the county, but most storms either cause no damage or the damage is not recorded. Based on data from the last 30 years and adjusted for inflation, there has been \$27 million in property and \$6 million in crop damage. Annualized losses are expected to be \$537,422 in property and \$119,937 in crop damage with an estimated fatality rate of 1 per every 25 years.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County, including the City of Billings, the City of Laurel, and Town of Broadview, have a **high** potential for structural damages and **high** potential for injury/fatality from extreme storms events. There have been two recorded fatalities from extreme storms and have been \$27 million in documented structural losses and \$6 million in crop losses to date. Future losses are estimated to be an average of \$657 thousand per year.

#### ***3.1.4. Tornado***

A tornado is a rotating column of air ranging in width from a few yards to more than a mile and whirling at destructively high speeds, usually accompanied by a funnel-shaped downward extension of a cumulonimbus cloud. Tornadoes can occur at any time of the year, but they are most frequent east of the

Rocky Mountains during the spring and summer months. The average forward speed is 30 mph, but can vary from nearly stationary to 70 mph; the strongest tornados have rotating winds of more than 250 mph (NOAA, 2010).

Yellowstone County has experienced 32 tornadoes in the past 48 years, which reflects a frequency of 0.66 per year. Tornadoes will impact urban structures, farm and ranch land, private and public structures, utilities, and individuals. Since 1990, there have been six confirmed tornadoes and eight funnel clouds reported.

The first recorded tornado to touch down in Billings was on June 2, 1958. This tornado was rated as an F2 tornado and there was an estimated \$19 million in damages (inflation adjusted). On June 20, 2010, another F2 tornado touched down in Billings' Heights and Downtown Core sections with heavy hail up to softball size, dangerous cloud to ground lightning, and dangerous heavy winds.

The 2010 tornado was classified as an EF-2 on the Enhanced Fujita Scale. Wind speeds within an EF-2 tornado range from 111-135 mph, with 120 yards wide damage path approximately ½ mile in length. The tornado touched ground for an estimated 12 minutes. The damage assessment and eyewitness accounts indicate that the tornado developed near the intersection of Lake Elmo Drive and Main Street in the Billings Heights at approximately 4:24 pm, with significant EF-2 damage to several nearby businesses. Damage included rooftops being blown off of three structures, windows blown out, power poles downed, business signs and billboards blown down along with several trees uprooted.

Significant property damage occurred at the Rimrock Auto Arena and at Metrapark where the roof was blown off the arena and there was damage to the exterior of the building. Debris from the arena impacted other nearby businesses creating additional damage, mainly in the form of broken windows. Debris from the arena was reported to land as far away as a mile from the tornado touchdown.

**Table 10. Documented Tornadoes and Funnel Clouds**

Date	Location	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
7/6/1955	Yellowstone Co, not specified	Tornado	F	0	0	204K	0
7/2/1958	Yellowstone Co, not specified	Tornado	F2	0	2	19M	0
8/12/1958	Yellowstone Co, not specified	Tornado	F	0	1	23K	0
6/7/1964	Yellowstone Co, not specified	Tornado	F	0	0	0	0
6/16/1965	Yellowstone Co, not specified	Tornado	F	0	0	174K	0
6/2/1971	Yellowstone Co, not specified	Tornado	F0	0	0	135K	0
7/6/1979	Yellowstone Co, not specified	Tornado	F0	0	0	0	0
5/24/1990	Yellowstone Co, not specified	Tornado	F1	0	0	0	0
6/19/1991	Yellowstone Co, not specified	Tornado	F0	0	0	5K	0
6/21/1991	Yellowstone Co, not specified	Tornado	F1	0	0	0	0

Date	Location	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
6/18/1997	Lockwood	Funnel	N/A	0	0	0	0
7/20/1997	Laurel	Tornado	F0	0	0	0	0
5/13/1998	Billings	Funnel	N/A	0	0	0	0
7/4/1998	Laurel	Funnel	N/A	0	0	0	0
7/4/1998	Billings Heights	Funnel	N/A	0	0	0	0
7/4/1998	Worden	Funnel	N/A	0	0	0	0
7/4/1998	Billings Heights	Tornado	F0	0	0	0	0
6/5/1999	Billings	Funnel	N/A	0	0	0	0
8/15/1999	Billings	Funnel	N/A	0	0	0	0
7/26/2003	Billings	Tornado	F0	0	0	0	0
5/20/2005	Pompey's Pillar	Funnel	N/A	0	0	0	0
8/11/2005	Acton	Tornado	F0	0	0	0	0
7/3/2009	Rimrock	Funnel	N/A	0	0	0	0
6/20/2010	Billings	Tornado	F2	0	0	ND	ND
	<b>Totals</b>			<b>0</b>	<b>3</b>	<b>19.5m</b>	<b>0</b>

Source: National Climate Data Center (2010)

### ***Estimated Future Losses***

Total recorded losses from tornado events over a 55 year period through 2009 were \$19.5 million (inflation adjusted) with an annualized estimated loss of \$355 thousand. There are no complete estimates from the 2010 tornado but it is anticipated to be in the tens to hundreds of millions in losses, significantly increasing the estimated annualized loss. Assuming losses were approximately \$50 million, the estimated annualized losses from tornado events is \$1.26 million.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County, including the City of Billings, the City of Laurel, and Town of Broadview, have a **high** potential for structural damages and **high** potential for an injury/fatality from tornado wind events. There have been three recorded injuries from tornados and an estimated \$70 million in structural losses to date. Future losses are estimated to be an average of \$1.26 million per year.

#### ***3.1.5. Winter Hazards: Storms, Cold Spells***

Winter storms are an atmospheric disturbance manifested in strong winds accompanied by freezing rain, sleet, or heavy snowfall or blizzards. They take place during the coldest season of the year, occurring between autumn and spring, extending in the Northern Hemisphere from the winter solstice to the vernal equinox. These seasonal 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. Blizzards are characterized by low visibility caused by high winds and blowing and drifting snow. 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. Ice storms accompanied by high winds can have destructive impacts, especially to trees, power lines, and utility services. Winter storms are frequently the precursors to spring flooding due to snow melt runoff from the nearby mountains into the area rivers and tributary streams.

Atkins compiled winter storm losses from the SHELDUS™ developed by the University of South Carolina's Hazards & Vulnerability and Research Institute at the SHELDUS™. The SHELDUS™ is a county-level hazard data set for the U.S. for 18 different natural hazard events types such as thunderstorms, hurricanes, floods, wildfires, and tornados. For each event the database includes the beginning date, location (county and state), property losses, crop losses, injuries, and fatalities that affected each county. Yellowstone County faces winter storms of varying degrees each year. While most storms are not acknowledged as a major event, Yellowstone County residents must cope with these storms each year. Yellowstone County storm events are summarized below in **Table 11**.

**Table 11. Winter Storm Events with Estimated Property or Crop Loss**

Date	Hazard Type	County	Injuries	Fatalities	Property Damage	Crop Damage
2/22/1962	Wind - Winter Weather	Yellowstone	0	0	\$68	\$0
2/1/1963	Wind - Winter Weather	Yellowstone	0.04	0	\$128	\$0
12/15/1964	Wind - Winter Weather	Yellowstone	0	0	\$60,819	\$0
1/1/1969	Winter Weather	Yellowstone	0	0	\$507	\$0
3/23/1973	Winter Weather	Yellowstone	0	0	\$118	\$0
4/18/1973	Winter Weather	Yellowstone	0	0	\$51,588	\$0
4/7/1975	Winter Weather	Yellowstone	0	0	\$41,667	\$0
2/4/1978	Wind - Winter Weather	Yellowstone	0	0	\$773,815	\$773,815
10/15/1980	Winter Weather	Yellowstone	0	0	\$6,500	\$0
9/13/1982	Winter Weather	Yellowstone	0	0	\$6,147	\$6,147
2/1/1989	Winter Weather	Yellowstone	0	0	\$152,048	\$152
10/28/1989	Winter Weather	Yellowstone	0	0	\$5,778	\$0
4/27/1990	Winter Weather	Yellowstone	0	0	\$2,663	\$0
4/11/1991	Winter Weather	Yellowstone	0	0	\$4,635	\$0
10/31/1991	Winter Weather	Yellowstone	0	0	\$113	\$0
12/1/1991	Wind - Winter Weather	Yellowstone	0	0	\$11,255	\$0
8/25/1992	Winter Weather	Yellowstone	0	0	\$0	\$1,342
2/23/1994	Winter Weather	Yellowstone	0	0	\$12,671	\$0
9/22/2000	Winter Weather	Yellowstone	0	0	\$1,754	\$0
<b>Totals</b>					<b>\$1,071,257</b>	<b>\$781,456</b>
<b>Annualized Losses for 50 Years of Winter Storm Data</b>					<b>\$21,425</b>	<b>\$15,629</b>

Source: SHELDUS 2010

### ***Estimated Future Losses***

Based on estimated losses of \$1.85 m from 50 years of storm data, the expected annualized losses from winter storms is \$37,000.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County, including the City of Billings, the City of Laurel, and Town of Broadview, have a **low** vulnerability for structural damages from winter weather. There have been no documented fatalities in Yellowstone County from winter storm events, but there is a **high** potential for injuries/fatalities due to the severity of winter storms that can impact the area. There has been \$1 million

in documented structural losses and \$600 thousand in crop losses to date. Future losses are estimated to be an average of \$37 thousand per year.

### **3.1.6. Drought and Insect Infestation**

A drought is a long period of abnormally low rainfall, especially one that adversely affects growing or living conditions. Drought is a special type of disaster because its occurrence does not require evacuation of an area nor does it constitute an immediate threat to life or property. People are not suddenly rendered homeless or without food and clothing. The basic effect of a drought is economic hardship, but it does, in the end, resemble other types of disasters in that victims can be deprived of their livelihoods and communities can suffer economic decline.

The effects of drought become apparent with a longer duration because moisture related industries are affected more severely. Non-irrigated croplands are most susceptible to moisture shortages. Rangeland and irrigated agricultural lands do not feel the effects as quickly as the non-irrigated, cultivated acreage, but their yields can also be greatly reduced due to drought. Reductions in yields due to moisture shortages are often aggravated by wind-induced soil erosion. In periods of severe drought, range fires can destroy the economic potential of the livestock industry, as well as wildlife habitat in/adjacent to the areas impacted by fire. Under extreme drought conditions, lakes, reservoirs, and rivers can be subject to severe water shortages, which greatly restrict the use of their water supplies.

Insect infestations tend to coincide with drought, creating a double impact to the County. They have a large impact on farming and ranching, as well as creating health concerns for residents. Insect Infestations are characterized as a large abundance of insects in a concentrated area that primarily occur during drought years, and are destructive in nature.

From 2005 through 2009 the annual precipitation has averaged 13.93 inches, which is a little less than 1 inch below the normal of 14.77 inches annually (1970-2009 average). Currently, Yellowstone County is in a normal moisture pattern and has not been in a severe drought status since September 2006. (DNRC, 2010 <http://nris.mt.gov/drought/status/status2010.asp>). **Figure 8** shows average annual precipitation at the Billings Wastewater Treatment Plant and departure from normal from 1905 through 2009.

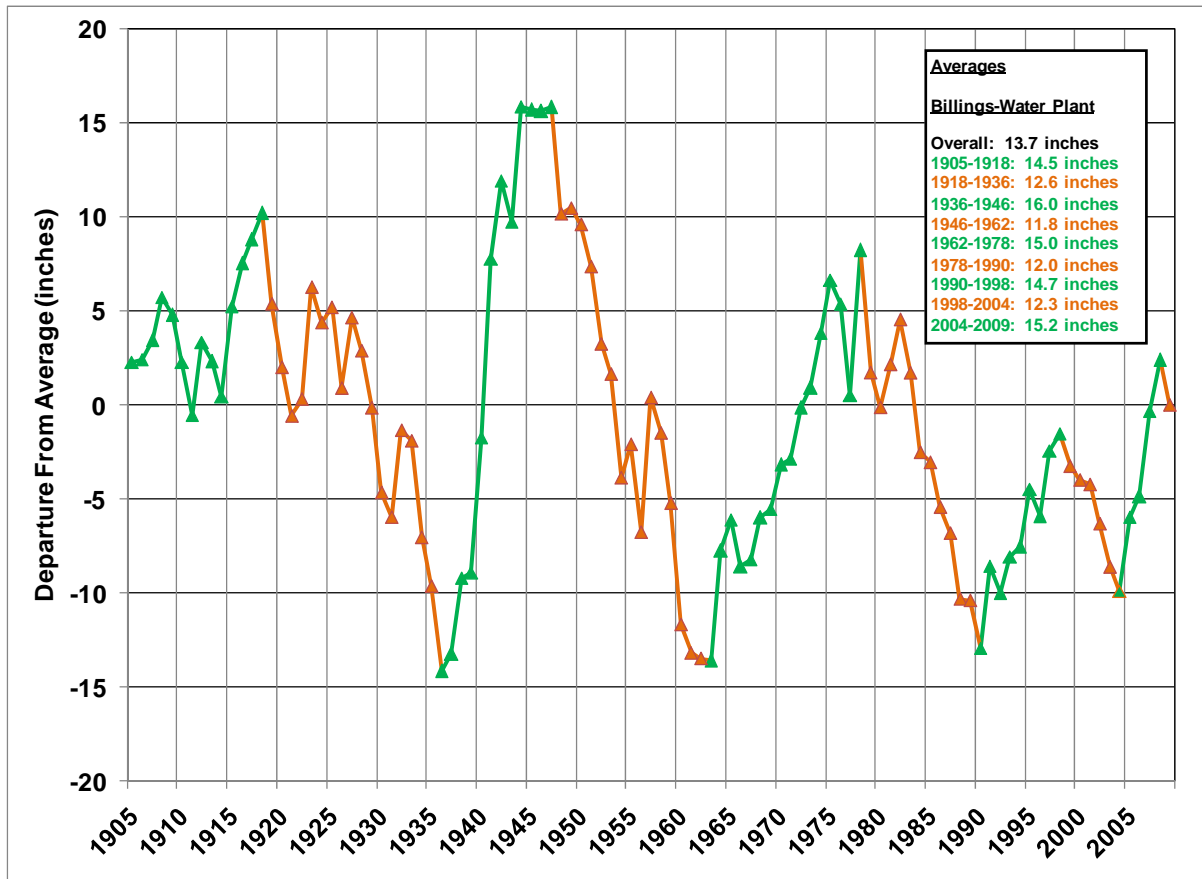


Figure 8. Average Annual Precipitation at the Billings Wastewater Treatment Plant

**Table 12. Drought Events Summary**

Date	Hazard Event	Description/Costs
August 26 – September 2, 1984	Drought	Drought conditions became extreme throughout the county. Wildfire event in Northern Yellowstone County and Musselshell County. 44 homes lost, 145,000 acres of range and timberland burned. County declaration August 28, 1984, followed by a State declaration and a Federal agricultural designation (for rancher assistance only). County response cost \$51,000, City \$1,800.
Summer 1985	Drought	24,000 acres impacted with 26 producers. Secretary of Ag. designation to assist ranchers with spraying grasshoppers that became problematic during the drought.
Summer 1986	Drought	48,000 acres infested with 65 producers. County declaration resolution 86-37, July 2, 1986 and 86-50, August 11, 1986. No direct County costs. Secretary of Ag. designation to assist ranchers with spraying grasshoppers that became problematic during the drought.
Summer 1987	Drought	May 25, County declared emergency, State declared June 1. State paid \$32,847 and the County paid \$109,793 to farmers and ranchers to reimburse spraying costs. 48,000 acres sprayed. 159 producers, total rancher costs to spray \$223,000. County reimbursed \$2.30/acre and state reimbursed \$.68/acre spraying costs. County resolution 87-55 adopting a revenue budget to pay costs. Secretary of Ag. designation to assist ranchers with spraying grasshoppers that became problematic during the drought.
Summer 1988	Drought	Drought. Aphid infested acres—16,500; Hopper infestation—21,000 acres. \$206,000 spraying costs by 78 producers. County resolution 88-27, May 9. County reimbursed \$49,404 spraying costs for aphids and \$21,174 spraying costs for grasshoppers for a total of \$70,578. Secretary of Ag. designation to assist ranchers with spraying grasshoppers that became problematic during the drought.

As **Table 12** suggests, drought occurs in cycles and current trends suggest a period of normal moisture for central and eastern Montana. During drought cycles, there will be an increase in insect infestation, increase in wildfire occurrence, and decrease in water supplies. The expected losses on annualized basis have not been calculated because impacts from drought can be manifested in many ways.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County have a **very low** vulnerability for structural damages from drought, most damages would occur to crops. There is a **very low** potential for injuries/fatalities due to the drought. No estimate of future potential losses has been calculated.

#### ***3.1.7. Urban Fire***

Urban fires are unpredictable, but often cause an economic loss to individuals, damaging private and public structures, utilities, and loss of life. An urban fire is the uncontrolled ignition and burning of materials on a large scale in a city environment.

**Table 13. Significant Urban Fire Events Summary**

Date	Location	Description/Costs
1940	Northern Hotel	Fire
1960's	James Hotel	
January 17, 1963	Miracle Gas Company at 421 N. 20th Street in Billings	The building fire occurred in the afternoon as children were just getting out of school for the day one block away. This caused an extremely hazardous situation with the storage of gas on the premises. It was the largest fuel explosion in Billings history at that time.
1970's	Yellowstone Country Club	Clubhouse fire
1980's	Super 8 Motel	Explosion and fire
2003	Country Inn and Suites	Fire consumed building while under construction.
May 24, 2006	Hi Mountain Recreation	The largest fire of the year occurred in a downtown building during the afternoon of May 24th at Hi Mountain Recreation, 14 North 30th Street, with an estimated \$1,000,000 in damages.

**Table 14. Annual Fire Losses City of Billings**

Year	Dollar Losses	Fatalities
2000	\$2,296,780	na
2001	\$4,722,283	na
2002	\$4,147,132	na
2003	na	na
2004	\$2,697,798	2
2005	\$6,332,397	4
2006	\$4,210,406	0
2007	\$3,018,839	1
2008	\$10,336,159	1
2009	\$2,198,423	1

Source: City of Billings Annual Fire Report 2009

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County may be vulnerable to structural damages from urban fires and there is a high potential for injuries/fatalities. Because this is not characterized as a nature caused hazard, an estimate of future potential losses has not been calculated.

#### ***3.1.8. Dam Failure***

Dams and levees are engineered to withstand a flood with a computed risk of occurrence. For example, a dam or levee may be designed to contain a flood at a location on a stream that has a certain probability of occurring in any one year. If a larger flood occurs, then that structure will be overtopped. Dam failure is the cessation of proper functioning or performance of a barrier constructed across a waterway to control the flow or raise the level of water. If, during the overtopping the dam or levee fails or is washed out, the water behind it is released to become a flash flood. Failed dams or levees can create floods that are catastrophic to life and property because of the tremendous energy of the released water (coupled with

debris carried in its path). (Source: <http://ks.water.usgs.gov/pubs/fact-sheets/fs.024-00.html>). High Hazard Dams are those that pose an immediate threat of fatalities in the event of a dam failure.

Anita Dam is the only High Hazard Dam located within Yellowstone County. The Anita Dam was constructed in 1937 to augment the Huntley Irrigation Project near Pompey's Pillar. The dam is an earth structure, 42 feet high with a volume of 143,000 cubic yards, located 1 mile southeast of the Anita Railroad Station. Failure of Anita dam has the potential to jeopardize as many as 100 lives along a 7-mile reach of the Fly Creek floodplain between the dam and the Yellowstone River. This area includes several private residences, the community of Pompey's Pillar, county roads in Fly Creek floodplain, sections of I90, U.S. Highway 312 and sections of the Burlington Railroad main line in the Yellowstone Floodplain.

Cooney Dam and Reservoir are located on Red Lodge Creek in Carbon County, approximately seven miles west of the Town of Boyd. The dam is owned by the Montana Department of Natural Resources and Conservation. The earth-fill dam is 102 feet in height, has a crest length of 2,369 feet, and impounds 28,230 acre-feet of water at full pool. The water is used for supplemental irrigation on approximately 20,000 acres. The original dam was completed in 1937 and rehabilitated in 1982 to meet current dam safety standards. Cooney Dam is classified as a high-hazard dam with potential to inundate portions of Laurel and Billings in both a probable maximum flood and clear weather breach scenario (DNRC, 2010b). Inundation maps and Emergency Action plan for Cooney Dam is available at the Yellowstone County Disaster and Emergency Services office.

### ***Summary of Vulnerability and Impact***

Yellowstone County, the City of Laurel, and the City of Billings all have a **moderate** potential for structural damages from dam failure and **moderate** potential for injuries/fatalities. The greatest risk to injuries and fatalities in Yellowstone County is from a failure of Anita Dam, however the potential for such an event to occur is extremely low.

#### ***3.1.9. Expansive Soil***

Expansive soil is defined as a fine-grained clay (composed of rocks and mineral particles mixed with organic matter) which occurs naturally and is generally found in areas that historically were a flood plain or lake area, but can occur in hillside areas also. Expansive soil is subject to swelling and shrinkage of the soil, varying in proportion to the amount of moisture present in the soil.

### ***Mapped Expansive Soil Zones***

The wetting and drying of expansive soils can impact the community by affecting the soundness of private and public structures built in these areas; the urban area around Billings has several areas that are affected by this condition, see **Figure 9** (the rest of the County has not been mapped). Buildings built in these areas have had numerous problems with shifting foundations, cracks, and ground movement problems. Utilities may be affected greatly as the ground continues to shift causing damage to underground pipes and lines. While the damage might not occur quickly, expansive soils have the potential to cause significant damage to roads, railways and bridges.

### ***Summary of Vulnerability and Impact***

Known areas of vulnerability are south of the City of Billings and in a small portion of Yellowstone County. Little documented damages is available, therefore the potential for structural damages is considered **low** and there is a **very low** potential for injuries/fatalities.

#### ***3.1.10. Landslide***

The term landslide as used here includes all types of gravity-caused mass movements of earth material, ranging from rock falls to mud slides, and debris flows. Landslides occur in all fifty of the United States; in the conterminous United States, the region's most seriously affected are the Pacific Coast, the Rocky Mountains, and the Appalachian Mountains (USGS, 2001).

FEMA notes that landslides can be large or small, rapid or slow. They can occur following storms and flooding, earthquakes, volcanic eruptions, fires causing burned areas, alternating freezing and thawing, and steepening of slopes by erosion or human modification. Mud flows consist of rock, earth, and other debris saturated with water that has accumulated from heavy rainfall or rapid snowmelt. Landslides can flow rapidly, striking with little or no warning at avalanche speeds. Depending on slope and magnitude, they have the potential to travel several miles from their source, growing in size as they pick up trees, boulders, cars, and other materials. (Source: <http://www.fema.gov/hazard/landslide/index.shtm>).

### ***Mapped Landslide Areas***

The terrain in Yellowstone County has some potential for landslides as shown on **Figure 10** for the Billings urban area and **Figure 11** for the rest of the county. These figures show that quaternary landslide areas represent a very small portion of the county. The greatest area of concerns is in the Billings area below the Rims. A rockfall destroyed a house at the base of the rims in Billings on October 9, 2010.

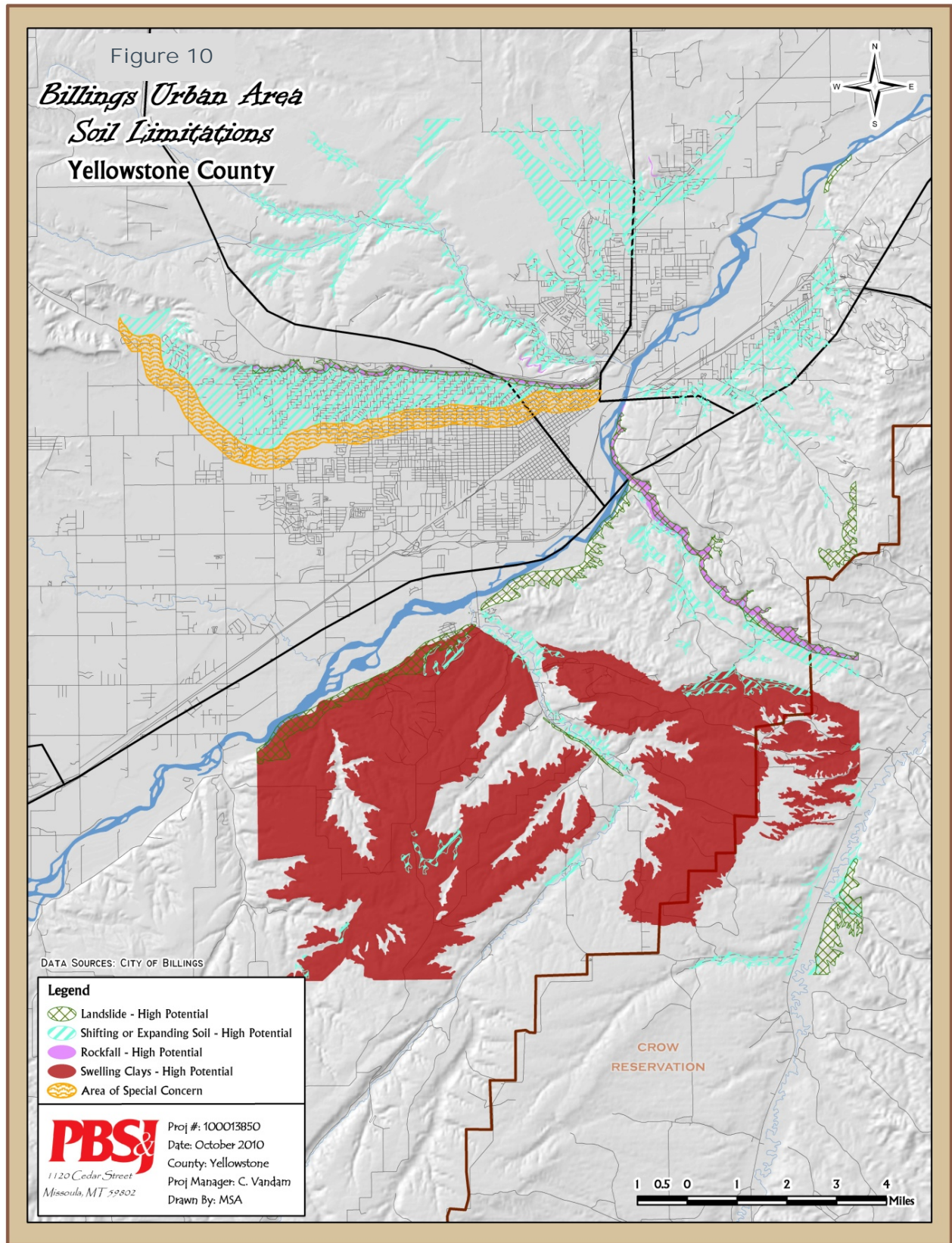


**Figure 9. Private and Public Structures Affected by Landslides**

Existing structures below the Billings Rimrock are at risk of rockfall damage. Subdivision regulations for the City of Billings and Yellowstone County could restrict the creation of new lots that would be in the path of potential rock fall. While existing homes may be at risk, subdivision design would help reduce the risk for new lots created at the base of the rimrocks.

### ***Summary of Vulnerability and Impact***

Known areas of vulnerability are along the rim rocks within the City of Billings and adjacent portions of Yellowstone County. There is little available documented damages, therefore the potential for structural damages is considered **low** and there is a **low** potential for injuries/fatalities.



**Figure 10. Billings Urban Area Soil Limitations, Yellowstone County**

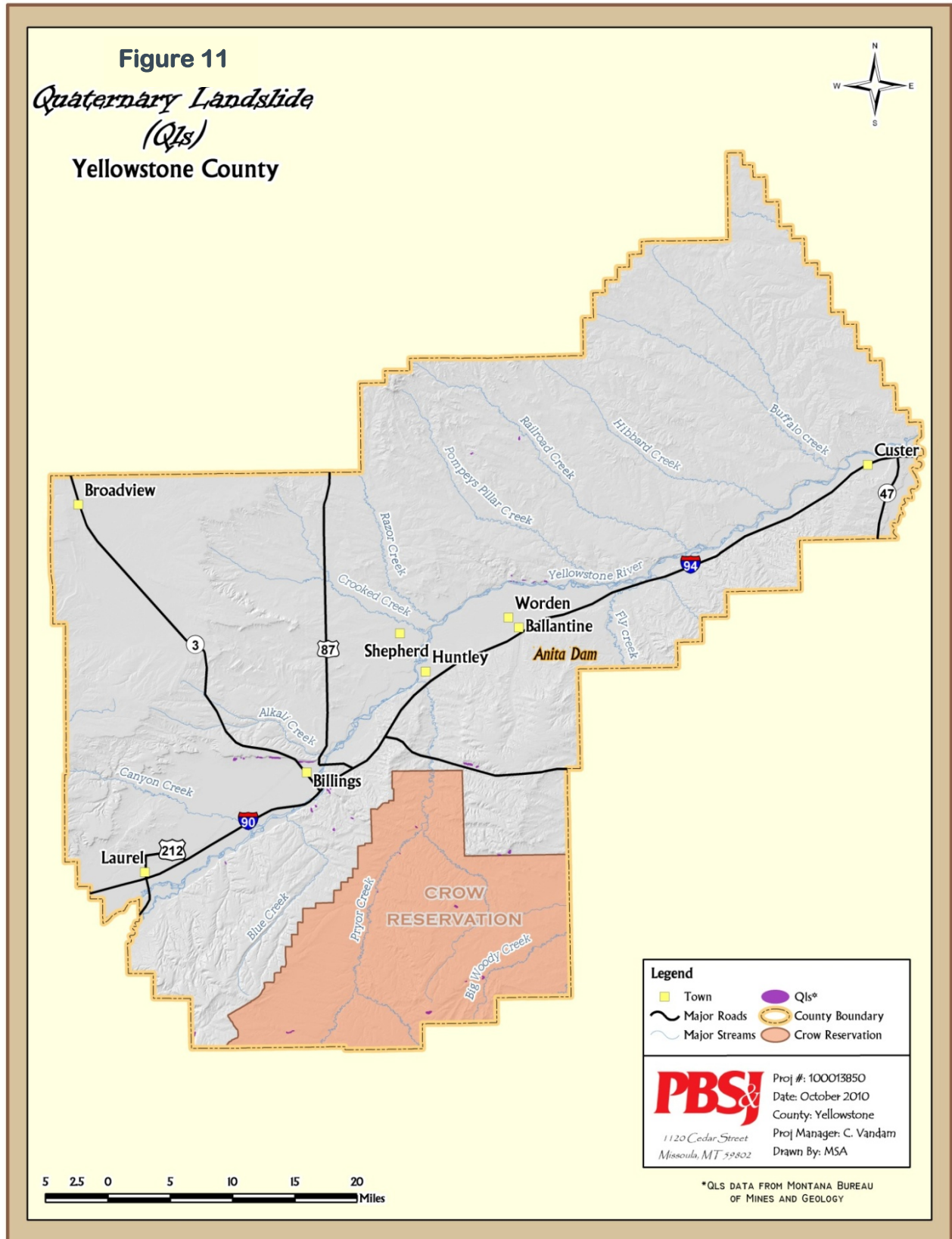


Figure 11. Quaternary Landslides (QLs) Yellowstone County

### 3.1.11. *Earthquake*

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. Montana is seismically active but has not experienced a great earthquake of this magnitude in the past 100 years. The greatest seismic exposure for Montana is along the Intermountain Seismic Belt and Centennial Tectonic Belt found in the western portions of the state.

Earthquake magnitude and intensity are used to describe seismic activity from earthquakes. Magnitude is a measure of the total energy released. Each earthquake has one magnitude, usually measured on the Richter Scale. Intensity is used to describe the effects of the earthquake at a particular place. Intensity differs throughout the area and is given a value on the Modified Mercalli Scale.

Scientists continue to study faults in Montana to determine future earthquake potential. Faults are cracks in the earth's crust along which movement occurs. Thousands of faults have been mapped in Montana, but scientists think only about 95 of these have been active in the past 1.6 million years (the Quaternary Period). Although it has been over four decades since the last destructive earthquake in Montana, small earthquakes commonly occur at an average rate of 7-10 earthquakes per day with the majority of events taking place unnoticed by area residents.

While many earthquakes have occurred in Montana, there have been no substantial earthquakes recorded in Yellowstone County. The largest earthquake in Montana, the Hebgen Lake event on August 18, 1959, caused more than \$11 million (per USGS: in 2007 terms, \$78.6 million) in damage and 28 people died from the landslide it generated. The 1959 Hebgen quake did cause buildings to shake in the Billings area but there were no recorded losses (Billings Gazette, August 18, 1959). The second most-damaging earthquakes were the October 1935 Helena earthquake clusters, which caused four deaths and more than \$4 million in damage (per USGS: in 2007 terms, \$60.7 million). The probability of future earthquake events occurring somewhere in Montana (particularly along the Intermountain Seismic Belt in western Montana – see **Figure 12**) is not only high, but is also inevitable and unpredictable.

The probability of damage from future earthquakes in Yellowstone County is relatively low (see **Figure 14** showing an overview of Yellowstone County hazard zones). This figure depicts the locations of three zones of peak horizontal acceleration (%g) covering Yellowstone County that have a 10 percent probability of occurring over a period of fifty years. The %g interval is a measure of ground acceleration that indicates how hard the earth shakes, where 'g' is the acceleration due to earth's gravity. Generally, the interval between 1 and 4 reflects a perceived shaking as 'weak' or 'light' and 'no potential damage'; interval 5 corresponds with a 'moderate' perception of shaking and 'potentially very light damage'; all three of the zones covering Yellowstone County reflect %g intervals that do not exceed 4.

**Figure 13** depicts the probability of an earthquake with a magnitude greater than 5.0 within 100 years and within a 50 kilometer radius from Billings (Source: 2009 USGS Probabilistic Seismic Hazards Assessment Model). There is typically little or no damage resulting from earthquakes of magnitude less than 5.0.

**Predicted Losses from Earthquakes:** To estimate potential losses in Yellowstone County from area earthquakes, a regional earthquake loss estimation model (HAZUS) was used to simulate a 7.3 magnitude earthquake in the Hebgen Lake area. The HAZUS model was developed by the Federal Emergency Management Agency and the National Institute of Building Sciences to provide a methodology and software to estimate earthquake losses at a regional scale. The simulated Hebgen earthquake did not predict any structural damages to buildings or infrastructure in Yellowstone County and there were no predicted injuries or fatalities from the simulated earthquake.

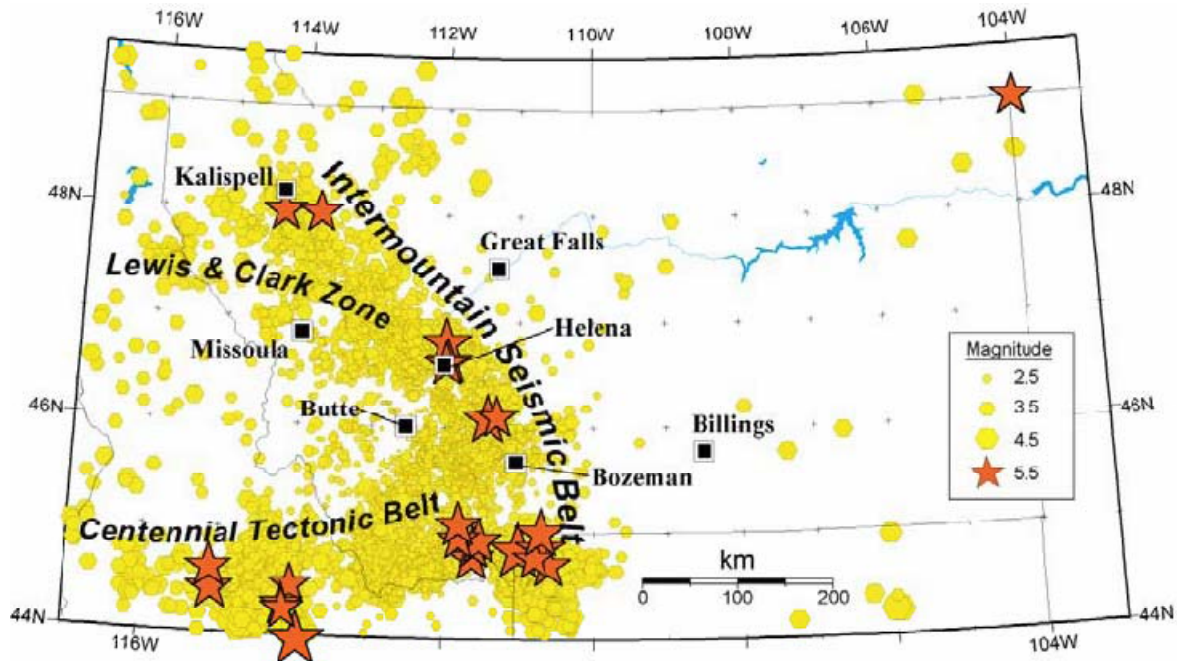


Figure 12. Intermountain Seismic Belt, Region Seismicity 1982-99 (Source: MBMG 2004)

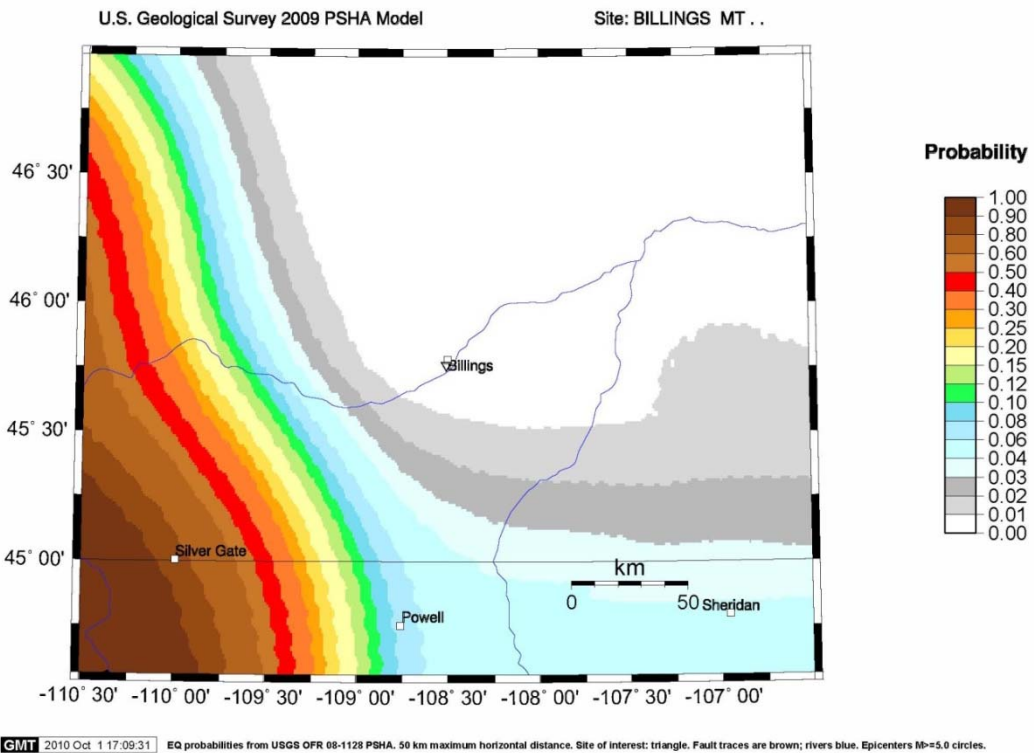


Figure 13. Probability of an Earthquake with M >5.0 within 100 years and 50 km from Billings

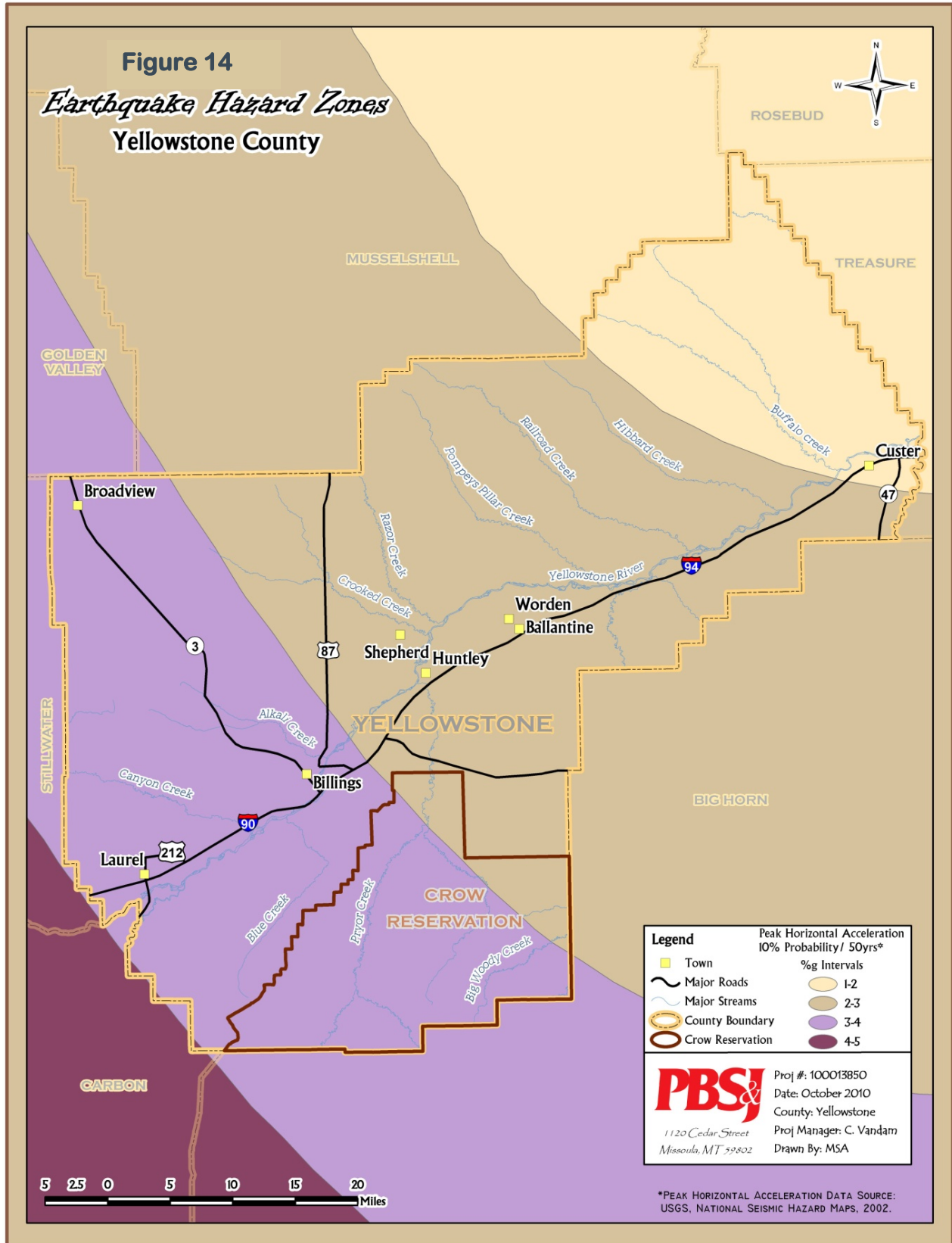


Figure 14. Earthquake Hazard Zones, Yellowstone County

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County are within areas of very low potential for a magnitude 5.0 or greater earthquake to occur. From a major regional earthquake, the HAZUS model showed that there would be no structural damage or injuries from a 7.3 magnitude quake in the Hebgen Lake area.

Yellowstone County and other jurisdictions within the County have a very low potential for structural damages and a very low potential for injuries/fatalities from an earthquake.

#### ***3.1.12. Volcanic Ash***

When the violent energy of a volcano is released, the results can be catastrophic. Lava flows, debris avalanches, and explosive blasts have invaded communities, swept people to their deaths, choked major riverways, destroyed bridges, and devastated huge tracts of forest. Noxious volcanic gas emissions have caused widespread lung problems. Airborne ash clouds have disrupted the health, lives, and businesses of hundreds of thousands of people; caused millions of dollars of aircraft damage; and nearly brought down passenger flights. The risks to life, property, and infrastructure from volcanoes continue to increase as more and more people live, work, play, and travel in volcanic regions.

An explosive volcanic eruption blasts solid and molten rock fragments (tephra) and gases into the air with tremendous force. The largest rock fragments (bombs) usually fall back to the ground within 2 miles of the vent. Small fragments (less than about 0.1 inch across) of volcanic glass, minerals, and rock (ash) rise high into the air, forming a huge, billowing eruption column. Eruption columns can grow rapidly and reach more than 12 miles above a volcano in less than 30 minutes, forming an eruption cloud. The volcanic ash in the cloud can pose a serious hazard to aviation. Large eruption clouds can extend hundreds of miles downwind, resulting in ash fall over enormous areas; the wind carries the smallest ash particles the furthest. (Source: <http://pubs.usgs.gov/fs/2006/3014/>).

Volcanic ash, either from volcanic activity in Yellowstone National Park (approximately 90 miles to the west of Yellowstone County) or further to the west in Washington and Oregon, would impact the entire county causing health concerns for humans and livestock, and damaging equipment and utilities. Ash from the May 18, 1980, eruption of Mount St. Helens, Washington, fell over an area of 22,000 square miles in the Western United States. Heavy ash fall can collapse buildings, and even minor ash fall can damage crops, electronics, and machinery. Montana's Governor declared "State of Emergency" and closed all schools, businesses, and government offices. Western Montana was hardest hit with the ash, receiving 0.5-1 inch in places. Yellowstone County received a dusting of volcanic ash from the Mt. St. Helens eruption.

The Yellowstone Caldera is one of the largest and most active calderas in the world. The spectacular geysers, boiling hot springs, and mud pots that have made Yellowstone famous are surface manifestations of a magma chamber at depth. Cataclysmic eruptions 2.0, 1.3, and 0.6 million years ago ejected huge volumes of rhyolite magma; each eruption formed a caldera and extensive layers of thick pyroclastic-flow deposits. If another large caldera-forming eruption were to occur at Yellowstone, its effects would be worldwide. Thick ash deposits would bury vast areas of the United States, and injection of huge volumes of volcanic gases into the atmosphere could drastically affect global climate. The Yellowstone volcanic system shows no signs that it is headed toward such an eruption. The probability of a large caldera-forming eruption within the next few thousand years is exceedingly low (USGS, 2005).

The Cascade Range includes 27 volcanoes, many of which have been active in the last 10,000 years. The only threat these volcanoes pose to Montana is ash fall. The likely extent of such ash fall can be estimated on the basis of past eruptions. Volcanoes in Washington and Oregon that have erupted in the last 200 years include: Mount Hood, Mount St. Helens, Mount Rainier, and Mount Baker. Eruptions from any of these volcanoes are likely to occur in the next 100 years, the expected impacts to Yellowstone County will be similar to the Mount St. Helens event.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County have a very low vulnerability to structure damage and injuries from a Cascade Range volcanic eruption. The vulnerability is significantly different from a Yellowstone eruption in which there would be major damage to structures, infrastructure, and high potential for fatalities. Since a significant eruption from Yellowstone is not predicted in the next several thousands of years, the vulnerability to both structure damage and injuries is very low.

#### ***3.1.13. Transportation/Mobile Incident***

The impact of a transportation/mobile incident is high relative to other areas of Montana because of the relatively large population and industrial base in the County and because both the interstate highways and railways are major east west shipping routes. Both interstate highways I-90 and I-94 are used heavily by commercial vehicles hauling chemicals, petroleum products, and farm products and more. An incident would block all east-west traffic and detain large numbers vehicles and individuals. In addition to interstate travel, rail lines run through Yellowstone County that provides the only means of rail travel across this region.

A transportation/mobile incident is any incident that occurs for which the exact location cannot be predetermined. Any incident involving a mode of transportation including car, truck, rail, pipeline, air, or mass transit is classified as a mobile incident. These can include incidents involving the transport of hazardous materials.

Several transportation incidents have occurred in Yellowstone County. The two described here are the most significant incidents to date:

December 18, 1992: Aircraft Crash/Structural Fire. Twin engine Cessna Citation with eight WAPA employees on board crashed into the School District 2 warehouse. All individuals were killed and the warehouse was destroyed, which stored school records, books, supplies, food, and vehicles for School District 2. \$4 million in damage.

A train derailment in 1999 caused evacuation of downtown Billings.

Yellowstone County has a high probability of occurrences of transportation/mobile incidents. With a major rail line running through downtown Billings in Yellowstone County, the largest airport in the state located in close proximity to downtown Billings, and a large section on Interstate 90 and Interstate 94 within the county's jurisdiction, it would be expected that more events could happen in the future. Risks will increase as the population of the county continues to increase. Additionally, damaging impacts to transportation infrastructure by the secondary effects of other potential hazards (storms, flooding, earthquakes, landslides, etc.) could also contribute to increased risks of future transportation/mobile incidents.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County may be vulnerable to transportation related accidents and there is a high potential for injuries/fatalities. Because this is not characterized as a nature caused hazard, an estimate of future potential losses has not been calculated.

#### ***3.1.14. Hazardous Materials Incident***

Yellowstone County is home to three major refineries and several chemical businesses that manage large amounts of hazardous materials. Any of these facilities could cause a major incident and some have occurred in the past. A hazardous materials incident could impact a large area of the county and gases release from the event could affect even more.

Hazardous Materials Incident/Accident-Fixed is any incident involving potentially hazardous materials or at a location where there is a predetermined expected level of an incident occurring. These are distinct from natural hazards primarily in that they originate from human activity. The term "technological hazards" refers to the origins of incidents that can arise from human activities such as the manufacture,

transportation, storage, and use of hazardous materials. Technological emergencies are accidental and their consequences are unintended. Examples of technological hazards are industrial accidents at either fixed facilities or transportation, and failure of a critical infrastructure component.

The history of hazardous materials incidents in Yellowstone County was compiled by participants in the identification process and by research. It is not, however, an exhaustive list of all prior events in Yellowstone County. Yellowstone County has experienced hazardous material incidents in 1989, 1991, 1992, 1993, 1998, 1999, and 2001. These incidents originated from refineries, railroad tank cars, highway tankers and pipelines. Within the county limits, there are three refineries, three pipelines, US Interstate 90 and Burlington Northern Rail Line. **Table 15** summarizes major known incidents from 1963 to present.

**Table 15. Hazardous Materials Incidents**

Date	Hazard Event	Location	Description/Injuries/Costs
January 17, 1963	Miracle Gas Company	421 N. 20th Street, Billings	The building fire occurred in the afternoon as children were getting out of school one block away. This caused an extremely hazardous situation with the storage of gas on the premises. It was the largest fuel explosion in Billings history at that time.
1980's	Super 8 Motel		Gas explosion
September 4, 1986	Cenex pipeline rupture	Lockwood	8" pipeline lost 30,000 gal of gasoline in Coulson irrigation ditch. A 40" long gash on pipe caused by a backhoe caused it to rupture. Lockwood Water User wells were tested; no contamination was found. During the event 12 businesses and 50 people were evacuated due to fumes.
January 28 – February 3, 1989	Cenex pipeline rupture	Huntley	8" pipeline ruptured with 8-10,000 gal of gasoline recovered from frozen creek. 4 homes evacuated, road closed, MRL Railroad closed. Estimated damage and cleanup \$15,000.
February 21 – 25, 1989	Explosion at home	Custer Avenue, Billings	Entire home destroyed due to bottled propane gas in home. 1 death, 1 injury, 7 homes in neighborhood damaged by concussion and debris. Estimated cost \$1.5 million.
July 1, 1992	Tanker truck rolled over leaking LPG (propane)	Lockwood	Farstad Oil Company truck with 9,000 gal of LPG. 3000 people evacuated along with ExxonMobil Refinery, I-90 closed, electricity shut off to homes due to danger of ignition. Six and one half hours to contain.
June 22-24, 1993	Railroad tank car leaked LPG	Lockwood	Local area in Lockwood evacuated, I-90 and MRL railroad closed. Owned by Gas Supply Co., railroad tank car leaked LPG due to structural defect in metal. Clean up expenses \$30,000.
March 24, 1994	Tanker truck rollover	Lockwood	Farstad Oil Company tanker truck with diesel fuel rolled over in Lockwood. I-90 closed and 3,000 gallons of fuel lost. Response costs \$2,900.
October 22, 1998	Cenex refinery explosion	Laurel	Hydrogen gas line ruptured causing explosion and fire. No injuries. \$2.5 million in damage to refinery.
July 20, 1999	Train derailment	downtown Billings	Six MRL cars derailed, 2 cars carried 72K gal of LPG. 16 blocks evacuated as a precaution. It was a 16-hour incident with \$22,641 response costs.

Date	Hazard Event	Location	Description/Injuries/Costs
October 7, 2002	Orchard School	Billings	Gasoline spill caused the temporary evacuation of students. The Fire Department ventilated the building.
October 30, 2002	Gas explosion	V-1 Propane, Frontage Rd., Billings	Gas Explosion and fire forced the evacuation of surrounding businesses and an elementary school and shut down Interstate 90 for about an hour before fire crews extinguished the blaze.
November 24, 2002	Train Derailment	Huntley	40 LB of Ammonium Nitrate released upon the derailment of 9 railroad cars due to a broken rail.
January 1, 2008	Tanker Truck Rollover	Billings	Truck drift down the shoulder, rolling and striking a power pole releasing 1520 LGA of Corrosive Liquid.
September 21, 2008	Tanker Truck Rollover	Billings	3800 LG of High Temperature Liquid Asphalt released in turnover of trailer when truck negotiated turn.
December 12, 2008	Overfill	Worden	350 gallons of diesel fuel released from overfill of storage tank.
June 30, 2009	Railroad Car Spill	Laurel	Sulfuric Acid (10 gal) spilled onto locomotive engineer causing two injuries, one resulting in hospitalization.
July 15, 2009	Overfill	Billings	Aviation Fuel released when high alarm failed to operate on storage tank causing a release of 1100 gallons.

Yellowstone County has a high probability of occurrences of hazardous material incidents. With two rail yards in Yellowstone County, the largest airport in the state located in close proximity to downtown Billings, three refineries, and many associated chemical industries, it is anticipated that more events will happen in the future and will affect a population that continues to grow.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County may be vulnerable to hazardous material related accidents and there is a high potential for injuries/fatalities. Because this is not characterized as a nature caused hazard, an estimate of future potential losses has not been calculated.

#### ***3.1.15. Terrorism, Bio-Terrorism***

A Terrorism or Bio-Terrorism event has the potential to impact a large area of the County or a small but significant number of people depending on the location and type of event.

Terrorism/Bio-Terrorism is the use of biological agents, such as pathogenic organisms or agricultural pests, for terrorist purposes. The term "terrorism" refers to intentional, criminal, malicious acts. Terrorism hazards include the use of Weapons of Mass Destruction such as, Chemical, Biological, Radiological, Nuclear, Explosive weapons, and armed attacks, industrial sabotage and "cyber terrorism". Whether intentional or accidental, human-caused disasters involve the application of one or more modes of harmful force or destruction. These modes are defined as contamination (chemical, biological, radiological, or nuclear hazards), energy (explosives, arson, and electromagnetic waves), or failure or denial of service (sabotage, infrastructure breakdown, and transportation service disruption). The greatest human-caused hazard risk is the large quantities of propane, anhydrous ammonia, and petroleum stored in various locations.

Participant discussions provided insight into the events that have occurred in Yellowstone County. The most noteworthy were recent hoaxes of anthrax, bomb threats to schools and government buildings including Post Offices, Federal Building, Courthouse, congressional buildings, and college campuses. In addition, participants mentioned anthrax mailbox incidents and the freemen incident (below).

While the probability of an event of this sort in Yellowstone County, Montana is relatively low compared to major cities in the United States, the county must be prepared. As the largest populated county in Montana, if an event were to occur in Montana the probability is high that it would occur in Yellowstone County.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County may be vulnerable to terrorism and bio-terrorist accidents. Because this is not characterized as a nature caused hazard, an estimate of future potential losses has not been calculated.

#### ***3.1.16. Civil Disturbance, Riot, Labor Unrest***

Impact from a civil disturbance, riot, or labor unrest would probably affect the more populated areas of the County including the cities of Billings, Laurel, or Broadview. This could impact utilities, critical facilities, individuals, and business.

An incident of civil disturbance/riot/labor unrest is characterized here as a group of highly agitated individuals causing injury to persons and/or property. Civil unrest is not a common hazard affecting Montana; however, Garfield County made national news during the Montana Freeman crisis. In the early spring of 1996, hundreds of FBI agents surrounded the Ralph Clark ranch complex near Jordan, Montana for a siege lasting 81 days. The government claimed that the nearly thirty people inside were of a radical anti-government and racist religious sect who had written bad checks and threatened judges, among other things. Billings and Yellowstone County were impacted by these events as a staging area for law enforcement, housing suspects in the County Jail, and during the Federal trial.

Within the last twenty-years there have been two teachers' strikes that had incidents of violence against those who crossed the picket lines and those that were vocal about their opinions. Within the last ten-years two union-trucking industry strikes have had incidents of violence. While the history is not inclusive, these events stood out in participant's minds or were found during research for this plan.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County may be vulnerable to civil disturbance, riots, and labor unrest related incidents. Because this is not characterized as a nature caused hazard, an estimate of future potential losses has not been calculated.

#### ***3.1.17. Enemy Attack***

An enemy attack is defined here as a planned assault against an area or individual(s) for the sole purpose of inflicting harm. Although the historic occurrence of an enemy attack on American soils is very low, the September 11, 2001 terrorist attack in New York is an example of our societal vulnerability to such events and a reminder to maintain an informed vigilance. The Nuclear Powers and other potentially adversarial Nations are continually being evaluated by the U.S. Defense Department as potential threats to the United States of America.

Yellowstone County has not specifically been the target of an enemy attack to date. However, with the events of September 11, 2001 and the potential for dangerous groups or individuals using Montana as a base for their operations, Yellowstone County must consider these threats. The impact of an enemy attack on Yellowstone County would impact the more populated areas of the County causing harm to individuals, disrupting utilities, and halting business activities.

The probability of future enemy attack is low in Yellowstone County. However, the threat cannot be entirely dismissed because Yellowstone County reflects the largest population base in Montana, and has a number of potential targets (many refineries, a large airport, large entertainment complex, and many government agencies) if these groups were determined to disable the region.

### ***Summary of Vulnerability and Impact***

All jurisdictions within Yellowstone County may be vulnerable to enemy attack related incidents. Because this is not characterized as a nature caused hazard, an estimate of future potential losses has not been calculated.

#### ***3.1.18. Other Hazards***

**Infectious/Natural Disease:** An infectious or natural disease in humans or animals is defined as a pathogenic microorganism or agent capable of being transmitted by humans and/or animals, characterized by an identifiable group of adverse signs or symptoms. Infectious or communicable diseases can cause major disruption to communities ranging from norovirus and gastroenteritis to West Nile virus. Education and awareness on conditions to prevent the spread and proliferation of diseases will always be the best means to minimize impacts to the community.

**Utility Outage:** A utility outage is a disruption in a commodity or service, such as electricity, water, or public transportation that is provided by a public utility. Utility outages can cause life threatening conditions during severe winters and especially impact sensitive populations that may have limited mobility and resources.

### ***Risk Assessment Summary***

The Risk Assessment identified the vulnerability of Yellowstone County and all jurisdictions within the county. Vulnerability is a factor on the frequency of the hazard, potential losses to property and infrastructure, and potential for casualties. These factors are used to provide a vulnerability quotient for a particular hazard such that mitigation efforts can be prioritized based on the relative risk of the hazard. The vulnerability quotient is estimated for natural hazards only. While man caused hazards may have a greater impact on our communities, such as urban/structure fires and hazardous material releases, these hazards can be addressed at the cause. Whereas, we have little ability to control the cause of natural hazards and shall invest in mitigation projects to reduce the impacts of natural hazards.

The vulnerability quotient is a sum of the values assigned to the factors shown below:

<b>Factor</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Frequency (Years Between Major Event)	0-5	>5-15	>15-45	>40-100	>100
Annualized Property Loss (\$)	>1m	>500K-1m	>250K-500K	>50K-250K	0-50K
Casualties/Injuries	very high	high	moderate	low	very low

**Table 16. Risk Assessment/Vulnerability Quotient for Natural Hazards**

<b>Hazard</b>	<b>Frequency w/ Major Damages<sup>1</sup></b>	<b>Estimated Annualized Losses<sup>2</sup></b>	<b>Potential Casualties</b>	<b>Vulnerability Quotient</b>	<b>2004 Rank</b>
Weather-Extreme Wind & Thunderstorms	10 years	\$657,000	very high	13	3
Flooding	25 years	\$1,116,000	high	12	1
Tornado	25 years	\$1,260,000	high	12	4
Wildfire	20 years	\$356,000	moderate	10	2
Severe Winter Storms	10 years	\$37,000	high	9	5
Landslide	10 years	\$50,000	low	8	9
Flooding - Major Dam Failure	>500 years	<\$250,000	moderate	6	7
Earthquake	50 years	\$0	low	5	10
Volcano	>100 years	\$5,000	very low	3	11
Drought	25 year (cycles)	na	very low	--	6
Expansive Soils	na	na	very low	--	8

## 4.0 MULTI-JURISDICTIONAL HAZARD MITIGATION STRATEGY

The mitigation strategy is the course of action Yellowstone County and the incorporated communities of Billings, Broadview and Laurel plan on taking to prevent losses from disasters in the future. Rather than wait until a disaster occurs, these communities have developed this strategy to move in a proactive direction in disaster prevention. Losses cannot be fully mitigated, but actions can be taken as funding and opportunities become available to reduce the impacts of disasters which will save taxpayer dollars.

The 2004 PDM Plan conducted a thorough community involvement process to assess the communities ranking of all hazards that could impact the County's jurisdictions. The ranking was reviewed in the early phases of the Plan Update and the PDM Task Force recommended keeping the rankings. The ranking of natural and man-made hazards shown in **Table 17** and **Table 18** still reflects the priorities of Yellowstone County and the affected jurisdictions.

**Table 17. Community Ranking of Natural and Man-made Hazards**

<b>Natural Hazard Priority Ranking for Yellowstone County (2004 PDM)</b>			
<b>Hazard</b>	<b>Probability of Disastrous Event (chance in any given year)</b>	<b>Magnitude (severity/impact to community)</b>	<b>Priority Rank</b>
Flooding	Moderate	High	1
Wildfire	Moderate-High	Moderate	2
Wind and Hail Storms	Moderate	Moderate-High	3
Tornado	Moderate-High	Moderate	4
Winter Storms	High	Moderate-High	5
Drought	Moderate-High	Moderate-High	6
Insect Infestations	Moderate	Moderate-High	7
Urban Fire	Moderate	Moderate	8
Dam Failure	Low-Moderate	Low-Moderate	9
Expansive Soil	Moderate	Moderate	10
Landslides	Low-Moderate	Moderate-High	11
Earthquake	Low	Low	12
Volcanic Ash	Low	Low	13
<b>Manmade Hazard Priority Ranking for Yellowstone County</b>			
Transportation/Mobile Incident	Moderate	High	1
Hazardous Materials Incident/Accident-Fixed	Moderate-High	Moderate	2
Terrorism/Bio-Terrorism	Low-Moderate	Moderate-High	3
Civil Disturbance/Riot/Labor Unrest	Moderate	Moderate	4
Enemy Attack	Low	Low-Moderate	5

**Table 18. Priorities Established in the Original 2004 PDM Plan**

<b>Natural Hazard Vulnerability Ranking for Yellowstone County</b>					
<b>Hazard</b>	<b>History</b>	<b>Vulnerability</b>	<b>Maximum Threat</b>	<b>Probability</b>	<b>Rank</b>
Flooding	High	High	High	High	1
Wildfire	High	High	High	High	2
Wind and Hail Storms	High	High	High	High	3
Tornado	Moderate	Moderate	Moderate	Moderate	4
Winter Storms	High	Moderate	Moderate	Moderate	5
Drought	High	Low	Moderate	Moderate	6
Insect Infestations	Moderate	Moderate	Moderate	Moderate	7
Urban Fire	Low	Low	Moderate	Low	8
Dam Failure	Low	Moderate	Moderate	Low	9
Expansive Soil	Moderate	Low	Low	Moderate	10
Landslides	Moderate	Low	Low	Low	11
Earthquake	Low	Low	Low	Low	12
Volcanic Ash	Low	Low	Low	Low	13
<b>Manmade Hazard Vulnerability Ranking for Yellowstone County</b>					
Transportation/Mobile Incident	Moderate	Moderate	High	High	1
Hazardous Materials Incident/ Accident-Fixed	Moderate	Moderate	High	High	2
Terrorism/ Bio-Terrorism	Low	Moderate	High	Low	3
Civil Disturbance/ Riot/Labor Unrest	Moderate	Moderate	Moderate	Moderate	4
Enemy Attack	Low	Moderate	High	Low	5

#### 4.1. Review of Goals from 2004 PDM Plan

Plan goals identify how local agencies and concerned citizens can take action to mitigate the risk from natural and manmade disasters. Goals and objectives were identified through the planning and development process and by looking at specific projects that were referenced frequently. **Table 19** identifies the progress made with the goals and objectives set in the 2004 PDM Plan and provides recommendations on whether specific projects should be continued or eliminated.

**Table 19. 2004 Yellowstone County Mitigation Plans, Updated 2012**

<b>Goals and Objectives</b>	<b>Jurisdiction</b>	<b>City/County Dept</b>	<b>Progress Report 2012 Update</b>
<b>Goal #1 Increase Hazard Awareness</b>			
Floodplain Awareness	All	Co. DES, LEPC, NWS	Ongoing Education
Firewise	All	Co. DES, LEPC, Fire Depts	Ongoing Fire Council Project Activities
High Winds Awareness	All	NWS, DES	Ongoing Education
Weather Awareness	All	NWS, DES	Ongoing Education

Goals and Objectives	Jurisdiction	City/County Dept	Progress Report 2012 Update
<b>Goal #2 Reduce Impacts of Flooding</b>			
Highway 3 Storm Water Runoff Management	County		Need to add Airport Road runoff, damage from constructed roundabout
Highway 87/Alkali Creek Crossing Improvement	County		Project Completed: New pedestrian underpass addresses flooding problems
Storm Drain-Laurel	Laurel	City of Laurel	2002 Mitigation Plan addressed problems
Rimrock Road/Molt Road Flooding	County	City/County Planning, DES	In Progress West Billings Flooding Feasibility Study
Billings West End Retention Pond/Diversion Channel	Billings & County	City/County Planning, DES	In Progress West Billings Flooding Feasibility Study
Feasibility Study for irrigation canal unloading structures/linear parks	County		Will be Addressed in West Billings Flooding Feasibility Study
Repetitive Loss Structure Buyout	County	DES	No Action, shall pursue strategy to address repetitive losses from flood
Stream Restoration	County		Various levee issues along the Yellowstone River need to be addressed
Echo Canyon/Zephyr Lane Flooding	County		Not a Priority Flood Issue
<b>Goal #3 Reduce Impacts of Wildfire and Structure Fires on the Community</b>			
Rural Dry Hydrants	County	City/Co. Planning, DES	County Subdivision regulations modified to require dry hydrants in areas lacking central water systems with fire pressure
Wildland Fire Mapping	County	CWPP completed by DES, LEPC	Addressed in CWPP, continues to monitor development and new areas of risk
Firewise Demonstration Houses	All	DES	Three Firewise Demonstration Homes Completed, none scheduled for work at this time
Older Building Sprinkler Installations	All	City/Co Planning, DES	Not implemented
Wise Building Practices	All	City/Co Planning, DES	Literature available in Big Sky Economic Development Business Library, and Public Library

Goals and Objectives	Jurisdiction	City/County Dept	Progress Report 2012 Update
<b>Goal #4 Improve Emergency Communications</b>			
Public Alerting System Maintenance & Upgrade	All	County DES, LEPC	Continual maintenance required, upgrades with funds from Refineries, LEPC
Rural Communication Systems	County	County DES, Big Sky 11	Replacing and improving repeater sites, working with state on statewide com strategy, upgrade portable and mobile radios for rural fire response, sat radio for DES, EOC
Alerting System Expansion	All		Address in Public Alerting project above
<b>Goal #5 Countywide Mapping and Zoning</b>			
Resolution of Clarks Camp problem	County	DES, Floodplain Manager	Completed
Floodplain Mapping	County	DES, Floodplain Manager	Map Modernization Complete, being adopted
New Floodplain Regulations	All		See Floodplain Mapping Above
<b>Goal #6 Protection of Public Health and Property from Disasters</b>			
Enemy Attack/Terrorism plan update	All	DES	To be addressed in the Emergency Operations Plan
12-Mile Creek-Dam Failure on Box Spring Road	County		No Longer a Community priority will be dropped
Special Population Emergency Planning	All	DES, United Way, LEPC, CAER	Ongoing planning, organization, and training,
Subdivision Disaster Planning	All	DES, United Way, LEPC, CAER	Subdivision Regulations have been modified to address ingress/egress issues.
Animals in Disaster	All	DES with HSUS	Continue Zoo Montana to address flooding issues
Safety Window Film Installation	All	DES and school districts	No activity, recommendation to discontinue
<b>Goal #7 Grow and Develop Partnerships</b>			
School Safety Education	All	School Districts, DES and LEPC	Ongoing Education: School district participate in table top and full scale disaster drills with LEPC
School Violence Prevention	All	Police & Sheriff Departments	Ongoing Education
Wise Building Practices	All	Planning	Literature available in Big Sky Economic Development Business Library, and Public Library

Goals and Objectives	Jurisdiction	City/County Dept	Progress Report 2012 Update
Countywide Building District	County	Planning	No Progress
<b>Goal #8 Enhance Emergency Services</b>			
Hazard Identification/Comprehensive Planning/GIS	County	DES, LEPC	PDM plan, review yearly, update as needed
Emergency Shelters	All	DES	Mapping of Shelters is Complete

## 4.2. Mitigation Actions

Proposed projects to mitigate hazards in Yellowstone County are quite diverse. Areas of concern were identified and ranked according to which were the most urgent mitigation concerns for Yellowstone County. These concerns were reviewed and discussed in PDM Task Force, LEPC and public meetings and at committee meetings. A list of projects for the PDM Update was compiled and includes ongoing projects from the 2004 PDM Plan and new projects identified in this planning cycle. These projects are grouped into the four types of projects: construction, feasibility studies, public education, and hazard awareness. These projects all fit with the overall goals of the Yellowstone County PDM Plan.

### Construction Projects

- West Billings Flood Mitigation Project: Construction of two small storage features on Cove and Little Cove Creeks and improving flood conveyance through the West Billings area.
- Arrow Island Weir Project: Bank Stabilization project north of Huntley.

### Feasibility Studies

- Highway 3 Stormwater Controls: Study options for mitigating stormwater runoff from Highway 3 near the Airport.
- Riverside Park Levee Repair: Study to assess options for controlling bank erosion and protection of buried pipelines near Riverside Park in Laurel.
- Repetitive Loss Properties: Review losses to the three properties in Yellowstone County and address means to eliminate or reduce impacts from flooding.
- Zoo Montana Flood Mitigation: Assess potential for flooding zoo and address options for managing zoo animals in the event of a flood.
- Purchase of Knife River Pit: Examine the option for creating stormwater retention basin in the Knife River Pit to mitigate potential flooding downstream of the West Billings area.

### Public Education

- Floodplain Awareness: Continued community outreach on the potential for flooding in flood prone areas in the following jurisdictions, Yellowstone County, City of Billings, and City of Laurel.
- Firewise Demonstrations: Continued community outreach on wise building practices in the wildland urban interface in the following jurisdictions, Yellowstone County, City of Billings, City of Laurel, and Town of Broadview.
- Severe Storm Education: Continued community outreach on preparation and safety during severe storms in the following jurisdictions, Yellowstone County, City of Billings, City of Laurel, and Town of Broadview.
- School Safety: Interaction with public safety officials and schools on school population planning for emergencies in the following jurisdictions, Yellowstone County, City of Billings, City of Laurel, and Town of Broadview.

### Hazard Preparedness

- Wildland Fire Mapping
- Public Alert System
- Enhanced Rural Communication/Montana Interoperability Project
- Modification of floodplain regulations to require property setbacks
- Establish Tornado Shelter at the Broadview Elementary School

### **4.3. West Billings Flood and Stormwater Mitigation Study**

The West Billings area is one of the fastest growing areas of Billings and Yellowstone County and there are several major transportation routes through the area. Potential flooding in this area is a limiting factor for growth. In 2006, a flood study mapped the 100-year floodplain within a 20-square mile area west of Billings and corroborated an historic flood event that occurred in 1937 which inundated downtown Billings.

As growth in the area has proceeded, flood irrigation use has declined. Flood irrigation has been identified as the main source of groundwater recharge in this area. Many of the existing developments in the County rely on groundwater for domestic drinking water and as irrigation is eliminated, the groundwater source for domestic wells is compromised. There is a distinct need to identify options that would allow continued development without jeopardizing safety and ensuring a sustainable groundwater resource. The flood mitigation and groundwater recharge are both addressed through a comprehensive feasibility study (PBSJ 2011).

### **4.4. Mitigation Prioritization Plan**

Yellowstone County will implement the above mitigation actions by creating partnerships with local government, businesses, and individuals. Mitigation projects will be selected based on priority ranking, public support, and where/when project funding becomes available. When funding becomes available, the higher priority activities can be prioritized even further with more detailed costs, benefits, and other criteria. Project funding shall include state and federal grant programs and local funding. The LEPC has the capacity to organize resources, prepare grant applications, and oversee project implementation, monitoring and evaluation. Coordinating organizations may include local, county, or regional agencies that are capable of or responsible for implementing activities and programs. The DES Director will be responsible for mitigation project administration.

Project prioritization on specific projects was determined by evaluating the following criteria:

- Vulnerability Quotient ( $V_Q$ ): represent s the risk factor generated in **Table 20**, in the Risk Assessment.
- Benefit to Cost ( $B_C$ ): A ratio representing the estimated costs for a project against the resulting benefits of property/structure saved, reduction in economic loss, and reduction in casualties. This is typically a gross estimate unless a project has completed a specific benefit to cost analysis.
- Protect Property ( $S_P$ ): Value of property/structures protected from mitigation actions. This is a gross estimate unless specific project numbers are calculated.
- Reduce Casualties ( $C_R$ ): Qualitative estimate on the impact of the project in reducing injuries and loss of life.

Each of these factors were scored according to the table below to generate a Priority Value ( $P_V$ ). The Priority Value was calculated based on the following equation:

$$P_V = V_Q (B_C + S_P + C_R)$$

**Table 20. Priority Value Factors**

Factor	5	4	3	2	1
Vulnerability Quotient	11-13	9-10	7-8	5-6	<5
Benefit to Cost (est.)	>10:1	5-10:1	3-5:1	1-3:1	<1:1
Protect Property (Structure Value in \$)	>\$5m	\$1m-5m	\$500K-1m	\$100K-500K	<\$100K
Reduce Casualties	very high	high	moderate	low	very low

The 2004 Community Priority Rank is displayed in the table but not used in the Priority Value equation.

**Table 21. Proposed PDM Update Mitigation Projects and Activities**

Projects	Vulnerability Quotient	Benefit to Cost	Protect Structures	Prevent Casualties	Timeframe	Community Priority	Priority Value	City/County Dept	Possible Funding Sources
<b>Construction Projects</b>									
West Billings Flood Mitigation Project	5	4	5	3	Long	1	60	Yellowstone County Planning	FEMA PDM
Arrow Island Weir Project	5	2	3	2	Medium	1	35	Yellowstone County Parks	FEMA PDM
<b>Planning/Feasibility Studies</b>									
Highway 3 Storm Water Runoff Management	5	2	2	2	Medium	1	30	City of Billings Public Works	Transportation Planning /City of Billings Stormwater
Riverside Park Levee Repair	5	2	2	2	Medium	2	30	City of Laurel	Corp of Engineers FEMA PDM, Exxon Mobil
Zoo Montana Flood Mitigation	5	2	1	1	Long	1	20	Yellowstone County DES	Not Determined
Create Flood Storage in Knife River Gravel Pit	5	4	5	3	Long	1	60	Yellowstone County Planning	FEMA PDM
Repetitive Loss Properties	5	3	5	2	Ongoing	1	50	Yellowstone County DES	Not Determined
<b>Public Education</b>									
Floodplain Awareness	5	3	1	3	Ongoing	1	35	DES, LEPC	Not Determined
Firewise Demonstrations	4	3	1	3	Ongoing	2	28	DES, LEPC	Not Determined

Projects	Vulnerability Quotient	Benefit to Cost	Protect Structures	Prevent Casualties	Timeframe	Community Priority	Priority Value	City/County Dept	Possible Funding Sources
School Safety Emergency Planning	5	3	1	4	Ongoing	3	40	DES, LEPC	Not Determined
Severe Storm Education	5	3	1	4	Ongoing	3	40	DES, LEPC	Big Sky Economic Development
<b>Hazard Preparedness</b>									
Wildland Fire Mapping	4	2	3	2	Short	2	28	DES, LEPC	DNRC
Rural Communication Systems	4	3	1	3	Medium	3	28	DES, LEPC	LEPC, Montana DES
Public Alert System Enhancement	4	2	1	3	Medium	3	24	DES, LEPC	DNRC, Montana DES
Modification of Floodplain Regulations (require setbacks)	5	3	3	1	Medium	1	35	Yellowstone County Planning	City-County Planning Division
Establish Broadview Tornado Shelter	5	4	1	4	Medium	3	45	DES, LEPC, Broadview	DNRC, Montana DES

Timeframe Reference:

- Ongoing: Ongoing projects
- Short: Within 1 year
- Medium: Within 1-3 years
- Long: 4 years or Greater

## Economic Analysis of Mitigation Projects

The Federal Emergency Management Agency’s approach to identify costs and benefits associated with hazard mitigation strategies or projects fall into two general categories: benefit/cost analysis and cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster related damages later. Cost effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating hazards can provide decision makers with an understanding of the potential benefits and cost of an activity, as well as a basis upon which to compare alternative projects.

## Implementation through Existing Programs

Yellowstone County addresses state-wide planning goals and legislative requirements through its Comprehensive Land Use Plan, Capital Improvement Plans, and Montana Building Codes. The Pre-Disaster Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. Yellowstone County will have the opportunity to implement recommended mitigation action items through existing programs and procedures. Upon adoption of the Pre-Disaster Mitigation Plan it will be used as the baseline of information on the hazards that impact the county.

## 5.0 MULTI-JURISDICTIONAL PLAN MAINTENANCE

The plan maintenance section of this document details the formal process that will ensure that the Yellowstone County Pre-Disaster Mitigation Plan remains an active and relevant document. The plan maintenance process includes a schedule for monitoring and evaluating the Plan and producing a revised plan every year and in accordance with the Disaster Mitigation Act of 2000. Additionally, if a disaster occurs, or substantial changes occur within the County, the plan will be reviewed and revised if necessary. This section describes how the county will integrate public participation throughout the plan maintenance process. Finally, this section includes an explanation of how Yellowstone County government intends to incorporate the mitigation strategies outlined in this Plan into existing planning mechanisms such as the County Comprehensive Land Use Plan, Capital Improvement Plans, and Building Codes.

### 5.1. Monitoring, Evaluating, and Updating

The Yellowstone County Pre-Disaster Mitigation Plan will be evaluated on a yearly basis to determine the effectiveness of programs, and to reflect changes in land development or programs that may affect mitigation priorities. The evaluation process will be done yearly in conjunction with an LEPC meeting. Participants from all jurisdictions, local agencies, and the public will participate in plan evaluation and update. The convener (the Director of the Yellowstone County Disaster Emergency and Emergency Services) will be responsible for contacting the Pre-Disaster Mitigation Plan Committee members and organizing the public meeting. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan.

### 5.2. Incorporation into Existing Plans

Yellowstone County addresses statewide planning goals and legislative requirements through its Comprehensive Land Use Plan, Capital Improvement Plans, and Montana State Building Codes. The Pre-Disaster Mitigation Plan provides a series of recommendations that are closely related to the goals and objectives of these existing planning programs. Yellowstone County will have the opportunity to implement recommended mitigation action items through existing programs and procedures.

Upon adoption of the Pre-Disaster Mitigation Plan, Yellowstone County will assist local municipalities in developing their natural hazard mitigation goals and actions by providing the Yellowstone County Pre-Disaster Mitigation Plan as a baseline of information on the hazards that impact the County.

Within six-months of formal adoption of the Pre-Disaster Mitigation Plan, the recommendations listed above will be incorporated into the process of existing planning mechanisms at the county level. The meetings of the Pre-Disaster Mitigation Plan Committee will provide an opportunity for committee members to report back on the progress made on the integration of mitigation planning elements into the county planning documents and procedures.

### 5.3. Implementation Schedule

The mitigation projects in **Table 22** are categorized into the following types of projects: construction projects, feasibility studies, public education, and hazard preparedness. As funding and opportunities arise, the costs and benefits to the project can be refined. The implementation for some of the higher priority projects are shown in **Table 22**. The table provides a description of the project, the jurisdiction responsible for the project, the agency or department responsible for implementing the project, and its potential funding sources.

**Table 22. Implementation Plan for Yellowstone County, City of Billings, City of Laurel**

<b>Project Description</b>	<b>Jurisdiction/Department</b>	<b>Implementation Schedule</b>	<b>Funding Source (s)</b>	<b>Priority Score</b>
West Billings Flood Improvement Plan	Yellowstone County/Planning Public Works	Design 2013 Build 2014-15	Pre-Disaster Mitigation Grants, Hazard Mitigation Grants	60
Create Flood Storage in Knife River Gravel Pit	Yellowstone County/Planning Public Works	Feasibility Study 2012	Pre-Disaster Mitigation Planning Grant	60
Arrow Island Weir	Yellowstone County/Parks	Build 2012-2013	Pre-Disaster Mitigation Grants	35
Riverside Park	City of Laurel Public Works	Feasibility Study 2012	Pre-Disaster Mitigation Planning Grant	30

The approval of this plan shows that hazard mitigation is a high priority for Yellowstone County, City of Billings, City of Laurel, and Town of Broadview. Any current or future planning will incorporate these goals, objectives, and disaster mitigation projects into the decision making process. Incorporating these objectives and projects into growth plans, subdivision regulations, floodplain regulations, and other land use tools can help reduce exposure and losses from natural hazards and reduce public costs for response and disaster assistance.

#### **5.4. Continued Public Involvement in Plan Maintenance Process**

Yellowstone County, Billings, Laurel, and Broadview are dedicated to involving the public directly in the review and updates of the Pre-Disaster Mitigation Plan. The PDM Committee of the LEPC and the Disaster and Emergency Services office are responsible for reviewing and updating the plan every year or sooner if necessary.

The public will also have the opportunity to provide feedback about the Plan. Copies of the Plan will be catalogued and kept at the Yellowstone County DES office and Clerk and Records office, and the Billings Public Library. The plan also includes the address and the phone number of the County Disaster and Emergency Services office responsible for keeping track of public comments on the Plan. In addition, copies of the plan and any proposed changes will be posted on the Yellowstone County website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

A public meeting will also be held in conjunction with the evaluation and revision or when deemed necessary by the PDM Committee. The meetings will provide the public a forum for which they can express concerns, opinions, or ideas about the Plan. The DES Director will be responsible for using county resources to publicize the meetings and maintain public involvement through the County website, newspapers, and other media.

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# **Appendix A. Prior Jurisdictional Resolutions and Annual Reviews**

*Yellowstone County  
Multi-Jurisdictional Pre-Disaster Mitigation Plan,  
Update 2011*

RESOLUTION 2004

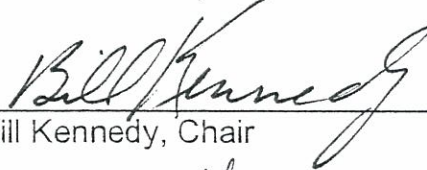
WHEREAS, Yellowstone County, Board of County Commissioners have met, read, and accepted the Yellowstone County Pre-Disaster Mitigation Plan for all of Yellowstone County.

NOW, THEREFORE, the Board has agreed to formally adopt the Yellowstone County Pre-Disaster Mitigation Plan as it is written.


Dated this 18<sup>th</sup> of May, 2004.

Board of County Commissioners

Attest: 

  
Bill Kennedy, Chair

Absent  
Jim Reno

  
John Ostlund

RESOLUTION NO. R04-66

A RESOLUTION ADOPTING THE  
YELLOWSTONE COUNTY PRE-DISASTER MITIGATION PLAN

WHEREAS, the City Council of the City of Laurel has met, read, and accepted the Yellowstone County Pre-Disaster Mitigation Plan for the City of Laurel.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Laurel, Montana,

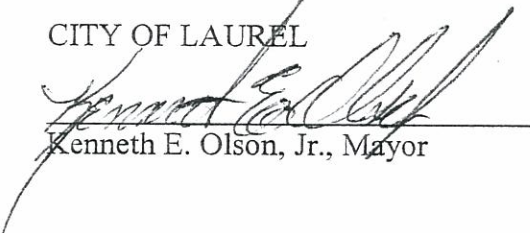
That the Council has agreed to formally adopt the Yellowstone County Pre-Disaster Mitigation Plan as it is written.

Introduced at a regular meeting of the City Council on July 6, 2004, by Alderman Mace.


PASSED and APPROVED by the City Council of the City of Laurel this 6<sup>th</sup> day of July, 2004.

APPROVED by the Mayor this 6<sup>th</sup> day of July, 2004.

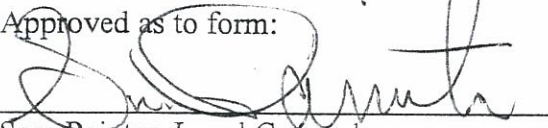
CITY OF LAUREL

  
Kenneth E. Olson, Jr., Mayor

ATTEST:

  
Mary K. Embleton, Clerk-Treasurer

Approved as to form:

  
Sam Painter, Legal Counsel  
Elk River Law Office, P.L.L.P.

RESOLUTION 2004 - #276

WHEREAS, Town of Broadview, Town Councilmen have met, read, and accepted the Yellowstone County Pre-Disaster Mitigation Plan for the Town of Broadview.

NOW, THEREFORE, the Council has agreed to formally adopt the Yellowstone County Pre-Disaster Mitigation Plan as it is written.

Dated this 8 of June, 2004.

Broadview Town Council

Attest: Coral Terpstra

John J. Hargrave

Amey M. Anderson

Ralph F. Brewster

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
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# **Appendix B. Yellowstone County, Montana, Community Wildfire Protection Plan Executive Summary**

*Yellowstone County  
Multi-Jurisdictional Pre-Disaster Mitigation Plan,  
Update 2011*



# **Yellowstone County, Montana,**

## **Community Wildfire Protection Plan**

### **Executive Summary**

**February 28<sup>th</sup>, 2006**

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***Vision:** Institutionalize and promote a countywide hazard mitigation ethic through leadership, professionalism, and excellence, leading the way to a safe, sustainable Yellowstone County.*

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## Acknowledgments

This Community Wildfire Protection Plan represents the efforts and cooperation of a number of organizations and agencies; through the commitment of people working together to improve the preparedness for wildfire events while reducing factors of risk.



Yellowstone County Commissioners  
and the employees of Yellowstone County



State of  
Montana



USDI Bureau of Land Management



USDI Bureau of Indian Affairs



USDA Forest  
Service



**FEMA**

Federal Emergency Management  
Agency



Montana Disaster and Emergency  
Services



USDI Bureau of Reclamation



Beartooth Resource  
Conservation & Development  
Council



Montana Fish, Wildlife, &  
Parks



Montana Department of Natural  
Resources and Conservation



Natural Resources  
Conservation Service



City of Billings  
City of Laurel  
Town of Broadview  
Yellowstone County Sheriff's Office  
Yellowstone County Fire Departments  
Yellowstone County Fire Districts  
Yellowstone County Fire Service Areas  
Deaconess Hospital  
&  
Local Businesses and Citizens of Yellowstone  
County

To obtain original copies of this plan contact:

**Yellowstone County Commissioner's Office**  
Yellowstone County Courthouse  
217 North 27<sup>th</sup> Street  
Billings, Montana 59101

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# Executive Summary

## 1 Introduction

This Community Wildfire Protection Plan for Yellowstone County, Montana, is the result of analyses, professional cooperation and collaboration, assessments of wildfire risks and other factors considered with the intent to reduce the potential for wildfires to threaten people, structures, infrastructure, and unique ecosystems in Yellowstone County, Montana. This Community Wildfire Protection Plan is an amendment to the Yellowstone County Pre Disaster Mitigation Plan, which was approved by FEMA in January 2005. The Yellowstone County Commissioners led the planning team responsible for implementing this project. Agencies and organizations that participated in the planning process included:

- Yellowstone County Commissioners and County Departments
- Yellowstone County Fire Warden
- Yellowstone County Disaster and Emergency Services
- Montana Department of Natural Resources and Conservation
- USDI Bureau of Land Management (also providing funding through the National Fire Plan)
- USDA Forest Service
- USDI Bureau of Indian Affairs
- Yellowstone County Fire Departments
- Town of Broadview
- Big Sky Economic Development Authority
- Yellowstone County Fire Districts and Fire Service Areas
- City of Billings
- Deaconess Hospital
- USDI Bureau of Reclamation
- U.S. Department of Homeland Security
- Beartooth Resource Conservation and Development Council
- Montana Fish, Wildlife, & Parks
- City of Laurel
- USDA Natural Resources Conservation Service
- Montana Disaster and Emergency Services
- Northwest Management, Inc.

The Yellowstone County Commissioners solicited competitive bids from companies to provide the service of leading the assessment and the writing of the **Yellowstone County Community Wildfire Protection Plan**. The Commissioners selected Northwest Management, Inc., to provide this service. Northwest Management, Inc., is a professional natural resources consulting firm located in Helena, Montana. Established in 1984, NMI provides natural resource management services across the USA. The Project Manager from Northwest Management, Inc. was Dr. William E. Schlosser, a professional forester and regional planner.

### 1.1 Goals and Guiding Principles

#### 1.1.1 Federal Emergency Management Agency Philosophy

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 program provide funding, through

state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

### **1.1.2 Additional State and Federal Guidelines Adopted**

The Community Wildfire Protection Plan will include compatibility with FEMA requirements while also adhering to the guidelines proposed in the National Fire Plan and the Healthy Forests Restoration Act (2004). This Community Wildfire Protection 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.
- Northern Rockies Coordinating Group
- Healthy Forests Restoration Act (2004)
- The Federal Emergency Management Agency’s 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.

The objective of combining these four complimentary guidelines is to facilitate an integrated wildland fire risk assessment, identify pre-hazard mitigation activities, and prioritize activities and efforts to achieve the protection of people, structures, the environment, and significant infrastructure in Yellowstone County while facilitating new opportunities for pre-disaster mitigation funding and cooperation.

#### **1.1.2.1.1 Montana’s Endorsement of the National Fire Plan**

In May 2002, Montana Governor Martz, as a member of the Western Governors' Association, helped develop the *10-Year Comprehensive Strategy* and an implementation plan, titled *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment*. With the Western Governors’ Association endorsement of the Implementation plan, Montana adopted the national implementation plan as its own.

The DNRC NFP Program is implemented primarily within the Forestry Division's Fire and Aviation Management Bureau (FAMB) and Service Forestry Bureau (SFB). The National Fire Plan is delivered, wherever appropriate, through existing state and private forestry programs. These programs are:

- County Cooperative Fire Program (FAMB)
- State Fire Assistance Program (FAMB)
- Private Forestry Assistance Program (SFB)
- Stewardship Program (SFB)

### **1.1.3 Local Guidelines and Integration with Other Efforts**

#### **1.1.3.1 Yellowstone County Fire Mitigation Planning Effort and Philosophy**

The goals of this planning process include the integration of the National Fire Plan, the Western Governors Association Implementation Strategy, the Healthy Forests Restoration Act, and the requirements of FEMA for a countywide Community Wildfire Protection Plan, a component of the County’s All Hazards Pre-Disaster Mitigation Plan. This effort will utilize the best and most appropriate science from all partners, the integration of local and regional knowledge about wildfire risks and fire behavior, while meeting the needs of local citizens, the regional economy, the significance of this region to the rest of Montana and the Inland West.

#### **1.1.3.1.1 Mission Statement**

To make Yellowstone County residents, communities, state agencies, local governments, and businesses less vulnerable to the negative effects of wildland fires through the effective administration of wildfire hazard mitigation grant programs, hazard risk assessments, wise and efficient fuels treatments, and a coordinated approach to mitigation policy through federal, state, regional, and local planning efforts. Our combined prioritization will be the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.

#### **1.1.3.1.2 Vision Statement**

Institutionalize and promote a countywide wildfire hazard mitigation ethic through leadership, professionalism, and excellence, leading the way to a safe, sustainable Yellowstone County.

#### **1.1.3.1.3 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 our way 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 Yellowstone County
- Strategically locate and plan fuel reduction projects
- Provide recommendations for alternative treatment methods, such as modifying forest stand density, herbicide treatments, fuel reduction techniques, and disposal or removal of treated slash
- Meet or exceed the requirements of the National Fire Plan and FEMA for a County level Wildfire Protection Plan

## 2 Administration & Implementation Strategy

Critical to the implementation of this Community Wildfire Protection Plan will be the identification of, and implementation of, an integrated schedule of treatments targeted at achieving an elimination of the lives lost, and reduction in structures destroyed, infrastructure compromised, and unique ecosystems damaged that serve to sustain the way-of-life and economy of Yellowstone County and the region.

All risk assessments were made based on the conditions existing during 2005, thus, the recommendations have been made in light of those conditions. However, the components of 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 changes, infrastructure modifications, and other factors.

As part of the Policy of Yellowstone County in relation to this planning document, the Community Wildfire Protection Plan should be reviewed annually at a special meeting of the Yellowstone County Commissioners, open to the public and involving all municipalities/jurisdictions, where action items, priorities, budgets, and modifications can be made or confirmed. A written review of the plan should be prepared (or arranged) by the Chairman of the County Commissioners, detailing plans for the year's activities, and made available to the general public ahead of the meeting (in accord with the Montana Open Public Meeting Laws). Amendments to the plan should be detailed at this meeting, documented, and attached to the formal plan as an amendment to the Community Wildfire Protection Plan. Total re-evaluation of this plan should be made on the 5<sup>th</sup> anniversary of its acceptance, and every 5-year period following.

### 2.1 Recommendations

Throughout the course of the planning process members of the committee and the public came up with many mitigation activities that they felt would help reduce the risk of wildfire in Yellowstone County. Action items were categorized by their effectiveness in "Safety and Policy", "People and Structures", "Infrastructure", and "Firefighting Resources and Capabilities". All recommended mitigation activities are detailed in the recommendation tables in Chapter 5 of the Plan. The following is a summarized list of the recommendations made by the committee. A full record of the recommended activities is found in Chapter 5 of the Community Wildfire Protection Plan.

#### 2.1.1 WUI Action Items in Safety & Policy

- Adoption and enforcement of International Building Codes and/or more stringent hazard--related building code provisions.
- Develop County policy concerning building materials used in high-risk WUI areas on existing structures and new construction.
- Develop County policy requiring the installation of dry hydrants in subdivisions with 5 or more dwellings.
- Begin distributing "New Code of the West" pamphlets with sub-division permit requests.
- Develop a policy to enforce "No Burning" restrictions in specified high risk subdivisions.
- Review need to inspect and enforce access and water issues in new subdivisions and individual homes.
- Develop county policy concerning access in moderate to high-risk WUI areas where subdivisions are built to insure adequate ingress and egress during wildfire emergencies.
- Develop a county policy to support grant applications for projects resulting from this plan.

#### 2.1.2 WUI Action Items for People and Structures

- Youth and Adult Wildfire Educational Programs and Professional Development Training.
- Wildfire risk assessments of homes in identified communities.

- Home Site WUI Treatments
- Community Defensible Zone WUI Treatments, specifically in the Clapper Flats, Buffalo Trails, Rehberg Ranch Estates, Alkali Creek, Hills Estates, Indian Cliffs, Pleasant Hollow, Shadow Canyon, Cedar Ridge, White Buffalo, High Trails, and Emerald Hills subdivisions.
- Maintenance of Home Site WUI Treatments
- Re-entry of Home Site WUI Treatments
- Implement proposed home defensible space projects.

### **2.1.3 WUI Action Items for Infrastructure Enhancements**

- Post “Emergency Evacuation Route” signs along the identified Primary and Secondary access routes in the County.
- Access improvements of bridges, cattle guards, and limiting road surfaces.
- Improve communications throughout the County by installing additional repeater towers and obtaining portable repeaters for emergency response personnel.
- Erect a repeater tower on the site donated by the Conover Ranch near Broadview.
- Fuel mitigation of the “Emergency Evacuation Routes” in the County to insure these routes can be maintained in the case of an emergency.
- Erect a repeater tower system to support the Shepherd Volunteer Fire Department and Shepherd community.
- Access improvements through roadside fuels management.

### **2.1.4 WUI Action Items in Firefighting Resources and Capabilities**

- Enhance radio availability in each department, link into existing dispatch, improve range within the region, and conversion to consistent standard of radio types.
- Retention of Volunteer Fire Fighters.
- Increased training and capabilities of firefighters.
- Obtain a Type 6 wildland fire truck, a ProPAC foam kit, a floater pump, and additional personal protective equipment for the Broadview Fire District #3.
- Support the construction of the new Fire Station/Clinic/Pharmacy/Community Center proposed in Lockwood.
- Obtain a Type 6 engine, two 1,000 gallon pumper trucks, and a heated truck storage facility for the Worden Volunteer Fire Department.
- Obtain a 4x4 pumper truck and a 1,500-2,000 gallon water tender for the Laurel Fire Department.
- Construction of a Shepherd Volunteer Fire Department satellite station in the Hidden Lake area.
- Additional heated equipment storage facility for the Broadview Fire Department #3.
- Establish onsite water sources such as dry hydrants or underground storage tanks for rural housing developments.
- Establish a site and install a higher capacity municipal well and pump and a 100,000 gallon storage tank for the town of Broadview.
- Establish a non-potable water well and storage system to supply fire hydrants, dry hydrants, and fire suppression systems in public buildings in the town of Broadview.
- Obtain a Type 3 WUI pumper truck for the Laurel Urban Fire Service Area.
- Obtain funding to add structural fire responsibilities to Broadview Fire District #3, which would include personnel incentives, additional rolling stock equipped with structural firefighting capabilities, structural turnout gear, and a larger equipment storage facility.
- Obtain a Type 6 wildland engine and a wood chipper for Lockwood Fire District #8.
- Acquire sites and install dry hydrants on Pine Hills Road, High Trails Road, Coburn Hill Road, Yellowstone Trail Road, and Box Canyon Spring Road.
- Obtain one structural engine, 3 Type 3 engines (to replace old 6x6’s), and one Type 2 water tender for the Shepherd Volunteer Fire Department.
- Secure funding for a full time Laurel Volunteer Fire Department Chief.
- Equip Laurel Emergency Operations Center with radios and phone lines.

## ***2.2 Prioritization of Mitigation Activities***

The Yellowstone County Community Wildfire Protection Plan committee has outlined a prioritization process for the mitigation activities recommended in the plan. The prioritization process includes a special emphasis on cost-benefit analysis review, but also incorporates factors such as population benefit, economic benefit, project feasibility, hazard magnitude, future development, and project effectiveness and sustainability. Each planning project or mitigation activity was analyzed and given a numerical score, which prioritized it into a “high”, “medium”, or “low” category. Priority rankings are listed with the specific action item in the recommendation tables in Chapter 5 of the Plan.

This plan was developed by Northwest Management, Inc., under contract with the Yellowstone County Commissioners, with funding provided by the USDI Bureau of Land Management and Yellowstone County.

**Citation of this work:**

Schlosser, W. E. and T. R. King. *Lead Authors*. 2006. Yellowstone County, Montana, Community Wildfire Protection Plan. Northwest Management, Inc., Helena, Montana. February 28, 2006. Pp. 216.

Schlosser, W. E. and T. R. King. *Lead Authors*. 2006. Yellowstone County, Montana, Community Wildfire Protection Plan – Executive Summary. Northwest Management, Inc., Helena, Montana. February 28, 2006. Pp. 10.

Schlosser, W. E. and T. R. King. *Lead Authors*. 2006. Yellowstone County, Montana, Community Wildfire Protection Plan Appendices. Northwest Management, Inc., Helena, Montana. February 28, 2006. Pp. 66.

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Last Page of Document



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Helena, MT 59624

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[NWManage@consulting-foresters.com](mailto:NWManage@consulting-foresters.com) e-Mail  
<http://www.Consulting-Foresters.com/> Internet

(Remainder Intentionally Blank)

# **Appendix C. LEPC Members List, Meeting Notes, Records of Public Participation**

*Yellowstone County  
Multi-Jurisdictional Pre-Disaster Mitigation Plan,  
Update 2011*

*C1-PDM Task Force and LEPC Membership  
C2-PDM Task Force Meeting Notes  
C3-LEPC Meeting Minutes  
C4-Press Release and Public Meeting Notes*

## **C1-PDM Task Force and LEPC Membership**

## Yellowstone County LEPC PDM Task Force



- ▣ Duane Winslow, Director of Yellowstone County Emergency & General Services
- ▣ Joe Marcotte, Billings Clinic Safety Director
- ▣ Dianne Lehm, Big Sky Economic Development Authority
- ▣ Gregory Neil, Riverstone Health
- ▣ Wyeth Friday, City County Planning
- ▣ Patrick O'Neil, St. Vincent Healthcare
- ▣ Maggie Lough, Lockwood Fire Council
- ▣ Charlie Vandam, Atkins/PBS&J

# Local Emergency Planning Committee

**Joe Marcotte, Chair**

Rick Musson, Vice-Chair

Kathy Gibson, Secretary

Jim Kraft, Treasurer

## MEMBERS ATTENDANCE LIST - 2010

NAME	AGENCY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Sommerville, Richard	Advanced Care Hospital of MT													0
Gilbert, Steve	Alternatives	X		X	X	X		X				X	X	7
Gurchiek, Lyndy	American Medical Response				X							X		2
Westmoreland, Melody	American Medical Response	X	X		X			X	X	X	X		X	8
Cornetet, Linda	American Red Cross							X	X					2
LaFurge, Stephen	American Red Cross													0
Richmond, Phillip	American Red Cross										X			1
Washburn, Jill	American Red Cross					X		X	X					3
Lehm, Dianne	Big Sky EDA – Project Impact	X	X	X	X	X		X		X	X	X	X	10
Nordlund, Patty	Big Sky EDA													0
Bryan, Dan	Billings, City of – Airport Fire													0
Glancy, Mike	Billings, City of – Airport Fire										X			1
Gates, Mike	Billings, City of – Airport Fire	X												1
Hanel, Tom	Billings, City of – Council/Mayor							X						1
Dextras, Paul	Billings, City of – Fire	X						X						2
Gibson, Kathy	Billings, City of - Fire	X	X	X	X	X		X	X		X	X	X	10
Larson, Terry	Billings, City of - Fire													0
Odermann, Frank	Billings, City of – Fire			X					X		X	X		4
Bedford, John	Billings, City of – Police	X		X		X		X			X			5
Krizek, Boris	Billings, City of - Public Works							X					X	2
Workman, Gary	Billings, City Public Works – Water	X	X	X	X	X		X	X			X		8
Friday, Wyeth	Billings, City/County Planning Dept									X				1
Marcotte, Joe	Billings Clinic	X	X	X	X			X	X	X	X	X	X	10
Aders, Kathy	Billings Public Schools				X	X								2
Gold, Nick	Brenntag Pacific, Inc.											X		0
Turnquist, Bob	Brenntag Pacific, Inc.	X	X		X									3
Cox, Meredith	BusinessWatch Montana	X		X										2
Kimble, Brad	CHS Refinery – Laurel							X	X	X		X		4
Lowe, Russ	CHS Refinery – Laurel							X						1
Jurovich, George	ConocoPhillips		X	X						X				3
Taylor, Susan	ConocoPhillips													0
Harmon, Jeff	ConocoPhillips – Pipeline													0
Steward, Neil	ConocoPhillips-Pipeline													0
Nieskens, Duke	County Water District - Heights	X		X				X	X	X				5
Rosh, Ron	DPC		X	X		X		X				X	X	6

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Jim Kraft, Treasurer

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NAME	AGENCY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Barone, Christopher	Dept of Homeland Security													0
Godbey, Aaron	Dept of Homeland Security													0
Ashworth, Jeff	DXP - Safety Master	X	X	X	X	X		X	X		X	X	X	10
Drain, Kelly	ExxonMobil	X		X	X				X	X				5
Facer, Bill	FBI							X	X					2
Cunningham, Jim	Hansers Automotive										X	X		2
Findley, Lyn	HOPE Dogs			X	X			X						3
Vaught, Tanya	HOPE Dogs			X	X									2
Eisen, John	JGA Architects									X				1
Markegard, Kurt	Laurel, City of												X	1
Reiter, Tim	Laurel, City of					X								1
	Laurel Fire Dept													0
Musson, Rick	Laurel Police Dept	X			X	X					X	X	X	6
Rash, William	Lockwood Fire Dept		X	X										2
Smart, Delet	Lockwood Fire Dept				X			X				X	X	4
Lough, Maggie	Lockwood Fire Safe Council							X	X	X				3
Woods, Woody	Lockwood Water & Sewer	X												1
Reed, Tony	Lockwood Water & Sewer													0
Haaland, Cliff	Lutheran Disaster Response	X		X	X			X		X		X	X	7
Wilkerson, Rob	Lutheran Disaster Response												X	1
Bunch, Paul	MT Army National Guard													0
Jones, Thomas	MT Army National Guard													0
Stricker, Heather	MT Army National Guard													0
Hanson, Charlie	MT Dist. V DES Rep.							X	X		X	X	X	5
Baum, Craig	Montana Highway Patrol	X			X	X		X	X		X			6
Osborne, Dale	Montana Highway Patrol													0
Stephens, Claudia	Montana Migrant Council	X												1
Hutter, Paul	MSSC				X						X			2
Smith, Michael	MSSC	X											X	2
Davis, Adam	MSU-Billings Campus Police										X			1
Fachini, Susan	MSU-Billings Campus Police	X												1
Forshee, Scott	MSU-Billings Campus Police										X			1
Frieders, Thomas	National Weather Service							X	X	X	X			4
Solum, Matt	National Weather Service									X				1
Evandary, Charlie	PBS & J									X				1

# Local Emergency Planning Committee

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Kathy Gibson, Secretary

Jim Kraft, Treasurer

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NAME	AGENCY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Zeilstra, Tom	Pierce RV				X									1
Foreman, Mike	Riverstone Health	x												1
Harris, Hillary	Riverstone Health	X												1
Hedrick, Debbie	Riverstone Health		X											1
Juarez, Josh	Riverstone Health					X								1
Mullaney, Kristin	Riverstone Health	X		X										2
Neill, Greg	Riverstone Health	X	X	X	X	X		X	X	X	X		X	10
Rapkoch, Arianne	Riverstone Health	X	X	X									X	4
Schneeman, Barbara	Riverstone Health													0
Coble, T.C.	St. Vincent HELP Flight	X	X	X	X	X			X					6
Dugan, Bill	St. Vincent Healthcare	X												1
Mahoney, Jason	St. Vincent Healthcare										X	X		2
O'Neil, Patrick	St. Vincent Healthcare	X	X	X	X				X	X				6
Allen, Richard	Salvation Army	X		X										2
Bruckner, Ramona	Salvation Army				X	X				X	X			4
Jackson, Kevin	Salvation Army	X												1
Lemar, Sam	Salvation Army			X										1
Snyder, Jack	Salvation Army	X								X				2
Grim, Jill	Stillwater County Health			X	X								X	3
Kelly, Chuck	Sysco Food Service	X			X									2
Lough, Bob	Sysco Food Service					X		X	X	X	X	X		6
Stanton, Paul	Team Builder, Inc.	X												1
Ostermiller, Rod	US Marshal's Service				X									1
Rash (Wessel), Carol	US Marshal's Service			X	X									2
Caulfield, Cathy	United States Postal Service					X								1
Haight, Rae Ann	United States Postal Service			X										1
Weinreis, Shane	US Water Rescue Dive Team				X									1
Klosken, Kristen	United Way					X		X						2
Sanderson, Pam	United Way Volunteer Center				X	X		X	X				X	5
Washburn, Jill [dual]	United Way / Red Cross													0
Viviano, John	VA – Mobile Veterans Center													0
Nichols, Chris	Western Area Power Admin													0
Bikle, Chuck	YARES, Radio Club	X	X	X	X	X		X	X	X	X		X	10
Gansel, Todd	YARES, District Emergency Coord													0
Glass, Ron	YARES, Radio Club	X	X		X			X	X	X	X	X	X	9

# Local Emergency Planning Committee

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Rick Musson, Vice-Chair

Kathy Gibson, Secretary

Jim Kraft, Treasurer

## MEMBERS ATTENDANCE LIST - 2010

NAME	AGENCY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC	TOTAL
Stand, Andy	YARES Radio Club		X											1
Ostlund, John	Yellowstone Co. Commission							X						1
Reno, Jim	Yellowstone Co. Commission							X						1
Kraft, Jim	Yellowstone Co. DES		X					X						2
Winslow, Duane	Yellowstone Co. DES	X	X					X	X	X	X	X		7
Bushey, Chuck	Yellowstone Co. Fuel Mitigation							X	X		X	X		4
Luppen, Janelle	Yellowstone Co. GIS													0
O'Donnell, Kent	Yellowstone Co - Sheriff													0
Paris, Davis	Yellowstone Co - Sheriff													0
Schieno, Mike	Yellowstone Co - Sheriff		X											1
Mann, Shelli	Yellowstone Lodging Assoc.													0
Sandburg, Tom	83 <sup>rd</sup> Civil Support Team													0
Schuff, Chris	83 <sup>rd</sup> Civil Support Team													0
Verrill, Todd	83 <sup>rd</sup> Civil Support Team													0
TOTAL ATTENDANCE NUMBERS		39	22	29	33	21	No DATA	36	27	22	25	22	24	

## **C2-PDM Task Force Meeting Notes**

**From:** Vandam, Charlie  
**Sent:** Wednesday, October 13, 2010 9:20 AM  
**To:** Anderson, Susan  
**Subject:** FW: Yellowstone Co PDM Update

Notes from PDM Task Force Meeting on Thursday September 9<sup>th</sup>.

**Charlie Vandam**

**PBS&J**

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Consider the environment. Please don't print this email unless you really need to.

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**From:** Vandam, Charlie  
**Sent:** Saturday, September 11, 2010 7:13 AM  
**To:** Marcotte, Joe; 'DWinslow@co.yellowstone.mt.gov'; 'Dianne@bigskyeda.org'  
**Cc:** 'jeisen@jgaarchitects.com'; 'FridayW@ci.billings.mt.us'; Andres, Gary; March, Dan  
**Subject:** RE: Yellowstone Co PDM Update

PDM Task Force:

As a follow up to our Thursday meeting, these were the items discussed and follow up action items:

Schedule: Agreed to Proposed Schedule with the task force meeting monthly on the Wednesday before the second Thursday (changed from meeting after discussing conflicts with Joe, time to be determined))

Public Meetings will be held in Broadview, Billings and Laurel in January, spokesperson for the plan update will be Duane with support from the County PIO.

Plan Outline: Agreed to include all the Hazards from the 2004 Draft and will include as annex the Community Wildfire Protection Plan.

Web Access: Agreed to place information on DES web page, Charlie recommended that it be set up so that comments can be entered through the web page.

Action Items:

1. Duane to send electronic version of 2004 PDM Plan to Charlie
2. Charlie will send project list to Joe, Diane, and Duane for their input on project progress (after receiving electronic version of plan from Duane)
3. Duane will get GIS coverage of critical facilities and GIS contact so PBS&J can begin building GIS coverage for hazard maps
4. Charlie will need contacts for Broadview and Laurel
5. Joe will provide Charlie with report showing the hazard prioritization
6. Charlie needs a list of all participating in the PDM Task Force including phone and email contacts (Diane?)

Please let me know if there was any other critical information or action items I left off. Thanks and I look forward working with all of you.

**Charlie Vandam, AICP**

MTN NW Sciences Division Manager | PBS&J

tel: 406.532.7275  
cell: 406.531.1121

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**From:** Marcotte, Joe [mailto:jmarcotte@billingsclinic.org]  
**Sent:** Thursday, September 09, 2010 8:54 AM  
**To:** Vandam, Charlie; 'DWinslow@co.yellowstone.mt.gov'; 'Dianne@bigskyeda.org'  
**Cc:** 'jeisen@jgaarchitects.com'; 'FridayW@ci.billings.mt.us'  
**Subject:** Re: Yellowstone Co PDM Update

Thanks Charlie! I may be a few minutes late, but I will be there.  
Joe

---

**From:** Vandam, Charlie <CVandam@pbsj.com>  
**To:** Marcotte, Joe; Duane Winslow <DWinslow@co.yellowstone.mt.gov>; Dianne Lehm <Dianne@bigskyeda.org>  
**Cc:** jeisen@jgaarchitects.com <jeisen@jgaarchitects.com>; Friday, Wyeth <FridayW@ci.billings.mt.us>  
**Sent:** Thu Sep 09 08:51:47 2010  
**Subject:** RE: Yellowstone Co PDM Update

PDM Committee-Agenda  
Thursday, Sept 9am, noon  
Emergency Operations Center

Planning Process-Outline & Schedule  
Three Tiers of Review: PDM Committee → LEPC → Public  
Plan Outline  
Discuss Hazards to Include in Plan  
Man-Made Hazards?  
Community Wildfire Protection Plan as Annex  
Other Hazards  
Recommendations from Kent Atwood  
Progress on Original PDM Plan  
Other?

**Charlie Vandam, AICP**  
MTN NW Sciences Division Manager | PBS&J  
tel: 406.532.7275  
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---

**From:** Marcotte, Joe [mailto:jmarcotte@billingsclinic.org]  
**Sent:** Tuesday, September 07, 2010 8:32 AM  
**To:** Vandam, Charlie; Duane Winslow; Dianne Lehm  
**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth  
**Subject:** RE: Yellowstone Co PDM Update

All,  
I can make arrangements so that plan will work for me.

Duane,  
You may need to touch base with Val (Kathy is out this week) to see if the smaller conference room is available. The Communications Subcommittee will be using the big room at 12:30.

Thanks!  
Joe

---

**From:** Vandam, Charlie [mailto:CVandam@pbsj.com]  
**Sent:** Tuesday, September 07, 2010 8:29 AM  
**To:** Duane Winslow; Marcotte, Joe; Dianne Lehm  
**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth  
**Subject:** RE: Yellowstone Co PDM Update

Duane,  
That sounds like a good idea. I will put together an agenda of items to complete for the meeting. Is the EOC in the same place as Fire Station #1?

**Charlie Vandam, AICP**  
MTN NW Sciences Division Manager | PBS&J  
tel: 406.532.7275  
cell: 406.531.1121

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---

**From:** Duane Winslow [mailto:DWinslow@co.yellowstone.mt.gov]  
**Sent:** Tuesday, September 07, 2010 8:22 AM  
**To:** Vandam, Charlie; Marcotte, Joe; Dianne Lehm  
**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth  
**Subject:** RE: Yellowstone Co PDM Update

Would it make sense for us to meet at the EOC at noon? Bring your own lunch and that way we eliminate the travel time. That would work fine for me, if it works for everyone else. At least that way we can have all the players at the table.

Duane Winslow  
Emergency and General Services Director  
Yellowstone County  
(406) 256-2775

---

**From:** Vandam, Charlie [mailto:CVandam@pbsj.com]  
**Sent:** Tuesday, September 07, 2010 7:59 AM  
**To:** Marcotte, Joe; 'Dianne Lehm'; Duane Winslow  
**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth  
**Subject:** RE: Yellowstone Co PDM Update

Joe,  
Let me know when is a good time, and good phone number to reach you this morning, or call me at 532-7275

(Missoula). I will be in until 11:30 am and then again from 1:00-3:30.

**Charlie Vandam, AICP**

MTN NW Sciences Division Manager | PBS&J

tel: 406.532.7275

cell: 406.531.1121

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---

**From:** Marcotte, Joe [mailto:jmarcotte@billingsclinic.org]

**Sent:** Friday, September 03, 2010 2:14 PM

**To:** 'Dianne Lehm'; Vandam, Charlie; Duane Winslow

**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth

**Subject:** RE: Yellowstone Co PDM Update

Charlie,

I am sorry for my delay in responding today. "technically," I'm out of the office ☺. The only time I am available on the 9<sup>th</sup> between 6:30 AM and 7:00 PM is between 12:00 and 1:30 (more accurately 12:15-1:15 to allow travel time). I would like to be present for the meeting. However, do not let my schedule impede progress.

Regarding the results of the last meeting, a small work team was created. LEPC representatives are: Duane Winslow, Diane Lehm, Maggie Lough Patrick O'Neil, and Joe Marcotte (Greg Neil also offered to assist if desired). The charter for the work team is to complete the review of the PDM and provide summary recommendations to the LEPC General Body. The LEPC General Body retains the responsibility of final approval. Therefore, the expectation is that this work team conducts the review and reports its results to the LEPC general body. Most of the LEPC is familiar with the PDM. During the August meeting, I shared the general plan for review that was agreed upon via email in July (see July 12 email below). Therefore, I am not sure that there is much more to say at this point. However, if you have items that need to be addressed in order for the work team to move forward (e.g. any issues that require LEPC approval), then we should certainly include these on the agenda. As Diane mentioned, the agenda is structured with numerous standing reports. In order to respect very busy schedules, we try to stick to an hour unless previously arranged. Since the LEPC did not approve the extension of the agenda at its last meeting, we would need to make the report very short and incorporate the statement into the "old business" period of the agenda.

I have attached the agenda for reference.

Let me know thoughts about the meeting time.

Thanks!

Joe

---

**From:** Dianne Lehm [mailto:Dianne@bigskyeda.org]

**Sent:** Friday, September 03, 2010 11:46 AM

**To:** Vandam, Charlie; Marcotte, Joe; Duane Winslow

**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth

**Subject:** RE: Yellowstone Co PDM Update

Charlie,

Sounds great. I should be able to make 11 am work with my schedule and would be fine with making it a lunch meeting if that works for the group. There are several lunch places nearby where we could meet that have quieter areas for meetings.

Thanks,

Dianne

---

**From:** Vandam, Charlie [mailto:CVandam@pbsj.com]  
**Sent:** Friday, September 03, 2010 11:27 AM  
**To:** Dianne Lehm; Marcotte, Joe; Duane Winslow  
**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth  
**Subject:** RE: Yellowstone Co PDM Update

Diane,

With regard to our meeting, can we plan on 11am and perhaps merge the meeting into lunch? I am in Missoula and will be travelling over on Wednesday afternoon so will not be available on Wednesday morning. The intent of this first meeting is for me to get more familiar with you all and for us to come to an agreement on the expectations and schedule for the PDM Update. The four of us will make up the planning group.

On the presentation to the LEPC, I agree that their role should be as a sounding board and can definitely limit the amount of time in front of the LEPC. I had planned a detailed explanation of the PDM Planning process, but if they understand the intent of the plan and process, I can cut to the quick and explain the schedule, process, and expectations. The LEPC will represent the stakeholder group.

There will be public meetings after a draft plan is completed (probably November/December timeframe). In the meantime, there will be monthly updates to the LEPC/Stakeholders committee.

**Charlie Vandam, AICP**

MTN NW Sciences Division Manager | PBS&J  
 tel: 406.532.7275  
 cell: 406.531.1121

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**From:** Dianne Lehm [mailto:Dianne@bigskyeda.org]  
**Sent:** Friday, September 03, 2010 11:12 AM  
**To:** Vandam, Charlie; Marcotte, Joe; Duane Winslow  
**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth  
**Subject:** RE: Yellowstone Co PDM Update

Hello Charlie and All,

I have our organization's board meeting the morning of September 9<sup>th</sup>. Wednesday would be a better fit for my schedule. If you meet after 10:30 on the 9<sup>th</sup> I may be able to attend depending on the board meeting's agenda.

I feel a little out of the loop on the plans since I missed the last LEPC meeting on the PDM plan update. My thoughts on the LEPC meeting ~I think it may be necessary to shorten the length of the presentation. The LEPC usually meets for 1 hour total and there are a number of items that are required to be addressed at each meeting. Since I wasn't able to attend the last meeting, Joe could give us a better idea, but I would think we need to keep it to ½ hour or less. If we could let the members know that we will have an extended meeting next month or an additional separate meeting that may work better to convey all the needed items. With the

original PDM plan separate public meetings were held in the evening around the county and then the recommendations were brought to a special meeting of the LEPC.

Thanks,

Dianne

---

**From:** Vandam, Charlie [mailto:CVandam@pbsj.com]  
**Sent:** Friday, September 03, 2010 10:58 AM  
**To:** Vandam, Charlie; Marcotte, Joe; Duane Winslow; Dianne Lehm  
**Cc:** jeisen@jgaarchitects.com; Friday, Wyeth  
**Subject:** RE: Yellowstone Co PDM Update

Duane, Diane and Joe:

I would like to meet with the three of you the morning of the 9<sup>th</sup> to complete some pre-planning on the PDM Plan. Please let me know if each of you are available and if anyone can recommend a time and place to meet. I look forward to hearing from you soon.

**Charlie Vandam, AICP**

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**From:** Vandam, Charlie  
**Sent:** Thursday, September 02, 2010 4:16 PM  
**To:** 'Marcotte, Joe'; Jim Kraft  
**Cc:** Duane Winslow; Dianne Lehm; jeisen@jgaarchitects.com; 'Friday, Wyeth'  
**Subject:** RE: Yellowstone Co PDM Update

Joe,

John Eisen (JGA) and I plan to attend next week's LEPC meeting (Sept 9<sup>th</sup>?) and discuss the update of the PDM Plan before the LEPC. The LEPC will represent our stakeholders group and we hope that they will be interested in giving PBS&J direction on the plan's preparation. I would like to be able to take about 1 hour discussing the PDM Planning process, review of the previous plan, recommendations from the group on what to incorporate into the plan, and recommendations for additional LEPC and public meetings. I do not know how much you have on the agenda and if that much time will work out for the group. Please let me know and feel free to call to discuss.

**Charlie Vandam, AICP**

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**From:** Marcotte, Joe [mailto:jmarcotte@billingsclinic.org]  
**Sent:** Monday, July 12, 2010 7:03 PM  
**To:** Vandam, Charlie; Jim Kraft  
**Cc:** Duane Winslow; Dianne Lehm; jaisen@jgaarchitects.com  
**Subject:** RE: Yellowstone Co PDM Update

Thanks Charlie! My guess is that a similar approach to the last revision will be the recommendation. Diane probably remembers better than I. First, if I remember correctly, Jim and Diane did a significant amount of work. Then, I believe a small work team, primarily Jim, myself, Diane, and a couple of others conducted an initial review of the "revised" document. There was a least one stakeholders meeting external to the general LEPC that followed. Once that was complete, a summary of changes was provided to the general body of the LEPC. After some discussion, the plan was then approved by the LEPC. Given the size of the LEPC, I would suggest a similar approach. If everyone is comfortable with repeating the previous process, I will be sure the concept is on the August agenda and will seek a couple of others who are willing help with the review.

What do the rest of you think?

Charlie, the typical attendance at a Yellowstone County LEPC meeting averages 28 people with a range of 19 – 45. Therefore, it is difficult to do much in terms of detail work in such a large group setting. There are seven standing subcommittees of the LEPC (where the work actually gets done). It is quite common for us to form short-term work teams to accomplish tasks like this one.

Thanks!  
Joe

---

**From:** Vandam, Charlie [mailto:CVandam@pbsj.com]  
**Sent:** Monday, July 12, 2010 3:25 PM  
**To:** Jim Kraft; Marcotte, Joe  
**Cc:** Duane Winslow; Dianne Lehm; jaisen@jgaarchitects.com  
**Subject:** RE: Yellowstone Co PDM Update

Thanks Jim,

I did know that you were retiring, congratulations, I wanted to make sure I coordinated with the right folks. I met both Diane and Duane at the Steering Committee meetings so I will coordinate and discuss any future meetings with them. As discussed in the scoping meetings for the PDM Update project, I recommended using the LEPC as the stakeholders committee for developing the plan. I hope that will work.

Joe,

If you think this is appropriate thing for the LEPC to take on, I will plan on being there for the September 9<sup>th</sup> meeting. I can introduce myself to the committee, explain the planning process, complete a review of the existing PDM plan, and suggest a timeline for the PDM Update. I look forward to hearing from you.

**Charlie Vandam, AICP**

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**From:** Jim Kraft [mailto:jkraft@co.yellowstone.mt.gov]  
**Sent:** Monday, July 12, 2010 3:11 PM  
**To:** Vandam, Charlie  
**Cc:** Duane Winslow; Dianne Lehm; Marcotte, Joe  
**Subject:** RE: Yellowstone Co PDM Update

Hi Charlie:

Since I will be retiring the end of this month, it would be advisable to coordinate with my successor, Duane Winslow, and the person who previously developed our PDM plan, Dianne Lehm, of Big Sky EDA.  
[dwinslow@co.yellowstone.mt.gov](mailto:dwinslow@co.yellowstone.mt.gov), 256-2742  
[lehm@bigskyeda.org](mailto:lehm@bigskyeda.org), 256-6871

The LEPC meets at a regularly scheduled time each month, the 2<sup>nd</sup> Thursday of each month at 1:30 pm in the basement of Fire Station #1, 2300 9<sup>th</sup> Ave North. I would guess you could get on the agenda for 9<sup>th</sup> of September. Arrange with Joe Marcotte, the chair, at 657-4824 or [jmarcotte@billingsclinic.org](mailto:jmarcotte@billingsclinic.org).

Also, I do have an extra copy of the PDM plan here in my office for you to use, keep, markup etc.

**Jim Kraft**

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**From:** Vandam, Charlie [mailto:CVandam@pbsj.com]  
**Sent:** Monday, July 12, 2010 12:35 PM  
**To:** Jim Kraft  
**Cc:** March, Dan  
**Subject:** Yellowstone Co PDM Update

Jim,

I will be starting the research on the PDM Plan Update soon and needed a reminder on who I should be coordinating with in your office? Also, our original schedule had a meeting with the LEPC the week of September 6<sup>th</sup>. Does the LEPC have a regular scheduled meeting time or is there some flexibility on what time within the month they meet?

**Charlie Vandam, AICP**

MTN NW Sciences Division Manager | PBS&J  
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**From:** March, Dan  
**Sent:** Monday, July 12, 2010 12:15 PM  
**To:** Vandam, Charlie; Jim Kraft  
**Subject:**

Jim Kraft, [jkraft@co.yellowstone.gov](mailto:jkraft@co.yellowstone.gov)

**Daniel E. March, P.E., CFM**

Sr. Project Manager

**PBS&J**

3810 Valley Commons Drive, Suite 4

Bozeman, MT 59718

Direct: 406-587-7275 x 230

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# 2010 Yellowstone County Pre Disaster Mitigation Plan Update

## October 14, 2010 Teleconference Notes

**PDM Task Force Participants:** Dianne Lehm/BSE, Duane Winslow/DES, Joe Marcotte/Billings Clinic.

**Also present:** Charlie Vandam/PBSJ, Susan Anderson/PBSJ. Meeting notes summarized by PBSJ; all action items are **underlined/bold/italicized**.

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**Charlie reviews progress:** PBSJ currently in process of setting up the hazardous assessment portion of report; Charlie has asked **Susan** to begin editing the 2004 PDM to include updated information. Documentation being collected; he has reviewed Kent Atwood's recommendations.

**Charlie discussed loss estimate methodology:** As per 9/9/2010 meeting, the task force agreed to include all hazards identified in the 2004 PDM, and add the Community Wildfire Protection Plan. Charlie discussed the methodology that will be used in the 2010 PDM Update to estimate losses for each natural and manmade hazard.

### NATURAL HAZARDS

- 1. Flooding:** Structures in mapped floodplain to be compared with average structure value from CAMA database to determine extent of potential damage in 100-yr flood event, and calculate annualized damage potential.
- 2. Wildfire:** Refer to existing CWPP, map high priority areas (**Dianne** states this data is available) and compare to critical facilities.
- 3. Wind and Hail Storms:** Use 20 years of National Climatic Data Center Reports on property and crop damage and injuries/deaths (pre 1990 data does not have complete data on estimates. **Duane** to find/provide more data on 6/20/2010 tornado event (city/county infrastructure, ~20 residences FEMA applicants), will also try contacting insurance companies as FEMA only may yield an underestimate, Joe concurs, noting Billings Clinic may have 1 to 1.5 mil. in damage. Duane notes that the recent tornado loss estimates are still in progress and may not be available for some time.
- 4. Tornado:** See item #3.
- 5. Winter Storms:** See item #3.
- 6. Drought:** No loss estimate per Charlie, as it is difficult to forecast potential future losses.
- 7. Insect Infestations:** See item #6.
- 8. Urban Fire:** See item #6.
- 9. Dam Failure:** EAP or inundation maps from dam failure. **Duane** will check with floodplain administrator for maps.
- 10. Expansive Soil:** Charlie asks if additional local sources available, as current data covers only Billings.
- 11. Landslides:** As part of the 2010 State Plan Update, a new GIS layer was developed of landslide risk (**Figure 4.4.5-1**). Shape files used for the GIS layer included areas of mapped historic landslides, available from the MBMG (2009) <http://www.mbmgt.mtech.edu/gis/gis-datalinks.asp>, and slopes greater than 55 degrees, based on methodology developed by the U.S. Forest Service for a delineation of landslide prone areas in the Clearwater-Nez Perce National Forest (USFS, no date). The MBMG data was downloaded for the 74 datasets comprising the 100k areas. Each dataset was queried for "QIs"

(Quaternary Landslide units) and these were merged together. Not all 100k areas contained landslide data. Local Sources: Charlie will check with City of Billings Public Works (David Mumford) on mapping of hazard areas and for information on recent house that was hit by a rock.

**12. Earthquake:** HAZUS (to simulate 7.0 magnitude effects to Yellowstone County and jurisdictions) or see item #6.

**13. Volcanic Ash:** See item #6.

### MANMADE HAZARDS

For all manmade hazards, PBSJ will check for mitigation options, not estimate losses.

- 1. Transportation/Mobile Incident**
- 2. Hazardous Materials Incident/Accident-Fixed**
- 3. Terrorism/Bio-Terrorism**
- 4. Civil Disturbance/Riot/Labor Unrest**
- 5. Enemy Attack**

**Other:** Dianne agrees to follow up on obtaining all PDM meeting notes subsequent to the 2004 PDM report, and also need documentation of interim public participation and opportunities for participation in PDM plan from 2004 to present, including any public comments. The LEPC Task Force will be expanded to add three additional reviewers. Charlie to forward this list to Susan for documentation. Charlie to forward to Susan Joe's Health Advisory Medical Groups risks data. Charlie proposes that hazard priorities be double-checked in next meeting; all tentatively agreed to Nov 18<sup>th</sup> from 1 to 3 pm. PBSJ plans to get a preliminary PDM draft to the PDM task force by the end of October.

## 2010 Yellowstone County Pre Disaster Mitigation Plan Update

### November 19, 2010 Meeting - DES Office

**PDM Task Force Participants:** Dianne Lehm/BSE, Duane Winslow/DES, Wyeth Friday/Yellowstone County Planning, Maggie Lough/Lockwood Fire Council, Gregory Neil/Riverstone Health .

**Also present:** Charlie Vandam/PBSJ. Meeting notes summarized by PBSJ; all action items are **underlined/bold/italicized.**

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**Charlie reviews progress:** PBS&J is reviewing the projects that were identified in the 2004 Plan. He asked for input on all the projects listed, whether they should be included, removed, or if additional projects should be added..

**Charlie discussed hazard assessment:** We agreed to leave all of the hazards from the 2004 plan eventhough the State Plan only addresses natural hazards.

#### Project Review

We went quickly though all of the projects to determine current status and whether they are worth keeping. The status of all the projects were compiled into the attached list. New projects identified include:

- Riverview Park Bank Stabilization

#### Public Meetings

PBS&J will present the results of the Risk Assessment and a summary of the PDM Process to the LEPC in January, 2011. The draft of the PDM plan will be posted on the DES website at the beginning of January. Public meetings in Billings, Laurel, and Broadview will be presented in late January/early February.

Contact: Duane Winslow  
Yellowstone County Emergency and General Services  
E-Mail: [dwinslow@co.yellowstone.mt.gov](mailto:dwinslow@co.yellowstone.mt.gov)  
Phone: 406-256-2775  
[www.co.yellowstone.mt.gov](http://www.co.yellowstone.mt.gov)

# Press Release

## Update to the Yellowstone County Pre-Disaster Mitigation Plan (PDM)

The public is invited to participate in the updating of the Yellowstone County Pre-Disaster Mitigation Plan or PDM. Meetings will take place in Billings, Laurel, and Broadview to provide an opportunity for comments on recommended updates to the plan. These meetings will provide information about the PDM, new or changing issues facing Yellowstone County, and potential solutions. Comments may also be made through the Yellowstone County website. Comments will be reviewed and incorporated into the updated PDM. All meetings will take place at 7:00 PM.

February 1, 2011 – Billings Community Center

- 360 North 23<sup>rd</sup> Street, Billings, Montana

February 2, 2011 – Laurel School District Administration Building

- 410 Colorado Avenue (board room), Laurel, Montana

February 3, 2011 – Broadview Community Center

- 13725 5th Street, Broadview, Montana

### Overview

Input will be solicited regarding proposed revisions to the Yellowstone County Pre-Disaster Mitigation Plan (PDM) from first responders, government officials, and the general public. The purpose of these meetings is to determine if proposed revisions to the existing PDM are aligned with the thoughts of residents of Yellowstone County.

For Immediate Release

## **C3-LEPC Meeting Minutes**

# AGENDA

**OCTOBER 14, 2010**

**FIRE STATION #1**

**[PLEASE USE THE 2300 9<sup>TH</sup> AVENUE NORTH ENTRANCE]**

**1:30 P.M.**

## **INTRODUCTIONS**

## **MINUTES**

## **QUARTERLY FINANCIAL REPORT - - [Duane Winslow]**

Reports will be presented quarterly in the months of March, June, September, and December.

## **COMMITTEE REPORTS**

- 1) EXERCISE DESIGN COMMITTEE REPORT [Jeff Ashworth]
- 2) GRANTS SUBCOMMITTEE [Dianne Lehm]
- 3) CAER / CITIZENS CORP COUNCIL SUBCOMMITTEE [Pam Sanderson]
- 4) HEALTH & MEDICAL ADVISORY GROUP (HMAG) [Debbie Hedrick]
- 5) CONFERENCE SUBCOMMITTEE [Paul Hutter]
- 6) COMMUNICATIONS SUBCOMMITTEE [Patrick O'Neill]
  1. Big Sky 11 Consortium [Duane Winslow]
- 7) TRAINING SUBCOMMITTEE [Mike Glancy, Paul Dextras]
  - 1.

## **OLD BUSINESS**

- 1.

## **NEW BUSINESS**

1. AGENCY EDUCATION SESSIONS (10 MINUTES) - MSU-BILLINGS POLICE DEPT

## **OTHER BUSINESS**

### **MEETING DATES FOR 2010 [2<sup>ND</sup> THURSDAY OF EACH MONTH @ 1:30 P.M. – UNLESS OTHERWISE NOTED]**

JANUARY 14, 2010	JULY 8, 2010
FEBRUARY 11, 2010 [LEPC/MSSC SAFETY CONFERENCE]	AUGUST 12, 2010
MARCH 11, 2010	SEPTEMBER 9, 2010
APRIL 8, 2010	OCTOBER 14, 2010
MAY 13, 2010	NOVEMBER 11, 2010 [VETERANS DAY] NOVEMBER 18, 2010
JUNE 10, 2010	DECEMBER 9, 2010 * ANNUAL BUSINESS MEETING – ELECTION OF OFFICERS

# MINUTES

SEPTEMBER 9, 2010

	The meeting was called to order @ 1:30 p.m. by LEPC Chair Joe Marcotte.	
<b>INTRODUCTIONS</b>		
<b>AGENDA ITEMS</b>	<b>DISCUSSION</b>	<b>ACTION STEPS / FUTURE EVENTS</b>
<b>MINUTES</b>	Minutes were approved as distributed:	
<b>FINANCIAL REPORT</b>	<p><b>QUARTERLY FINANCIAL REPORT</b> [DUANE WINSLOW]                      Financial Reports are given quarterly: March, June, September, December</p> <p>Balance in account approx. \$22,000. Encumbered <u>\$4,086.03</u> (balance of Health Grant for "Ready Yellowstone" campaign). Balance: approx. \$18,000</p>	<p>Next Quarterly Report:                       December 2010</p>
<b>COMMITTEE REPORTS</b>	<p><b>EXERCISE DESIGN COMMITTEE:</b> [JEFF ASHWORTH, CHAIR]                      Jeff unable to attend.                      Committee members reported.                      Two exercises are currently in the planning stages.</p> <p>November: National Weather Service Tabletop: Volcano                      Next May: Airport FAA required compliance exercise</p>	<p>Next meeting:                      September 28<sup>th</sup>                      10:00 – 11:00 a.m.                      Billings Clinic                      Room E, Mary Alice                      Fortin Center</p>
	<p><b>GRANTS COMMITTEE</b> [DIANNE LEHM, CHAIR] - DIANNE was unable to attend. No report</p> <ul style="list-style-type: none"> <li>• PDM to be updated so there is eligibility for funds.</li> <li>• Funding DNRC helping with lead study and mitigation on the West End. Another public meeting in a month to look at alternatives and move forward with mitigation in the future.</li> <li>• \$20,000 purchase of fire shelters for rural areas.</li> <li>• HMEP grant just came out. Joe requested specifics. Will likely pursue as support for the spring conference.</li> </ul>	
	<p><b>CAER/CITIZENS CORPS</b> [PAM SANDERSON]                      Pam was unable to attend but submitted her report to Joe electronically.</p> <p>September is National Preparedness Month and a good time to put forth a preparedness message in your workplaces. If you go to ready.gov and click on National Preparedness Month you can register and have access to web banners, printed materials, short videos that you can use. Thank you to Arianne Snyder for the great article in the Health section of the newspaper a few days ago on being prepared to help yourself and your neighbors.</p> <p>We are intending to have a joint training for organizations with affiliated volunteers as well as those on the CERT list the end of September. Pam is working with the Red Cross on date and place but has not, at least at this time, received confirmation from them. She will keep trying.</p> <p>It will be hosted by the Red Cross and Humane Society and will focus on "Are YOU Ready?" The intent will be to remind affiliated volunteers that they need to be ready to respond in case of a disaster and what they should have in place to be ready.</p>	<p>Volunteers are always needed. Ideas for Day of Caring projects? Contact Pam Sanderson @ 252-3839  <a href="http://www.youcanvolunteer.org">www.youcanvolunteer.org</a></p>

	<p><b>HEALTH &amp; MEDICAL ADVISORY GROUP (HMAG)</b> [GREG NEIL FOR DEBBIE HEDRICK] Essentially, the subcommittee took the Summer off – meetings will resume next month Joe Marcotte explained the importance of getting the flu vaccination this year due to severity of H2N3 strain that leads to hospitalizations. Distribution of vaccine will likely begin around October 1. This year's vaccine does contain vaccine for H1N1 as well.</p>	
<p><b>COMMITTEE REPORTS</b></p>	<p><b>CONFERENCE SUB-COMMITTEE</b> [PAUL HUTTER] Paul was unable to attend. Joe Marcotte reported that work on the 2011 conference is well underway. Progress has been made in key areas. Paul is making great strides. One key topic is Ethics in Emergency Management. While it was reported last month that consideration was being given to a merger with the Governor's Conference for 2011, due to the legislative session, that plan has been tabled. However, the plan is a definite for the 2012 MSSC/LEPC and Governors Conference. One mailing has been sent – brochure is being finalized. Deposit on Holiday has been made. Use HMAP grant funds for keynote speaker. Diane, Duane and Paul will work on the grant.</p>	
	<p><b>COMMUNICATIONS SUB-COMMITTEE</b> [PATRICK O'NEILL, Chair] Patrick reported that the Communications Sub-Committee met @ 12:30 today to discuss the development of a communications system for the EOC. The following are keys activities:</p> <ul style="list-style-type: none"> <li>• Identify what equipment is available. Contact Duane to inventory</li> <li>• Come up with Communications Guide</li> <li>• Build Communications Glossary – draft available soon</li> </ul>	
	<p><b>BIG SKY 11 CONSORTIUM</b> [DUANE WINSLOW] No report. Duane was unable to attend the meeting.</p>	
	<p><b>TRAINING SUB-COMMITTEE:</b> [MIKE GLANCY] September 17-18: Ham Radio Operators License Exam Prep Class. Ron Glass will forward information for this class to Keg and it will be distributed to all LEPC agencies.  September 18: Int'l Humanities – Rimrock Mall – visit Montana Red Cross web site for more information.  October 1: <u>NIMS 100-200-700-800 Certification Course</u>: ExxonMobil would like to offer 5 seats to attend the one day training class to pick up on-line certifications for the National Incident Mgmt System (NIMS). Location: College of Technology, Room #127 in the new Health &amp; Science Building, 7:00 a.m.-5:00 p.m. We will be providing lunch for all attendees. Contact Kelly Drain, Emergency Response Supervisor @ ExxonMobil @ 406-657-526  October 4<sup>th</sup>: <u>PER280: EMERGENCY RESPONSE: STRENGTHENING COOPERATIVE EFFORTS AMONG PUBLIC &amp; PRIVATE SECTOR ENTITIES</u>: Columbus Fire Station - 1-day class. The flyer and a link to register for a class were emailed on August 8<sup>th</sup>. The class designed by Homeland Security in conjunction with Northwest Arkansas Community College and is a great way to bring both public and the private sectors together in building those relationships and efforts needed during an incident or disaster. This class is free to those who would like to attend. For more information contact Eric Frank, Stillwater County DES @ 406-322-8054 or via email @ <a href="mailto:efrank@stillwater.mt.gov">efrank@stillwater.mt.gov</a>  To register online visit: <a href="http://www.ruraltraining.org/training/delivery/1600">http://www.ruraltraining.org/training/delivery/1600</a> Registration deadline: September 20, 2010. October 28 &amp; 29 – Joe Marcotte will teach combined IS-700/IS-100. Some seats may be available. November 15-16 – Joe Marcotte will teach IS-200. Some seats may be available. November 29-30 – Joe Marcotte will teach IS-300. A limited number of seats may be available. December 16-17 – Joe Marcotte will teach IS-400. Seats are available.</p>	

<b>NEW BUSINESS</b>		
	<p><b>PRE-DISASTER MITIGATION PLAN TASK FORCE CREATION [JOE MARCOTTE]</b>                  This is a short-term work team tasked with reviewing the pre-disaster mitigation plan for Yellowstone County and making the final recommendation for approval by the LEPC. Volunteers for the task force are: Joe Marcotte; Duane Winslow, Dianne Lehm, Maggie Lough and Patrick O'Neill. The team met today at 12:00 and developed a plan of action.</p>	
<b>AGENCY EDUCATION SESSION:</b>		
	<p><b>NATIONAL WEATHER SERVICE</b>                  Thank you to Tom Frieders for a very interesting and informative session. There are numerous Weather Service products / resources available. For additional information, contact Tom Frieders (652-0851)</p>	
<b>ANNOUNCEMENTS</b>	<p>September 10: <u>DXP Customer Appreciation BBQ</u></p> <p>September 13: <u>Tour de Cure: Fundraiser for the American Diabetes Association.</u> Event includes 6-, 23-, 56- and 100-mile rides, all of which begin in the state park near Three Forks and our own Chuck Bikle will be one of the riders...Go "Team Chuck"</p> <p>September 24: <u>Red Cross Recruitment Fair/Stillwater County DES.</u> LEPC agencies who have handout materials that they would like to make available please contact Jill @ 598-4176 or email her for more information at <a href="mailto:washburnj@usa.redcross.org">washburnj@usa.redcross.org</a></p>	

MSU-Billings Police Dept is next on the list for the 10 minute Agency presentation.

There being no other business the meeting was adjourned @ 2:45 p.m.

Reminder: The next meeting will be October 14, 2010 @ 1:30 p.m.

**AGENCY EDUCATION SESSIONS SCHEDULE**

	<b>DATE</b>	<b>AGENCY</b>	
COMPLETED	<del>November 2009</del>	<del>United Way</del>	
COMPLETED	<del>December 2009</del>	<del>YARES</del>	
COMPLETED	January 2010	Yellowstone County DES	
COMPLETED	February 2010	Yellowstone County Sheriff's Office	
COMPLETED	March 2010	US Postal Service	
COMPLETED	April 2010	US Marshal's Service	
COMPLETED	May 2010	Sysco Food Service	
COMPLETED	June 2010	St. Vincent HELP Flight	
COMPLETED	JULY 2010	ST. VINCENT HEALTHCARE	
COMPLETED	August 2010	RiverStone Health	
COMPLETED	<del>September 2010</del>	<del>National Weather Service</del>	
	October 2010	MSU-Billings Police	
	November 2010	MSSC	
	December 2010	Montana Army National Guard	
	January 2011	Montana Highway Patrol	
	February 2011	Montana District V - DES	
	March 2011	Lutheran Disaster Response	
	April 2011	Lockwood Water & Sewer	
	May 2011	Lockwood Fire Department	
	June 2011	Laurel, City of - Police & Fire/Ambulance Dept	
	July 2011	HOPE Dogs	
	August 2011	Hansers Automotive	
	September 2011	FBI	
	October 2011	ExxonMobil	
	November 2011	DXP - Safety Master	
	December 2011	DPC	
	January 2012	County Water District - Billings Heights	
	February 2012	ConocoPhillips	
	March 2012	CHS Refinery	
	April 2012	Business Watch Montana	
	May 2012	Brenntag Pacific	
	June 2012	Billings Public Schools	
	July 2012	Billings Clinic	
	August 2012	Billings City of - Police Dept	
	September 2012	Billings City of - Public Works	
	October 2012	Billings City of - Fire Dept	
	November 2012	Billings City of - Airport Fire Dept	
	December 2012	Big Sky EDA	
	January 2013	Baptist Disaster Relief	
	February 2013	American Red Cross	
	March 2013	American Medical Response	
	April 2013	Advanced Care Hospital of MT	
	May 2013	Stillwater County Public Health	
	June 2013		

**ATTENDANCE RECORD – SEPTEMBER MEETING**

Present	Name	Company	Federally Funded Yes / No	Miles Travelled	TOTAL ATTENDANCE
	Sommerville, Richard	Advanced Care Hospital of MT			
	Syvertson, Suzanne	Advanced Care Hospital of MT			
	Lambert, Lorna	Advanced Care Hospital of MT			
	Gilbert, Steve	Alternatives, Inc.	No	2	
	Gurchiek, Lyndy	American Medical Response	No	5	
	Westmoreland, Melody	American Medical Response	No	5	
	Cornetet, Linda	American Red Cross	No		
	LaFurge, Stephen	American Red Cross	No	2	
	Washburn, Jill	American Red Cross	No	1	
	Edlin, Jim	Baptist Disaster Relief			
	Lehm, Dianne	Big Sky EDA – Project Impact	No	1	
	Nordlund, Patty	Big Sky EDA	No		
	Bryan, Dan	Billings, City of – Airport Fire		1	
	Glancy, Mike	Billings, City of – Airport Fire	No	1	
	Gates, Mike	Billings, City of – Airport Fire		1	
	Hanel, Tom	Billings, City of – Council/Mayor			
	Dextras, Paul	Billings, City of – Fire		1	
	Gibson, Kathy	Billings, City of - Fire	No	1	
	Larson, Terry	Billings, City of – Fire	No	1	
	Odermann, Frank	Billings, City of – Fire			
	Yerger, JoLynn	Billings, City of – HRD			
	Bedford, John	Billings, City of – Police		5	
	Krizek, Boris	Billings, City of - Public Works			
	Workman, Gary	Billings, City Public Works – Water	No	3	
	Marcotte, Joe	Billings Clinic		1	
	Aders, Kathy	Billings Public Schools			
	Turnquist, Bob	Brenntag Pacific, Inc.	No	35	
	Cox, Meridith	BusinessWatch Montana	No		
	Kimble, Brad	CHS Refinery – Laurel	No	20	
	Lowe, Russ	CHS Refinery – Laurel	No		
	Jurovich, George	ConocoPhillips	No	1	
	Taylor, Susan	ConocoPhillips	No	1	
	Harmon, Jeff	Conoco Pipeline	No		
	Scheppele, Barbara	Cooper Creative Ads	No		
	Nieskens, Duke	County Water District of Blgs Heights	No	3	
	Barone, Christopher	Dept of Homeland Security	Yes		
	Rosh, Ron	DPC	No		
	Ashworth, Jeff	DXP - Safety Master	No	1	
	Drain, Kelly	ExxonMobil Refinery	No	3	
	Facer, Bill	FBI	Yes		
	Cunningham, Jim	Hansers Automotive	No		
	DeWitt, Susan	HOPE Dogs	No		
	Findley, Lyn	HOPE [Animal Assisted Crisis Response] Dogs	No	4	
	Vaught, Tanya	HOPE Dogs	No	6	
	Reiter, Tim	Laurel City of	No	18	
	Yeager, Derrick	Laurel Fire Dept			
	Musson, Rick	Laurel Police Dept	No	18	
	Lough, Maggie	Lockwood Fire Council	No	5	

# LOCAL EMERGENCY PLANNING COMMITTEE

2305 8<sup>TH</sup> AVENUE NORTH – BILLINGS, MT 59101

JOE MARCOTTE, CHAIR

Present	Name	Company	Federally Funded Yes / No	Miles Travelled	TOTAL ATTENDANCE
	Hutton, Allan	Lockwood Fire Dept			
	Rash, William	Lockwood Fire Dept	No	7	
	Smart, Delet	Lockwood Fire Dept	No	7	
	Woods, Woody	Lockwood Water & Sewer			
	Reed, Tony	Lockwood Water & Sewer			
	Haaland, Cliff	Lutheran Disaster Response	No		
	Toney, Dan	MT Dept of Labor/Safety Bureau			
	Hanson, Charlie	MT Dist. V DES Rep.	Yes		
	Baum, Craig	Montana Highway Patrol	No		
	Bunch, Paul	Montana Army National Guard		5	
	Jones, Thomas	Montana Army National Guard			
	Stephens, Claudia	MT Migrant Council	Yes	1	
	Hutter, Paul	MSSC	No		
	Smith, Michael	MSSC			
	Davis, Adam	MSU-Billings –Police			
	Forshee, Scott	MSU-Billings –Police			
	Fachini, Susan	MSU-Billings-Police			
	Frieders, Thomas	National Weather Service			
	Thomas, Samuel	One Eighty Communications			
	Foreman, Mike	OSHA		1	
	Zeilstra, Tom	Pierce RV			
	Harris, Hillary	Riverstone Health	No		
	Hedrick, Debbie	Riverstone Health			
	Juarez, Josh	Riverstone Health		1	
	Neill, Greg	Riverstone Health	Yes	1	
	Rapkoch, Arianne	Riverstone Health	Yes	1	
	Schneeman, Barbara	Riverstone Health			
	Allen, Richard	Salvation Army	No	1	
	Bruckner, Ramona	Salvation Army	No	2	
	LeMar, Sam	Salvation Army	No	2	
	Snyder, Jack	Salvation Army	No	1	
	Jackson, Kevin (Maj)	Salvation Army	No	2	
	Coble, T.C.	St. Vincent HELP Flight		1	
	Dugan, Bill	St. Vincent Healthcare		1	
	Mahoney, Jason	St. Vincent Healthcare			
	O'Neil, Patrick	St. Vincent Healthcare		1	
	Grim, Jill	Stillwater County Public Health	Yes	100	
	Kelly, Chuck	Sysco Food Service		4	
	Lough, Bob	Sysco Food Service		4	
	Stanton, Paul	Team Builder Inc. YBGR	No	1	
	Shipley, Terry	Transportation Security Adm			
	Ostermiller, Rod	US Marshal's Service			
	Wessel, Carol	US Marshal's Service	Yes	2	
	Caulfield, Cathy	United State Postal Service	Yes	1	
	Haight, Rae Ann	United States Postal Service	Yes	1	
	Weinreis, Shane	US Water Rescue Dive Team	No		
	Klosken, Kristen	United Way	No	1	
	Sanderson, Pam	United Way Volunteer Center	No	2	
	Washburn, Jill	United Way / Red Cross			

# LOCAL EMERGENCY PLANNING COMMITTEE

2305 8<sup>TH</sup> AVENUE NORTH – BILLINGS, MT 59101

JOE MARCOTTE, CHAIR

Present	Name	Company	Federally Funded Yes / No	Miles Travelled	Attendance Total
	West, Debbie	United Way			
	Carpozi, H. Starr	Volunteer – EOC			
	Bikle, Chuck	YARES, Radio Club	No	6	
	Gansel, Todd	YARES, District Emergency Coord			
	Glass, Ron	YARES, Radio Club	No	6	
	Stand, Andy	YARES, Radio Club			
	Ostlund, John	Yellowstone County Commission			
	Reno, Jim	Yellowstone County Commission			
	Kraft, Jim	Yellowstone County DES	Yes	1	
	Winslow, Duane	Yellowstone County DES		1	
	Bushey, Chuck	Yellowstone County Fuel Mitigation	No	2	
	Luppen, Janelle	Yellowstone County GIS			
	Mann, Shelli	Yellowstone Lodging Assoc – Boothill Inn			
	O'Donnell, Kent	Yellowstone Co - Sheriff			
	Paris, Daniel	Yellowstone Co - Sheriff			
	Schieno, Mike	Yellowstone Co – Sheriff			
	SSG Chris Schuff	83 <sup>rd</sup> Civil Support Team			
	Sandburg, Tom	83 <sup>rd</sup> Civil Support Team			
	Verrill, Todd	83 <sup>rd</sup> Civil Support Team			
	<b>TOTAL ATTENDANCE</b>				

# AGENDA

**FEBRUARY 10, 2011**

HEADQUARTERS FIRE STATION

PLEASE USE 2300 9<sup>TH</sup> AVENUE NORTH ENTRANCE

1:30 P.M.

## **INTRODUCTIONS**

## **MINUTES**

## **QUARTERLY FINANCIAL REPORT - -** [Duane Winslow]

Reports will be presented quarterly in the months of March, June, September, and December.

## **COMMITTEE REPORTS**

- 1) **EXERCISE DESIGN COMMITTEE REPORT** [Jeff Ashworth]
- 2) **GRANTS SUBCOMMITTEE** [Dianne Lehm]
- 3) **CAER / CITIZENS CORP COUNCIL SUBCOMMITTEE** [Pam Sanderson]
- 4) **HEALTH & MEDICAL ADVISORY GROUP (HMAG)** [Debbie Hedrick]
- 5) **CONFERENCE SUBCOMMITTEE** [Paul Hutter]
- 6) **CRISIS COMMUNICATIONS SUB-COMMITTEE/P.I.O.'S** [Arianne Rapkoch]
- 7) **COMMUNICATIONS SUBCOMMITTEE** [Patrick O'Neill]
  1. **Big Sky 11 Consortium** [Duane Winslow]
- 8) **TRAINING SUBCOMMITTEE** [Vacant]
- 9) **PRE-DISASTER MITIGATION PLAN TEMPORARY TASK FORCE**

## **OLD BUSINESS**

- 1.

## **NEW BUSINESS**

1. **AGENCY EDUCATION SESSIONS (10 MINUTES) - MONTANA DISTRICT V - DES**

**OTHER BUSINESS**

**MEETING DATES FOR 2011** [2<sup>ND</sup> THURSDAY OF EACH MONTH @ 1:30 P.M. – UNLESS OTHERWISE NOTED] PLEASE MARK YOUR CALENDARS.

JANUARY 13, 2011	JULY 14, 2011
FEBRUARY 10, 2011	AUGUST 11, 2011
<del>MARCH 10, 2011</del> MARCH 3, 2010 [CONFERENCE]	SEPTEMBER 8, 2011
APRIL 14, 2011	OCTOBER 13, 2011
MAY 12, 2011	NOVEMBER 10, 2011
JUNE 9, 2011	DECEMBER 8, 2011

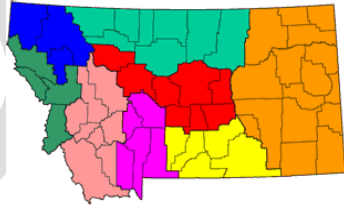
DRAFT

# MINUTES

**JANUARY 13, 2011**

	The meeting was called to order @ 1:30 p.m. by LEPC Chair Joe Marcotte.	
<b>INTRODUCTIONS</b>		
<b>AGENDA ITEMS</b>	<b>DISCUSSION</b>	<b>ACTION STEPS / FUTURE EVENTS</b>
<b>MINUTES</b>	Minutes were approved as distributed. [Lough/Bikle] Unanimous	Approved
<b>FINANCIAL REPORT</b>	<p><b>QUARTERLY FINANCIAL REPORT [DUANE WINSLOW]</b>                      Financial Reports are given quarterly: March, June, September, December                      Beginning Balance: \$22,967.67                      \$ 4,086.03 (balance of Health Grant for "Ready Yellowstone" campaign).                      Expenditures: \$ 186.37 Jim Kraft's Retirement                      Ending Balance: \$18,650.27</p>	Next Quarterly Report: March 2011
<b>COMMITTEE REPORTS</b>	<p><b>EXERCISE DESIGN COMMITTEE: [JEFF ASHWORTH, CHAIR]</b>                      Jeff reported that due the holiday and scheduling conflicts the Exercise Design Committee did not meet in November. Also due to holiday time off and vacations, the December Exercise Design Committee meeting has been cancelled.</p> <p>April, 2011: Real time exercise – RiverStone Health – Activation of the "Strategic National Stockpile.</p> <p>May, 2011: Real time exercise – Airport as part of their FAA requirement. Because this is an FAA requirement for airport personnel, the drill is being conducted as a semi-closed session at the airport. The LEPC exercise design sub-committee is planning an off airport property event involving the LEPC and both hospitals and focus on 4 parts: NIMS ICS system; controlled staging area; will run full-time responses; staffed access checkpoints.</p> <p>Unknown: Real time exercise – MSU-Billings Campus – gunman/active shooter. Planning stages only.</p> <p>2012 Operation COYOTE:</p> <p>2015 "Vigilant Guard" Exercise. At this time no location has been selected and plans are still in the preliminary stages.</p>	Next meeting: 4 <sup>th</sup> Tuesday of each month January 25, 2011 10:00-11:00 a.m.
	<p><b>NATIONAL GUARD – FLOOD SCENARIO – YELLOWSTONE &amp; TONGUE RIVER ICE JAM</b>                      Charlie Hanson reported at the last meeting that the Montana National Guard is planning a table top exercise in Helena February 16-17 and that local EOC's are encouraged to participate.</p>	

<p><b>COMMITTEE REPORTS</b></p>	<p><b>GRANTS COMMITTEE</b> [DIANNE LEHM, CHAIR] Dianne reported that the end of the year / quarterly reports have been filed.</p> <p>Two grant applications are pending. Applications have been sent to Steve Ketch.</p>	
	<p><b>CAER/CITIZENS CORPS</b> [PAM SANDERSON] January is ‘Resolve to Respond’ month. Work continues on updating the website and portal pages/quick links should be ready shortly.</p> <p>Joint training with affiliate agencies: Agencies who have access to training were asked to consider invitations to volunteers from other affiliated or associated agencies.</p>	<p>Volunteers are always needed. Ideas for Day of Caring projects? Contact Pam Sanderson @ 252-3839 <a href="http://www.youcanvolunteer.org">www.youcanvolunteer.org</a></p> <p>Meetings: 4<sup>th</sup> Tuesday of each month @ 1:30 p.m.</p>
	<p><b>HEALTH &amp; MEDICAL ADVISORY GROUP (HMAG)</b> [GREG NEIL FOR DEBBIE HEDRICK]</p>	<p>Next meeting: January 28<sup>th</sup> 10:00 a.m.</p>
	<p><b>CONFERENCE SUB-COMMITTEE</b> [PAUL HUTTER] An electronic copy of the Conference brochure and registration form will be emailed to LEPC members sometime next week.</p> <p>The March LEPC meeting will be held on March 3 (Thursday) @ 1:30 P.M. Please look for the signs for room assignments. LEPC is providing lunch at the Conference on March 3 @ Noon for LEPC members.</p> <p>Pam Sanderson will make arrangements for LEPC to have a booth at the Conference. If you want to volunteer to assist with the booth, please contact Pam @ 252-3839.</p>	<p>Conf. Registration Information:  <b>MSSC: 248-6178</b></p>
	<p><b>CRISIS COMMUNICATIONS/PUBLIC INFORMATION OFFICER’S SUB-COMMITTEE</b> [ARIANNE RAPKOCH] The Crisis Communications / Public Information Officer’s Sub-Committee has not yet met.</p>	
	<p><b>COMMUNICATIONS SUB-COMMITTEE</b> [PATRICK O’NEILL, Chair] Due to a scheduling conflict with the PDM Planning Committee, the Communications Sub-Committee did not meet on Thursday January 13<sup>th</sup> as planned. Ron Glass is currently working on scheduling a drill to set up the EOC later this month; the sub-committee will meet at that time. Once the date is finalized additional information will be sent out.</p>	
	<p><b>BIG SKY 11 CONSORTIUM</b> [DUANE WINSLOW] Nothing new to report.</p>	
	<p><b>TRAINING SUB-COMMITTEE:</b> [VACANT ] Joe Marcotte reported that a volunteer to Chair this sub-committee is needed. If anyone is interested in wanting to Chair this committee, please contact Joe Marcotte.</p> <p>If you have a training opportunities or announcements that you want to share with members, please forward them to Kathy Gibson ... <a href="mailto:gibsonk@ci.billings.mt.us">gibsonk@ci.billings.mt.us</a> She will forward to members via email.</p>	
<p><b>COMMITTEE REPORTS</b></p>	<p><b>PRE-DISASTER MITIGATION PLAN</b> [CHARLIE VANDAM, PBS&amp;J] PBS&amp;J hired by Yellowstone County to review the plan written in 2004. The plan is required to be reviewed and updated every 5-years. Tasks to be completed: Review existing plan, identify new hazards, and identify projects that will mitigate the hazards. LEPC members can review the existing plan posted on the Yellowstone County’s web site.</p> <p>The LEPC will be asked at the April meeting to recommend approval, sign off on the plan before it goes before governing bodies/Commissioners.</p>	

<p><b>OLD BUSINESS</b></p>		
<p><b>NEW BUSINESS</b></p>	<p><b>2010 ANNUAL REPORT FROM SUB-COMMITTEE CHAIRS</b> Reminder to all Sub-Committee Chairs: annual reports are due.</p>	
<p><b>AGENCY EDUCATION SESSION:</b></p>		
	<p>Montana Highway Patrol [Craig Baum, ] Craig Baum, Detachment Commander introduced himself. Craig stated that he is one of three Detachment Commanders assigned to the Billings Area.</p> <p>He gave a brief background of the 75 years the Montana Highway Patrol has been in existence.</p> <p>Mission Statement: The Highway Patrol's mission is to safeguard the lives and property of the people using the highway traffic system of Montana through education, service, enforcement, and interagency cooperation.</p> <p>The Patrol's 200 troopers cover great distances to police our state highways, assist other law enforcement agencies and help motorists in need. Each year, the men and women of the Patrol:</p> <ul style="list-style-type: none"> <li>• drive more than 5.5 million miles</li> <li>• respond to over 70,000 calls for service</li> <li>• issue more than 85,000 arrest tickets and more than 100,000 warning tickets</li> </ul> <p>Troopers provide public safety education presentations on nearly every subject related to driving safety, including seatbelt use, driving under the influence and child safety. To schedule a presentation, contact the nearest MHP district office. Contact the Patrol: In the event of a crash or other roadside emergency, call (800) 525-5555. Headquarters: Colonel Michael T. Tooley, Chief Administrator, Montana Highway Patrol , 2550 Prospect Avenue, P.O. Box 201419, Helena, MT 59620-1419, Phone: (406) 444-3780, Fax: (406) 444-4169, E-mail: MHPHQContact@mt.gov Recruiting: Phone: (406) 444-3284 or 444-3259, Toll free: (877) 8-PATROL or (877) 872-8765 E-mail: mhp@mt.gov</p> <p>From the MHP web-site: Districts Overview:</p> <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  </div> <div style="width: 45%;"> <p><b>District I (Missoula) – Mineral, Missoula, Ravalli and Sanders Counties</b> 2681 Palmer, Suite B Missoula, MT 59808-1700 Phone: (406) 329-1500 Fax: (406) 329-1549</p> </div> <div style="width: 45%;"> <p><b>District V (Glendive) – Carter, Custer, Daniels, Dawson, Fallon, Garfield, McCone, Powder River, Prairie, Richland, Roosevelt, Rosebud, Sheridan, Treasure, Valley and Wibaux Counties</b> 76 Highway 16 Glendive, MT 59330-9502 Phone: (406) 377-5238 Fax: (406) 377-8504</p> </div> </div>	

<p> District II (Great Falls) – Cascade, Fergus, Golden Valley, Judith Basin, Musselshell, Petroleum, Teton and Wheatland Counties              812 14th Street North              Great Falls, MT 59401-1247</p> <p>Phone: (406) 453-1121 or 452-9311              Fax: (406) 454-2119</p>	<p> District VI (Kalispell) – Flathead, Lake and Lincoln Counties              121 Financial Drive, Suite D              Kalispell, MT 59901</p> <p>Phone: (406) 755-6688              Fax: (406) 756-6606</p>	
<p> District III (Butte) – Beaverhead, Deer Lodge, Granite, Jefferson, Lewis &amp; Clark, Madison, Powell and Silver Bow Counties              3615 Wynne              Butte, MT 59701</p> <p>Phone: (406) 494-3233              Fax: (406) 494-8264</p>	<p> District VII (Bozeman) – Broadwater, Gallatin, Madison, Meagher and Park Counties              1045 Reeves Road East, Suite B              Bozeman, MT 59718</p> <p>Phone: (406) 587-4525, 587-4528 or 587-4530              Fax: (406) 587-4534</p>	
<p> District IV (Billings) – Big Horn, Carbon, Stillwater, Sweet Grass and Yellowstone Counties              615A South 27 Street              Billings, MT 59101</p> <p>Phone: (406) 896-4351              Fax: (406) 896-4355</p>	<p> District VIII (Havre) – Blaine, Chouteau, Glacier, Hill, Liberty, Phillips, Pondera and Toole Counties              1708 Second Street West, Suite A              Havre, MT 59501</p> <p>Phone: (406) 265-6420              Fax: (406) 265-6430</p>	

**MONTANA DISTRICT V – DES** is next on the list for the 10 minute Agency presentation.

There being no other business the meeting was adjourned @ 3:30 p.m.

**Reminder: The next LEPC meeting will be February 10, 2011 @ 1:30 p.m.**

**Reminder: The March LEPC meeting date and location was changed: The March meeting will be March 3, 2011 @ 1:30 p.m. during the Annual Safety Conference at the Holiday Inn.**

**AGENCY EDUCATION SESSIONS SCHEDULE**

	<b>DATE</b>	<b>AGENCY</b>	
COMPLETED	November 2009	United Way	
COMPLETED	December 2009	YARES	
COMPLETED	January 2010	Yellowstone County DES	
COMPLETED	February 2010	Yellowstone County Sheriff's Office	
COMPLETED	March 2010	US Postal Service	
COMPLETED	April 2010	US Marshal's Service	
COMPLETED	May 2010	Sysco Food Service	
COMPLETED	June 2010	St. Vincent HELP Flight	
COMPLETED	JULY 2010	ST. VINCENT HEALTHCARE	
COMPLETED	August 2010	RiverStone Health	
COMPLETED	September 2010	National Weather Service	
COMPLETED	October 2010	MSJ-Billings Police	
NO PRESENTATION GIVEN	November 2010	MSSC	
NO PRESENTATION GIVEN	December 2010	Montana Army National Guard	
COMPLETED	January 2011	Montana Highway Patrol	
	February 2011	Montana District V – DES	
	March 2011	Lutheran Disaster Response	
	April 2011	Lockwood Water & Sewer	
	May 2011	Lockwood Fire Department	
	June 2011	Laurel, City of – Police & Fire/Ambulance Dept	
	July 2011	HOPE Dogs	
	August 2011	Hansers Automotive	
	September 2011	FBI	
	October 2011	ExxonMobil	
	November 2011	DXP – Safety Master	
	December 2011	DPC	
	January 2012	County Water District – Billings Heights	
	February 2012	ConocoPhillips	
	March 2012	CHS Refinery	
	April 2012	Business Watch Montana	
	May 2012	Brenntag Pacific	
	June 2012	Billings Public Schools	
	July 2012	Billings Clinic	
	August 2012	Billings City of – Police Dept	
	September 2012	Billings City of – Public Works	
	October 2012	Billings City of – Fire Dept	
	November 2012	Billings City of – Airport Fire Dept	
	December 2012	Big Sky EDA	
	January 2013	Baptist Disaster Relief	
	February 2013	American Red Cross	
	March 2013	American Medical Response	
	April 2013	Advanced Care Hospital of MT	
	May 2013	Stillwater County Public Health	
	June 2013	MSSC	
	July 2013	Montana Army National Guard	

**ATTENDANCE RECORD – JANUARY 13, 2010 MEETING**

Present	Name	Company	Federally Funded Yes / No	Miles Travelled One-way
X	Gilbert, Steve	Alternatives, Inc.	No	2
	Gurchiek, Lyndy	American Medical Response	No	5
	Westmoreland, Melody	American Medical Response	No	5
	Cornetet, Linda	American Red Cross	No	
	LaFurge, Stephen	American Red Cross	No	2
	Richmond, Philip	American Red Cross	No	
	Washburn, Jill	American Red Cross	No	1
	Edlin, Jim	Baptist Disaster Relief		
X	Lehm, Dianne	Big Sky EDA – Project Impact	No	1
	Nordlund, Patty	Big Sky EDA	No	
	Glancy, Mike	Billings, City of – Airport Fire	No	1
	Dextras, Paul	Billings, City of – Fire		1
X	Gibson, Kathy	Billings, City of - Fire	No	1
	Larson, Terry	Billings, City of – Fire	No	1
X	Odermann, Frank	Billings, City of – Fire		
	Yerger, JoLynn	Billings, City of – HRD		
	Bedford, John	Billings, City of – Police		5
X	Krizek, Boris	Billings, City of - Public Works		
X	Workman, Gary	Billings, City Public Works – Water	No	3
X	Friday, Wyeth	City/County Planning	Yes	2
X	Marcotte, Joe	Billings Clinic		1
	Aders, Kathy	Billings Public Schools		
X	Gold, Nick	Brenntag Pacific, Inc.	No	15
	Turnquist, Bob	Brenntag Pacific, Inc.	No	35
X	Cox, Meredith	BusinessWatch Montana	No	
	Kimble, Brad	CHS Refinery – Laurel	No	30
	Lowe, Russ	CHS Refinery – Laurel	No	
	Jurovich, George	ConocoPhillips	No	1
	Taylor, Susan	ConocoPhillips	No	1
	Harmon, Jeff	Conoco Pipeline	No	
	Scheppele, Barbara	Cooper Creative Ads	No	
X	Nieskens, Duke	County Water District of Blgs Heights	No	3
	Barone, Christopher	Dept of Homeland Security	Yes	
	Rosh, Ron	DPC	No	
X	Ashworth, Jeff	DXP - Safety Master	No	1
	Drain, Kelly	ExxonMobil Refinery	No	3
	Cunningham, Jim	Hansers Automotive	No	
	DeWitt, Susan	HOPE Dogs	No	
	Findley, Lyn	HOPE [Animal Assisted Crisis Response] Dogs	No	4
	Vaught, Tanya	HOPE Dogs	No	6
	Reiter, Tim	Laurel, City of	No	18
X	Musson, Rick	Laurel, City of - Police	No	18
	Markegard, Kurt	Laurel, City of - Public Works		
X	Lough, Maggie	Lockwood Fire Council	No	5
	Rash, William	Lockwood Fire Dept	No	7
	Smart, Delet	Lockwood Fire Dept	No	7
	Woods, Woody	Lockwood Water & Sewer		
	Reed, Tony	Lockwood Water & Sewer		

**ATTENDANCE RECORD – JANUARY 13, 2010 MEETING**

Present	Name	Company	Federally Funded Yes / No	Miles Travelled
X	Grassel, Diana	Loveland Products		
X	Williams, Michael	Loveland Products		
	Hanson, Charlie	MT Dist. V DES Rep.	Yes	
X	Baum, Craig	Montana Highway Patrol	No	
	Hutter, Paul	MSSC	No	
	Smith, Michael	MSSC		
X	Davis, Adam	MSU-Billings –Police		
X	Forshee, Scott	MSU-Billings –Police		
X	Frieders, Thomas	National Weather Service		
X	Vandam, Charlie	PBS & J		
	Harris, Hillary	Riverstone Health	No	
	Hedrick, Debbie	Riverstone Health		
	Juarez, Josh	Riverstone Health		1
X	Neill, Greg	Riverstone Health	Yes	1
	Rapkoch, Arianne	Riverstone Health	Yes	1
	Schneeman, Barbara	Riverstone Health		
	Bruckner, Ramona	Salvation Army	No	2
X	Snyder, Jack	Salvation Army	No	1
	Jackson, Kevin (Maj)	Salvation Army	No	2
X	Wilkerson, Rob	St. John's Lutheran Ministries/Disaster Response		
	Coble, T.C.	St. Vincent HELP Flight		1
	Dugan, Bill	St. Vincent Healthcare		1
X	Mahoney, Jason	St. Vincent Healthcare		
	O'Neil, Patrick	St. Vincent Healthcare		1
	Grim, Jill	Stillwater County Public Health	Yes	100
	Kelly, Chuck	Sysco Food Service		4
X	Lough, Bob	Sysco Food Service		4
	Stanton, Paul	Team Builder Inc. YBGR	No	1
	Shipley, Terry	Transportation Security Adm		
	Ostermiller, Rod	US Marshal's Service		
	Wessel, Carol	US Marshal's Service	Yes	2
	Caulfield, Cathy	United State Postal Service	Yes	1
	Haight, Rae Ann	United States Postal Service	Yes	1
X	Sanderson, Pam	United Way Volunteer Center	No	2
	Washburn, Jill	United Way / Red Cross		
	West, Debbie	United Way		
	Carpozi, H. Starr	Volunteer – EOC		
X	Bikle, Chuck	YARES, Radio Club	No	6
	Gansel, Todd	YARES, District Emergency Coord		
X	Glass, Ron	YARES, Radio Club	No	6
X	Winslow, Duane	Yellowstone County DES		1
	Bushey, Chuck	Yellowstone County Fuel Mitigation	No	2
	Luppen, Janelle	Yellowstone County GIS		
X	Wallis, Vince	Yellowstone Co - Sheriff		
	Sandburg, Tom	83 <sup>rd</sup> Civil Support Team		
<b>31</b>	<b>TOTAL ATTENDANCE</b>			

# AGENDA

**MAY 12, 2011**

**FIRE STATION #1 – 2300 9<sup>TH</sup> AVENUE NORTH ENTRANCE  
1:30 P.M.**

## **INTRODUCTIONS**

## **MINUTES**

## **QUARTERLY FINANCIAL REPORT - – [Duane Winslow]**

Reports will be presented quarterly in the months of March, June, September, and December.

## **COMMITTEE REPORTS**

- 1) **EXERCISE DESIGN COMMITTEE REPORT** [Jeff Ashworth]
- 2) **GRANTS SUBCOMMITTEE** [Dianne Lehm]
- 3) **CAER / CITIZENS CORP COUNCIL SUBCOMMITTEE** [Pam Sanderson]
- 4) **HEALTH & MEDICAL ADVISORY GROUP (HMAG)** [Greg Neill]
- 5) **CONFERENCE SUBCOMMITTEE** [Paul Hutter]
- 6) **CRISIS COMMUNICATIONS SUB-COMMITTEE/P.I.O.'s** [Arianne Rapkoch]
- 7) **COMMUNICATIONS SUBCOMMITTEE** [Ron Glass]
  1. **Big Sky 11 Consortium** [Duane Winslow]
- 8) **TRAINING SUBCOMMITTEE** [Vacant]
- 9) **PRE-DISASTER MITIGATION PLAN TEMPORARY TASK FORCE**

## **OLD BUSINESS**

- 1.

## **NEW BUSINESS**

1. **AGENCY EDUCATION SESSIONS (10 MINUTES) - LOCKWOOD FIRE-RESCUE**

**OTHER BUSINESS**

**MEETING DATES FOR 2011** [2<sup>ND</sup> THURSDAY OF EACH MONTH @ 1:30 P.M. – UNLESS OTHERWISE NOTED] PLEASE MARK YOUR CALENDARS.

JANUARY 13, 2011	JULY 14, 2011
FEBRUARY 10, 2011	AUGUST 11, 2011
MARCH 10, 2011 — MARCH 3, 2010 [CONFERENCE]	SEPTEMBER 8, 2011
APRIL 14, 2011	OCTOBER 13, 2011
MAY 12, 2011	NOVEMBER 10, 2011
JUNE 9, 2011	DECEMBER 8, 2011

DRAFT

# MINUTES


APRIL 14, 2011

	The meeting was called to order @ 1:30 p.m. by LEPC Chair Joe Marcotte.	
<b>INTRODUCTIONS</b>		
<b>AGENDA ITEMS</b>	<b>DISCUSSION</b>	<b>ACTION STEPS / FUTURE EVENTS</b>
<b>MINUTES</b>	Minutes were approved as distributed. [Ashworth/Odermann] Unanimous	Approved
<b>FINANCIAL REPORT</b>	<p><b>QUARTERLY FINANCIAL REPORT</b> [DUANE WINSLOW]                      Financial Reports are given quarterly: March, June, September, December                      Beginning Balance: \$22,967.67                      \$ 4,086.03 (balance of Health Grant for "Ready Yellowstone" campaign).                      Deposit/DPC Donation 250.00                      Ending Balance: \$18,650.27</p>	Next Quarterly Report: June 2011
<b>COMMITTEE REPORTS</b>	<p><b>EXERCISE DESIGN COMMITTEE:</b> [JEFF ASHWORTH, CHAIR]</p> <p>March, 2011: DOVE (Dispensing Orientation Video Exercise). Greg Neill reported that the exercise/video production was successful. Thanks to United Way, Red Cross and RSVP who participated.</p> <p>April 2011: WADE Exercise. Thanks to Sysco, Carquest, Billings Police Department, St. John's Lutheran Ministries and YARES.</p> <p>May, 2011: Real time exercise – RiverStone Health – Activation of the "Strategic National Stockpile.</p> <p>May, 18 2011: Real time exercise – Airport is conducting this exercise as part of their FAA requirement. Will have a plane go off the west end of the runway and will have everyone responding real time – no pre-staging. The victims will be transported via busses to both hospitals where they will be doing a secondary triage then go through decon before being admitted and treated. We will be activating the EOC and will also be implementing the Family Assistance Program at both hospitals. Because this is an FAA requirement for airport personnel, the drill is being conducted as a semi-closed session at the airport. The LEPC is planning an exercise off airport property involving a mass transport of victims to both hospitals and focus on 4 parts: NIMS ICS system; controlled staging area; will run full-time responses; staffed access checkpoints. The LEPC portion of the exercise will run from 9:00 a.m. to 11:30 a.m. because the 'victims' have to get back to school.</p> <p>May 25-26: The Disaster Preparedness Conference at the MSU-B campus downtown and is sponsored by the Yellowstone County Commissioners. They will be discussing lessons learned such as the tornado in Billings, the downtown fire in Miles City, etc.</p> <p>June 4: Disaster Simulation - The 83<sup>rd</sup> Civil Support Team will be conducting a live exercise at MSU-B as part of the state CERT teams being in town. This will be conducted with MSU-B and the Billings Fire Dept. They will have 15-20 victims that will be hospitalized.</p>	Next meeting: 4 <sup>th</sup> Tuesday of each month April 26 10:00-11:00 a.m. Billings Clinic

# LOCAL EMERGENCY PLANNING COMMITTEE

2305 8<sup>TH</sup> AVENUE NORTH – BILLINGS, MT 59101  
JOE MARCOTTE, CHAIR

<p><b>COMMITTEE REPORTS</b></p>	<p>Date Unknown: Real time exercise–MSU-Billings Campus–gunman/active shooter. Planning stages only.</p> <p>2012 Operation COYOTE: Will be at the ConocoPhillips refinery – plans not yet discussed.</p> <p>2015 “Vigilant Guard” Exercise. No word on which location has been selected and plans are still in the preliminary stages.</p>	
	<p><b>GRANTS COMMITTEE</b> [DIANNE LEHM, CHAIR] Hazards Mitigation: Four (4) proposals were submitted and are currently being reviewed. Completing the final paperwork for the HMEP funding for the 2011 Safety Conference.</p>	
	<p><b>CAER/CITIZENS CORPS</b> [PAM SANDERSON] Ready Yellowstone Campaign [<a href="http://www.readyyellowstone.org">www.readyyellowstone.org</a>] is scheduled to formally launch on the 1<sup>st</sup> anniversary of the 2010 tornado. The Ready Yellowstone campaign is designed to encourage preparedness in Yellowstone County prior to a disaster or emergency event. In conjunction with the launch of Ready Yellowstone, the above website will be operation to allow for an easy to remember address that will link citizens to the County’s disaster website which includes information about threats, how to prepare for a disaster, opportunities to volunteer prior to a disaster, etc. The site will have two (2) quick link buttons --- one (1) that will link you to current County information and one (1) to the RiverStone Health site for current public health information.</p> <p>A copy of the survey sheet that Pam distributed at the meeting is attached. Please take a moment to compete the survey and return it to Pam as soon as possible. For information on the survey please call Pam @ 252-3839 or email her at <a href="mailto:pam.sanderson@unitedway.org">pam.sanderson@unitedway.org</a></p> <p>Vulnerable population committee has been twice and is still gathering information.</p>	<p>Volunteers are always needed. Ideas for Day of Caring projects? Contact Pam Sanderson @ 252-3839 <a href="http://www.youcanvolunteer.org">www.youcanvolunteer.org</a></p> <p>Meetings: 4<sup>th</sup> Tuesday of each month @ 1:30 p.m.</p>
	<p><b>HEALTH &amp; MEDICAL ADVISORY GROUP (HMAG)</b> [GREG NEIL] The HMAG group is scheduled to meet next week.</p>	
	<p><b>CONFERENCE SUB-COMMITTEE</b> [PAUL HUTTER] Working on next year’s conference theme, keynote speakers. Conference will be moved to the month of February for 2012. Suggestions/ideas/workshop topics are welcome.</p>	
	<p><b>CRISIS COMMUNICATIONS/PUBLIC INFORMATION OFFICER’S SUB-COMMITTEE</b> [ARIANNE RAPKOCH] Currently building a spreadsheet of local PIO (public information officers) names and contact information. If you would like your agency to be included please contact Arianne.</p>	
	<p><b>COMMUNICATIONS SUB-COMMITTEE</b> [RON GLASS, Chair] Ron Glass has agreed (okay so he was drafted) to become the Chair of this sub-committee. Projects for this committee include: <u>EOC room set-up exercise</u>. EOC was set-up as if for an actual emergency. Photos of the completed set-up were taken and will be printed, laminated and posted for future reference. <u>Communication Team Leader Checklist</u> development. Working on developing a check off sheet for use during any future EOC activations. <u>Radio Terminology Glossary</u>. Working on developing a dictionary/glossary of terms for EOC activations. <u>Translators</u>, list of agencies that could assist.</p>	<p>Next Meeting:  Fire Station #1 May 12, 2011 12:30 pm</p>
	<p><b>BIG SKY 11 CONSORTIUM</b> [DUANE WINSLOW] No report.</p>	
	<p><b>TRAINING SUB-COMMITTEE:</b> [VACANT ] If you have a training opportunities or announcements that you want to share with members, please forward them to Kathy Gibson ... <a href="mailto:gibsonk@ci.billings.mt.us">gibsonk@ci.billings.mt.us</a> She will forward to members via email.</p>	

<p><b>COMMITTEE REPORTS</b></p>	<p><b><u>NIMS - IS 701-704 TRAINING – APRIL 22, 2011.</u></b>                  Charlie Hanson will be conducting classes on April 22 – 8:00 a.m. – 5:00 p.m. in the basement Training Room, Billings Fire Station #1 [please use the 2900 9<sup>th</sup> Avenue North Entrance].</p> <ul style="list-style-type: none"> <li>✓ IS 701 – NIMS Multiagency Coordination System (MACS) Course</li> <li>✓ IS 702 – NIMS Public Information Systems</li> <li>✓ IS 703 - NIMS Resource Management Course</li> <li>✓ IS 704 – NIMS Communication &amp; Information Management.</li> </ul> <p>Anyone interested in attending, please contact Linda Oberg in the Yellowstone County DES office at 256-2775 or email <a href="mailto:loberg@co.yellowstone.mt.gov">loberg@co.yellowstone.mt.gov</a></p> <p>These classes are sponsored by Stillwater, Carbon and Yellowstone County DES offices. Thank you, Duane Winslow</p>	
	<p><b><u>NATIONAL NEIGHBORHOOD EXERCISE SERIES: <i>TORNADO EXERCISE – APRIL 30 2011</i></u></b>                  In many parts of the county with the coming of spring comes the posting of Tornado Watches and Warnings by the National Weather Service.</p>  <p>As the 2011 tornado season starts to become active now is the time for neighborhood, community and faith based organizations to assess their disaster planning and response capabilities by participating in the Formidable Footprint Tornado Exercise scheduled for April 30 2011.</p> <p>The Formidable Footprint National Neighborhood Exercise Series has been designed for CERTs, Neighborhood Watch Programs, Neighborhood Associations, Community / Faith Based Organizations, Citizen Corps, Fire Corps and others to assess their disaster readiness and response capabilities via a meaningful internet based exercise opportunity.</p> <p>There is <b>NO CHARGE</b> for participation in any of the Formidable Footprint exercises.</p> <p>For additional information or to register for the up-coming Tornado Exercise please access the following web site today: <a href="http://www.FormidableFootprint.org">www.FormidableFootprint.org</a></p> <div style="border: 1px solid black; padding: 5px;"> <p><b>Chris Floyd</b>                  Disaster Resistant Communities Group                  (850) 241-3565 Mobile                  chrisfloyd@drc-group.com                  6224 Wake Robin Ln                  Tallahassee FL 32309                  www.drc-group.com</p> </div>	<p>For additional information or to register for the up-coming Tornado Exercise please access the following web site today:  <a href="http://www.FormidableFootprint.org">www.FormidableFootprint.org</a></p>
	<p><b><u>NAT'L WEATHER SERVICE: OUTDOOR EVENTS - BE WEATHER PREPARED WEBINAR – MAY 5, 2011</u></b>                  Tom Frieders, Warning Coordination Meteorologist with the Nat'l Weather Service in Billings reported on an upcoming workshop for outdoor event planners. Your local Disaster and Emergency Services coordinators are urging outdoor event organizers to become more aware of the threats that weather poses on participants and attendees of these events. The National Weather Service can be a great resource to assist in your pre-planning for hazardous weather and its potential impacts on life and property. We have scheduled a seminar (and an online webinar for those unable to attend in person) that will guide you through the resources we have available to assist in planning for hazardous weather.</p> <p><b>When:</b> <u>Thursday, May 5th 1pm – 3pm</u>  <b>Where:</b> <u>National Weather Service Office - 2170 Overland Avenue - Billings, MT 59102</u></p>	<p>To register for the webinar or for additional information, please contact:</p> <p>Tom Frieders  <a href="mailto:tom.frieders@noaa.gov">tom.frieders@noaa.gov</a></p> <p>Nat'l Weather Service                  Billings                  Warning Coordination                  Meteorologist</p>

	<p>We are also providing the option to join the seminar online via a webinar if attending at the National Weather Service is not convenient. Reserve your Webinar seat now at:</p> <p><a href="https://www1.gotomeeting.com/register/844351072">https://www1.gotomeeting.com/register/844351072</a> &lt;<a href="https://www1.gotomeeting.com/register/844351072">https://www1.gotomeeting.com/register/844351072</a>&gt;</p> <p>A brochure, highlighting some pertinent tips to prepare your organizers and decision makers in advance of an outdoor event was sent out via email on April 4<sup>th</sup>. Lastly, we are also available to come to your organization to present the information in person if this would be more convenient.</p> <p>Please reply or give us a call if you are interested in attending or if you would like additional information. 406-652-0851, ext 223. Or email Tom Frieder at <a href="mailto:tom.frieders@noaa.gov">tom.frieders@noaa.gov</a></p> <p>All of our services noted on the brochure are free and support our mission of the protection of life and property. We look forward to hearing from you!</p>	<p>406-652-0851 x223</p>				
	<p><b>EMERGENCY PREPAREDNESS TRAINING SYMPOSIUM – JUNE 2-4, 2011</b>                  Student Union Building, MSU-Billings campus. For more information: The Governor’s Office of Community Service (406) 444-1718. \$25.00 registration fee meals &amp; lodging included. A copy of the course outline is below:</p> <table border="1"> <tr> <td> <p><b>THURSDAY JUNE 2: 9:00-6:00 PM</b>                      CERT Units 1 - 3                      Red Cross Training                      Mass Care Dinner by Salvation Army</p> </td> <td> <p><b>FRIDAY JUNE 3: 7:00-5:00 PM</b>                      CERT Units 4 - 7                      Red Cross Training                      Mass Care Dinner by Salvation Army</p> </td> </tr> <tr> <td colspan="2"> <p><b>SATURDAY JUNE 4: 7:00-3:00 PM</b>                      CERT Units 8 - 9                      Red Cross Training                      Disaster Simulation by National Guard                      Graduation Certificates of Completion</p> </td> </tr> </table> <p><b>CERT Train the Trainer:</b> E428 CERT Train the Trainer Course will increase the number of instructors qualified to deliver the basic Community Emergency Response Team (CERT) Course in local jurisdictions.</p> <p><b>Basic CERT:</b> With proper CERT training, you can help protect your family, neighbors, and co-workers if a disaster occurs. The Community Emergency Response Team (CERT) Program educates people about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skill, such as fire safety, light search and rescue, team organization, and disaster medical operations.</p> <p><b>Red Cross First Aid and CPR:</b> This Red Cross Basic First Aid and CPR Instructor course will increase the number of instructors qualified to deliver the Basic First Aid and CPR courses in local jurisdictions.</p> <ul style="list-style-type: none"> <li>❖ CERT Train the Trainer</li> <li>❖ Basic CERT</li> <li>❖ Be Red Cross Ready</li> <li>❖ Red Cross Health &amp; Safety</li> <li>❖ Map Your Neighborhood</li> </ul> <p>Engaging Citizen’s in Service &amp; Emergency Preparedness: <a href="#">Ready Montana</a>. For More Information Contact: The Governor’s Office of Community Service : (406)-444-1745 <a href="mailto:serve@mt.gov">serve@mt.gov</a></p>	<p><b>THURSDAY JUNE 2: 9:00-6:00 PM</b>                      CERT Units 1 - 3                      Red Cross Training                      Mass Care Dinner by Salvation Army</p>	<p><b>FRIDAY JUNE 3: 7:00-5:00 PM</b>                      CERT Units 4 - 7                      Red Cross Training                      Mass Care Dinner by Salvation Army</p>	<p><b>SATURDAY JUNE 4: 7:00-3:00 PM</b>                      CERT Units 8 - 9                      Red Cross Training                      Disaster Simulation by National Guard                      Graduation Certificates of Completion</p>		<p>For More Information on this June 2-4, 2011 Symposium:</p> <p>Contact The Governor’s Office of Community Service:</p> <p>(406)-444-1745  <a href="mailto:serve@mt.gov">serve@mt.gov</a></p>
<p><b>THURSDAY JUNE 2: 9:00-6:00 PM</b>                      CERT Units 1 - 3                      Red Cross Training                      Mass Care Dinner by Salvation Army</p>	<p><b>FRIDAY JUNE 3: 7:00-5:00 PM</b>                      CERT Units 4 - 7                      Red Cross Training                      Mass Care Dinner by Salvation Army</p>					
<p><b>SATURDAY JUNE 4: 7:00-3:00 PM</b>                      CERT Units 8 - 9                      Red Cross Training                      Disaster Simulation by National Guard                      Graduation Certificates of Completion</p>						

<p><b>OLD BUSINESS</b></p>		
<p><b>NEW BUSINESS</b></p>	<p><b><u>NATIONAL PUBLIC SAFETY TELE-COMMUNICATORS WEEK: APRIL 11-15, 2011</u></b>                  Each year, the second <b>full</b> week of April is dedicated to the men and women who serve as public safety tele-communicators. It is estimated that there are more than "500,000 telecommunications specialists" serving the public. Of course, you don't need National Tele-communicators Week to honor your public safety dispatchers for their excellence! You can write them a commendation, mention their "good job" at a shift briefing, or just give them a pat on the back. As Greg Coleman says, "They are there with us on every call, guiding us to those in need while remaining our safety line for help when ever we need it. We could not do what we do without them!"</p>	
	<p><b><u>SEVERE WEATHER AWARENESS WEEK IN MONTANA – APRIL 18-22, 2011</u></b>                  A press release/email was sent out to all LEPC Agencies to announce this year's weather awareness theme 'Ready, Set, Go'. Included in the email were two attachments. One was an announcement regarding the week. Also, if you have a Facebook page and want to publish daily posts throughout the week. Also included was an attachment for easy copy and paste into your Facebook page.</p> <ul style="list-style-type: none"> <li>➤ <b><u>Ready:</u></b> Monitor National Weather Service Hazardous Weather Outlooks seven (7) days in advance.</li> <li>➤ <b><u>Set:</u></b> As confidence increases, watches will be issued to give you a heads up that you need to be prepared for the possibility of severe weather within the next eight (8) hours.</li> <li>➤ <b><u>Go:</u></b> Warnings will be issued when the National Weather Service is confident that a storm is producing severe weather. Seek shelter NOW if you are in the path of the storm.</li> </ul> <p>This is an excellent time for all individuals, families, businesses, schools, radio and television stations to review their spring and summer preparedness plans. Take time to learn more about severe weather, develop severe weather preparedness plans, and test vital communications.</p> <p>The following Themes for each day:</p> <ul style="list-style-type: none"> <li>• <b><u>Monday:</u></b> Severe Weather Terminology: Learn the basic meanings &amp; differences between an outlook, watch and warning.</li> <li>• <b><u>Tuesday:</u></b> Severe Weather Climatology: For a history of severe weather.</li> <li>• <b><u>Wednesday:</u></b> Severe Weather Safety: What should you do if caught outdoors? In a vehicle? Where's the safest place in your home or place of business?</li> <li>• <b><u>Thursday:</u></b> Lightning Safety: Lightning can kill! Did you know ... an average of 60 people are killed each year by lightning?</li> <li>• <b><u>Friday:</u></b> Your Weather Information Sources: Learn your options for obtaining critical weather information.</li> </ul> <p>Please give us a call if you have any questions or comments! As always, we appreciate your support in spreading the word on severe weather safety. Thank you! More details at: <a href="http://www.wrh.noaa.gov">www.wrh.noaa.gov</a></p> <p>Tom Frieders, National Weather Service Billings, Warning Coordination Meteorologist, 406-652-0851.</p>	
	<p><b><u>BIG SKY CISM/CISD [JOE MARCOTTE]</u></b>                  Joe reported that the Big Sky CISM (Critical Incident Stress Management) CISD (Critical Incident Stress Debriefing) Team has undertaken a project to assess current team capabilities, assess the needs of emergency responders that make up their member agencies and make recommendation to those agencies and to recruit debriefing team members. Big Sky CISM/CISD members are: American Medical Response, Billings Clinic, City of Billings Airport Fire/Rescue, Billings Fire Department, Billings Police Department, Lockwood Fire Department, Montana Highway Patrol, St. Vincent Healthcare, Yellowstone County Sheriff's Office and Yellowstone County DES.</p>	

	<b>AGENCY EDUCATION SESSION: LOCKWOOD WATER &amp; SEWER:</b> No representative from Lockwood Water & Sewer was in attendance. Their name has been added to the bottom of the list.	
<b>AGENCY REPORTS:</b>		
<b>YARES</b>	Members of YARES will again be involved with these annual events.  <b>April 17<sup>th</sup>: 33<sup>rd</sup> Annual Peaks to Prairie:</b> Looking for some adventure to add life to your Spring training regimen? Or how about a challenge to take on with some good friends? Look no further than <b>Peaks to Prairie</b> , a unique Montana challenge that spans from the heights of the Beartooth Mountains to the open majesty of the Yellowstone River. The traditional <u>Peaks to Prairie route</u> involves an 8.8 mile run leg, a 43 mile bicycle leg, and a 23 mile paddling leg, in that order. Competitors can choose between the <b>triathlon</b> that covers these three legs, or a <b>duathlon</b> that covers the first two legs only. <b>May 7<sup>th</sup>: Woman's Run</b> - The 2011 Montana Women's Run will celebrate our 30 <sup>th</sup> Anniversary! Two-mile run starts at 8:45 a.m. and the five-mile run at 8:30 a.m.	
<b>NAT'L WEATHER SERVICE</b>	<b>Weather Spotter Training:</b> The Billings National Weather Service is holding a Severe Weather spotter training session for the upcoming severe weather season. The following is list of where these training sessions will be held, date, times and their generous sponsors.  Monday: <u>April 18</u> 7:30-9:30 PM Billings/North Park Recreation Center/Yellowstone Radio Club Tuesday: <u>April 19</u> 7:00-9:00 PM Billings/National Weather Service Wednesday: <u>April 20</u> 7:00-9:00 PM Miles City/Miles Community College Rm 106/Custer County DES Thursday: <u>April 28</u> 6:00-8:00 PM Ekalaka/Events Center/Carter County DES Tuesday: <u>May 10</u> 6:00-8:00 PM Columbus/Fire Station/Stillwater County DES	To register or for additional information, please contact:  Tom Frieders <a href="mailto:tom.frieders@noaa.gov">tom.frieders@noaa.gov</a>  Nat'l Weather Service Billings Warning Coordination Meteorologist  406-652-0851 x223
<b>CITY OF BILLINGS</b>	<b>BILLINGS PRESCRIPTION MEDICATION TAKE-BACK: SATURDAY, APRIL 30, 2011, 10:00 A.M. – 2: P.M.</b> Ever wonder how best to dispose of prescription medicine that you no longer need or is expired???? The Billings Police Department's Crime Prevention Center is holding a prescription medication take-back day. Collection will take place outside the Crime Prevention Center, Rimrock Mall, 300 South 24 <sup>th</sup> Street West. No questions asked!	
<b>PUBLIC UTILITIES</b>	Nothing else to report.	
<b>ST. VINCENT</b>	Helicopter 'hard landing' drill is still pending.	
<b>EXXONMOBIL</b>	Nothing else to report	
<b>RED CROSS</b>	Members are making plans in the event they are dispatched to the highline communities to assist with victims of the flooding there.	
<b>DPC</b>	Nothing else to report.	
<b>SYSCO</b>	Nothing else to report.	
<b>SCHOOL DIST 2</b>	Nothing else to report.	
<b>RIVERSTONE HEALTH</b>	Nothing else to report.	
<b>CONOCO PHILLIPS</b>	Mega-loads are here and the 2 <sup>nd</sup> shipment will be on its way. Also Conoco is happy to be the victim of the 2012 COYOTE exercise.	
<b>US MARSHALS</b>	Nothing else to report.	
<b>LOCKWOOD FIRE</b>	Happy to report the acquisition of two new trucks	
<b>AIRPORT</b>	Nothing else to report.	

AMR	Nothing else to report.	
YSTN Co DEs	NIMS - IS701-704 training reminder.	
SALVATION ARMY	Happy to be providing food for upcoming exercises and CERT classes.	

**APRIL 2011: LOCKWOOD FIRE-RESCUE:** is next on the list for the 10 minute Agency presentation.

**Please check the schedule below to see which LEPC meeting your Agency is schedule for their 10 minute presentation.**

There being no other business the meeting was adjourned @ 2:30 p.m. [Workman/Louge]

**AGENCY EDUCATION SESSIONS SCHEDULE**

	<b>DATE</b>	<b>AGENCY</b>	
COMPLETED	November 2009	United Way	
COMPLETED	December 2009	YARES	
COMPLETED	January 2010	Yellowstone County DES	
COMPLETED	February 2010	Yellowstone County Sheriff's Office	
COMPLETED	March 2010	US Postal Service	
COMPLETED	April 2010	US Marshal's Service	
COMPLETED	May 2010	Syseo Food Service	
COMPLETED	June 2010	St. Vincent HELP Flight	
COMPLETED	JULY 2010	ST. VINCENT HEALTHCARE	
COMPLETED	August 2010	RiverStone Health	
COMPLETED	September 2010	National Weather Service	
COMPLETED	October 2010	MSU-Billings Police	
NO PRESENTATION GIVEN	November 2010	MSSC	
NO PRESENTATION GIVEN	December 2010	Montana Army National Guard	
COMPLETED	January 2011	Montana Highway Patrol	
COMPLETED	February 2011	Montana District V – DES	
NO PRESENTATION GIVEN	March 2011	Lutheran Disaster Response	
NO PRESENTATION GIVEN	April 2011	Lockwood Water & Sewer	
	<b>May 2011</b>	<b>Lockwood Fire Department</b>	
	June 2011	Laurel, City of – Police & Fire/Ambulance Dept	
	July 2011	HOPE Dogs	
	August 2011	Hansers Automotive	
	September 2011	FBI	
	October 2011	ExxonMobil	
	November 2011	DXP – Safety Master	
	December 2011	DPC	
	January 2012	County Water District – Billings Heights	
	February 2012	ConocoPhillips	
	March 2012	CHS Refinery	
	April 2012	Business Watch Montana	
	May 2012	Brenntag Pacific	
	June 2012	Billings Public Schools	
	July 2012	Billings Clinic	
	August 2012	Billings City of – Police Dept	
	September 2012	Billings City of – Public Works	
	October 2012	Billings City of – Fire Dept	
	November 2012	Billings City of – Airport Fire Dept	
	December 2012	Big Sky EDA	
	January 2013	Baptist Disaster Relief	
	February 2013	American Red Cross	
	March 2013	American Medical Response	
	April 2013	Advanced Care Hospital of MT	
	May 2013	Stillwater County Public Health	
	June 2013	MSSC	
	July 2013	Montana Army National Guard	
	August 2013	Lutheran Disaster Response	
	September 2013	Lockwood Water & Sewer	

**ATTENDANCE RECORD – APRIL 14, 2011 MEETING**

Present	Name	Company	Federally Funded Yes / No	Miles Travelled One-way
X	Vandam, Charlie	Adkins, formerly PBS & J		
	Gilbert, Steve	Alternatives, Inc.	No	2
	Gurchiek, Lyndy	American Medical Response	No	5
X	Westmoreland, Melody	American Medical Response	No	5
	Cornetet, Linda	American Red Cross	No	
	LaFurge, Stephen	American Red Cross	No	2
	Richmond, Philip	American Red Cross	No	
X	Washburn, Jill	American Red Cross	No	1
	Edlin, Jim	Baptist Disaster Relief		
X	Lehm, Dianne	Big Sky EDA – Project Impact	No	5
	Nordlund, Patty	Big Sky EDA	No	
X	Barry, Tom	Billings, Airport, Logan	No	1
	Glancy, Mike	Billings, City of – Airport Fire	No	1
	Dextras, Paul	Billings, City of – Fire		1
X	Gibson, Kathy	Billings, City of - Fire	No	5
	Larson, Terry	Billings, City of – Fire	No	1
X	Odermann, Frank	Billings, City of – Fire		5
	Bedford, John	Billings, City of – Police		5
	Krizek, Boris	Billings, City of - Public Works		
X	Workman, Gary	Billings, City Public Works – Water	No	3
X	Friday, Wyeth	Billings, City/County Planning	Yes	5
X	Pearce, Cyndi	Billings, Public Schools	N	3
X	Kipp, Bruce	Civil Air Patrol	No	2
X	Marcotte, Joe	Billings Clinic		5
	Gold, Nick	Brenntag Pacific, Inc.	No	15
	Turnquist, Bob	Brenntag Pacific, Inc.	No	35
	Cox, Meredith	BusinessWatch Montana	No	
	Kimble, Brad	CHS Refinery – Laurel	No	30
	Lowe, Russ	CHS Refinery – Laurel	No	
X	Jurovich, George	ConocoPhillips	No	1
	Taylor, Susan	ConocoPhillips	No	1
	Harmon, Jeff	Conoco Pipeline	No	
	Scheppele, Barbara	Cooper Creative Ads	No	
	Nieskens, Duke	County Water District of Blgs Heights	No	3
	Barone, Christopher	Dept of Homeland Security	Yes	
X	Rosh, Ron	DPC	No	
X	Ashworth, Jeff	DXP - Safety Master	No	1
X	Montgomery, Jeb	ExxonMobil Pipeline	N	4.5
	Drain, Kelly	ExxonMobil Refinery	No	3
	Cunningham, Jim	Hansers Automotive	No	
	DeWitt, Susan	HOPE [Animal Assisted Crisis Response] Dogs	No	
X	Findley, Lyn	HOPE [Animal Assisted Crisis Response] Dogs	No	4
	Schultz, Harry	HOPE [Animal Assisted Crisis Response] Dogs		
X	Vaught, Tanya	HOPE [Animal Assisted Crisis Response] Dogs	No	6
	Reiter, Tim	Laurel, City of	No	18
	Musson, Rick	Laurel, City of - Police	No	18
	Markegard, Kurt	Laurel, City of - Public Works		
	Lough, Maggie	Lockwood Fire Council	No	5

**ATTENDANCE RECORD – APRIL 14, 2011 MEETING**

Present	Name	Company	Federally Funded Yes / No	Miles Travelled
	Rash, William	Lockwood Fire Dept	No	7
X	Smart, Delet	Lockwood Fire Dept	No	7
	Woods, Woody	Lockwood Water & Sewer		
	Reed, Tony	Lockwood Water & Sewer		
X	Grassel, Diana	Loveland Products		
	Williams, Michael	Loveland Products		
	Hanson, Charlie	MT Dist. V DES Rep.	Yes	
	Baum, Craig	Montana Highway Patrol	No	
	Smith, Michael	MSSC		
	Davis, Adam	MSU-Billings –Police		
	Forshee, Scott	MSU-Billings –Police		
	Hofacker, Margaret	Montana Sulphur & Chemical	No	
	Frieders, Thomas	National Weather Service		
	Webb, Christine	OSHA	Yes	2
	Wells, Jon	PPC-Montana	No	130
	Harris, Hillary	Riverstone Health	No	
	Hedrick, Debbie	Riverstone Health		
X	Juarez, Josh	Riverstone Health		1
X	Neill, Greg	Riverstone Health	Yes	1
	Snyder-Rapkoch, Arianne	Riverstone Health	Yes	1
	Schneeman, Barbara	Riverstone Health		
X	Snyder, Jack	Salvation Army	No	1
	Jackson, Kevin (Maj)	Salvation Army	No	2
X	Wilkerson, Rob	St. John's Lutheran Ministries/Disaster Response		
	Coble, T.C.	St. Vincent HELP Flight		1
	Dugan, Bill	St. Vincent Healthcare		1
X	Mahoney, Jason	St. Vincent Healthcare		
	Grim, Jill	Stillwater County Public Health	Yes	100
X	Kelly, Chuck	Sysco Food Service		4
X	Lough, Bob	Sysco Food Service		4
	Weinreis, Shane	US Water Rescue Dive Team	No	4
	Ostermiller, Rod	US Marshal's Service		
X	Rash, Carol	US Marshal's Service	Yes	2
	Haight, Rae Ann	United States Postal Service	Yes	1
X	Sanderson, Pam	United Way Volunteer Center	No	2
	West, Debbie	United Way		
X	Bikle, Chuck	YARES, Radio Club	No	6
	Gansel, Todd	YARES, District Emergency Coord		
X	Glass, Ron	YARES, Radio Club	No	6
	Oberg, Linda	Yellowstone County DES		3
	Winslow, Duane	Yellowstone County DES		1
	Bushey, Chuck	Yellowstone County Fuel Mitigation	No	2
	Luppen, Janelle	Yellowstone County GIS		
	Wallis, Vince	Yellowstone Co - Sheriff		
	Sandburg, Tom	83 <sup>rd</sup> Civil Support Team		
<b>31</b>	<b>TOTAL ATTENDANCE</b>			

## **C4-Press Release and Public Meeting Notes**



## Fire, floods and hail: County prepares for hazards of all kinds

By ED KEMMICK Of The Gazette Staff | Posted: Saturday, January 22, 2011 12:00 am

The Yellowstone County Pre-Disaster Management Plan runs to hundreds of pages, but it all comes down to the Boy Scout motto: Be prepared.

In Yellowstone County, that means being prepared for floods, fires, high winds, drought, insect infestations, transportation accidents and terrorism, among other natural and man-made hazards.

The plan was first approved in 2004 and is in the process of being revised and updated, as required by the Federal Emergency Management Agency, with the goal of having it completed by September.

County residents will have a chance to learn about what's in the plan, and to make suggestions for improving it, during a series of public hearings in early February.

The plan is important in its own right, in helping to prevent or lessen the effects of disasters and provide help in their aftermath, but it is also required by the federal government in order to apply for disaster mitigation funds or to qualify for emergency disaster aid.

"A lot of the funding you go out for depends on this plan," said Duane Winslow, director of Emergency and General Services for Yellowstone County.

Because the county had the 2004 plan in place, it qualified for a federal "fuels reduction" grant to prevent wildfires and another grant to make engineering improvements in the Cove Creek drainage on the far West End of Billings, to prevent future flooding.

Much of the plan goes into detail about the specific threats confronting the county, with the possibility of flooding heading the list. That's no surprise. According to the plan, "historically, floods have caused more economic loss to the nation than any other natural hazard. Almost 90 percent of all declared disasters include a flooding component."

The plan says Yellowstone County has seen major flooding on the Yellowstone River in 1918, 1943, 1944, 1967, 1974, 1975, 1991, 1996 and 1997, with damages totaling at least \$25 million. There have also been major floods on Alkali, Canyon, Cove, Blue and Pryor creeks.

The natural disaster probably foremost in the minds of county residents is that posed by tornadoes, given the destruction of the twister that struck Billings last summer.

Before last summer, the last major tornado in the county hit in 1958, causing an inflation-adjusted \$19 million worth of damages. Though the estimated costs of last year's tornado haven't been tabulated yet, the plan says they will probably be "in the tens to hundreds of millions" of dollars.

Hail, usually little more than a nuisance, can also be destructive. Since 1965, according to the plan, Yellowstone County has sustained an estimated \$33 million worth of damage to property and crops from hail or severe storms involving high winds and lightning.

Winter storms or cold weather in general caused property damage totaling nearly \$2 million since 1962, while annual losses resulting from urban fires has ranged from nearly \$2.2 million in 2009 to \$10.3 million in 2008.

In the way of man-made disasters, the plan mentions the plane crash that destroyed a School District 2 warehouse and killed eight people in 1992, and a train derailment in 1999 that prompted the evacuation of much of downtown Billings.

The plan ranks "transportation/mobile incident" as the No. 1 most likely man-made hazard, mainly because there are three oil refineries and many associated chemical industries in the county, the largest airport in the state, two rail yards and two interstate

highways.

Also on the list of man-made hazards are hazardous-materials incidents, terrorism, civil disturbance and, ranked last, enemy attack.

Diane Lehm, with the Big Sky Economic Development Authority, is on the Pre-Disaster Mitigation Plan Task Force that is revising the plan, and she played a big role in preparing the 2004 plan. She said the government did not mandate the inclusion of any particular threats. That was left up to local task forces.

But preparation of the initial plan started not long after Sept. 11, 2001, when the threat of terrorism and even enemy attack seemed anything but far-fetched. Even now, she said, it doesn't hurt to leave the possibility of "enemy attack" in the plan.

"Since we'd already done the work on it, our thoughts were to live it in there," she said.

Besides Lehm and Winslow, the task force working on the plan includes representatives of both Billings hospitals, RiverStone Health, the city-county Planning Department, the Lockwood Fire Council and PBS&J, a Bozeman engineering company that is the lead contractor on the plan.

One section of the plan looks at mitigation efforts that are completed or under way. Those include projects having to do with flooding and the threat of wildfires, improvements to rural communications systems, planning for ways to deal with elderly, home-bound, disabled and other "special populations" in a disaster, and plans for taking care of animals in the aftermath of a disaster.

One big component of the updated plan is a separate study of West End flooding, which includes recommendations for numerous mitigation projects, large and small. That plan will be folded into the country disaster plan.

Wyeth Friday, the planning division manager who serves on the task force, said the hope is to have a final draft of the plan ready by April. After the draft has been approved by the Federal Emergency Management Agency, it would have to be approved by the Yellowstone County Commission, the Billings and Laurel city councils and the Broadview Town Council.

# **YELLOWSTONE COUNTY PDM COMMUNITY MEETINGS - February 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup>, 2011**

Billings (2/1), Laurel (2/2), Broadview (2/3)

## **Introductions:** (John Eisen)

- John Eisen, JGA Architects Engineers Planners, Billings
- Pre-Disaster Mitigation Plan Task Force of the Local Emergency Planning Committee
  - Duane Winslow, Director of Yellowstone County Emergency & General Services
  - Joe Marcotte, Billings Clinic Safety Director
  - Dianne Lehm, Big Sky Economic Development Authority
  - Gregory Neil, Riverstone Health
  - Wyeth Friday, City County Planning
  - Patrick O'Neil, St. Vincent Healthcare
  - Maggie Lough, Lockwood Fire Council
  - Charlie Vandam, Project Engineer, PBS&J, Missoula
- Others?

## **Purpose of Meeting** (John Eisen)

- This is an update to the original PDM plan created in 2004
- We are gathering input from first responders, government officials, and the general public on proposed revisions to the existing PDM.

## **What we Want to Leave with Tonight** (John Eisen)

- We want participants to leave this meeting with an understanding of proposed revisions to the PDM Plan and the PDM Task Force to have a good understanding of your opinions and comments regarding the proposed revisions and any additional revisions that are suggested to the plan.
- Fill out comment cards and leave them in box
- Comment opportunity on Yellowstone County website

## **Background of the PDM** (Duane Winslow)

## **Overview of PDM Updates** (Charlie Vandam)

## **Discussion of Updates** (John and Charlie)

- The intent is for John to facilitate a group discussion and Charlie, Duane, and others to answer questions.
- Wyeth will document the discussion on a large pad
- John will summarize and close the meeting

**SIGN IN SHEET**  
 Yellowstone County PDM Plan Update Meeting  
 Billings Area Community Meeting  
 February 1, 2011

**PLEASE PRINT**

NAME	ADDRESS	E MAIL	TELEPHONE
PATRY NORDLUND	Big Sky EDA 222 N. 3rd St. 200, SAID1	nordlund@bigskyeda.org	869-8408
Dianne Lehman	Big Sky EDA "	lehman@bigskyeda.org	869-8409
Mike Martinez	2043 Grand Ave "Juvos Med."	mmartinez@juvosmedical.com	869-0119
Cynedi Pearce	Billings Public Schools 415 N. 30th	pearce@billings-schools.org	281-5100
DAVID GRAYMAN	2538 66th St 59106	here17@yahoo.com	697-1578
Rick Whitting	Blq1 Public School	whitting@billings-schools.org	241-5302
Bill Kennedy	Yellowstone Co.	bkennedy@co.yellowstone.mt.gov	

SIGN IN SHEET  
Yellowstone County PDM Plan Update Meeting  
Billings Area Community Meeting  
February 1, 2011

**PLEASE PRINT**

NAME	ADDRESS	E MAIL	TELEPHONE
MIKE Glancy	Billings Airport	glancy m@ci.billings.mt.us	657-8491
WYATT FRIDAY	City-County Planning		244-8660
JOHN BISSON	SEA Architects		245-6363
OSCAR L. HENRICH	4210 WELLS PL	OLH3R@BIZCROSSAND.COM	656-2642



Are the proposed revisions to the PDM Plan acceptable to you?  Yes  No

If not, what changes do you suggest?

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Do you have any comments or additional revision suggestions regarding the PDM Plan?

appears to be thorough reviews -  
comprehensive + complete  
obviously there is a need for public education  
regarding mitigation vs. preparedness + recovery

(Optional) Name / Address / Phone

Please place comment card in the box by the door as you leave.  
Thank you for your time and input.

**PRE-DISASTER MITIGATION PLAN UPDATE**  
**Summary of Public Meeting #1**  
**Billings Community Center, Billings, Montana**  
**February 1, 2011**

**Prepared by**  
**John Eisen, JGA Architects Engineers Planners**

Public Meeting #1 was held at 7:00 PM, February 1, 2011 at the Billings Community Center in Billings, Montana. There were 13 attendees including the Charlie Vandam, the project engineer from PBS&J in Missoula, Montana and John Eisen, the meeting facilitator with JGA Architects Engineers Planners in Billings. The purpose of this meeting was to provide to those in attendance an overview of the Yellowstone County Pre-Disaster Mitigation Plan (PDM), present recommended updates to the PDM Plan, and to receive any comments or suggestions for revisions to the recommended updates or any additional updates to the PDM Plan.

Five exhibits were set up and manned by project engineer Charlie Vandam (PBS&J). Meeting participants had ample opportunity to visit each exhibit and to ask questions of Mr. Vandam and other members of the PDM Plan Update Task Force or Local Emergency Planning Committee (LEPC) that were present.

John Eisen of JGA Architects Engineers Planners brought the meeting to order, introduced members of the PDM Plan Update Task Force that were present, and explained the purpose and objective of the meeting. Duane Winslow, Director of Yellowstone County Emergency and General Services gave an overview of the PDM Plan and the PDM Plan Update project. Charlie Vandam presented an overview of the recommended updates to the Plan. The remainder of the meeting was comprised of an open discussion of the Plan and the recommended updates between attendees, the Project Engineer, and PDM Plan Update Task Force. Numerous comments were documented, many questions were asked, and ideas exchanged.

John Eisen brought the meeting to a close with summary statements and a request for participants to complete a comment card asking the following questions:

1. Are the proposed revisions to the PDM Plan acceptable to you? If not, what changes do you suggest?
2. Do you have any comments or additional revision suggestions regarding the PDM Plan?

**A. Summary of oral comments made by meeting participants.**

1. Mitigation of the hazard of boulders falling off the Rimrocks onto houses below should be added to the PDM Plan.
  - Is there a way, such as rock anchoring, to protect housing and other structures under the Rimrocks from falling rocks?
  - Consider a no-build zone. There was acknowledgement of the fact that most land below the Rimrocks is already developed. It was noted that there is an area east of the Yellowstone Country Club that is undeveloped.
2. Address potential disasters at the three refineries located in Yellowstone County in the PDM Plan. It was noted that the refineries have their own disaster plans.
3. The priorities contained in the original 2004 PDM Plan should be reviewed and updated as a part of this PDM Plan Update.
4. Include man-made hazards along with natural hazards to allow this to be a true community-wide disaster mitigation plan.
5. The difference between a disaster mitigation and disaster response plan should be clarified. Explain where mitigation ends and response starts.
6. The question was asked, “Is there is a Disaster Recovery and Response Plan?” The Yellowstone County Emergency Operations Plan was discussed and it was mentioned by Dianne Lehm of the Big Sky Economic Development Authority that this plan is being updated in 2011.

**B. Summary of comment cards submitted by meeting participants. Two cards were received.**

Copies of the completed comment cards are attached.

1. Are the proposed revisions to the PDM Plan acceptable to you?
  - 2 – Yes
  - 0 – No
2. Do you have any comments or additional revision suggestions regarding the PDM Plan?
  - “Appears to be a thorough review – comprehensive and complete”.
  - “Obviously there is a need for public education regarding mitigation vs. response and recovery”.
  - “Great presentation.”
  - “Relevant.”

**C. Meeting Attendance Sheet**

The attendance sheets from the meeting are attached. 13 attendees were counted, 11 signed in.

# **Appendix D. Critical Facilities and Infrastructure**

*Yellowstone County  
Multi-Jurisdictional Pre-Disaster Mitigation Plan,  
Update 2011*

**UPDATED Table D-1. Critical Facilities - Emergency Responders (fire, medical, law)**

Critical Structure Type	Name	Community	Address	Zip
Emergency Response/Fire/Medical	Billings Fire Department Station 1 Headquarters	Billings	2305 8th Avenue North	59101-1018
Emergency Response/Fire/Medical	Billings Fire Department Station 2	Billings	501 South 28th Street	59101-4143
Emergency Response/Fire/Medical	Billings Fire Department Station 3	Billings	1928 17th Street West	59102-2907
Emergency Response/Fire/Medical	Billings Fire Department Station 4	Billings	475 6th Street West	59101-2716
Emergency Response/Fire/Medical	Billings Fire Department Station 5	Billings	605 South 24th Street West	59102-6246
Emergency Response/Fire/Medical	Billings Fire Department Station 6	Billings	1601 Saint Andrews Drive	59105-3863
Emergency Response/Fire/Medical	Billings Fire Department Station 7	Billings	1501 54th Street West	59106
Emergency Response/Fire/Medical	Billings Logan International Airport Crash Fire Rescue	Billings	2281 Overlook Drive	59105
Emergency Response/Fire/Medical	Blue Creek Volunteer Fire Department	Billings	2144 Santiago Boulevard	59101-9759
Emergency Response/Fire/Medical	Conoco Phillips Emergency Response Team	Billings	401 South 23rd Street	59101-4337
Emergency Response/Fire/Medical	ExxonMobil Emergency Response Team	Billings	700 Exxon Mobile Road	59101
Emergency Response/Fire/Medical	ExxonMobil Emergency Response Team	Billings	700 Exxon Mobile Road	59101
Emergency Response/Fire/Medical	Lockwood Rural Fire District 8	Billings	3329 Driftwood Lane	59101-6913
Emergency Response/Fire/Medical	Broadview Volunteer Fire Department	Broadview	16530 Donald Avenue	59015
Emergency Response/Fire/Medical	Custer Volunteer Fire Department	Custer	511 3rd Avenue	59024
Emergency Response/Fire/Medical	Worden Volunteer Fire Department Station 2 Huntley	Huntley	82 Northern Avenue	59037
Emergency Response/Fire/Medical	Cenex Harvest State Fire Brigade	Laurel	803 US Highway 212 South	59044
Emergency Response/Fire/Medical	Laurel Volunteer Fire Department	Laurel	215 West 1st Street	59044-3003
Emergency Response/Fire/Medical	Worden Volunteer Fire Dept. Station 3 Pompey's Pillar	Pompey's Pillar	3510 3rd Street South	59064
Emergency Response/Fire/Medical	Shepherd Volunteer Fire Dept. Station Headquarters	Shepherd	5453 Carey Avenue	59079
Emergency Response/Fire/Medical	Shepherd Volunteer Fire Dept. Storage Facility	Shepherd	8015 Wade Street	59079

**UPDATED Table D-1. Critical Facilities - Emergency Responders (fire, medical, law)**

Critical Structure Type	Name	Community	Address	Zip
Emergency Response/Fire/Medical	Worden Volunteer Fire Dept. Station 1 Headquarters	Worden	2463 3rd Street	59088
Emergency Response/Medical	AAA Advanced Air Ambulance	Billings	Overlook Drive	59105
Emergency Response/Medical	American Medical Response	Billings	711 4th Avenue North	59101
Emergency Response/Medical	American Medical Response, Central Stn	Billings	115 5th Street West	59101
Emergency Response/Medical	American Medical Response, West Stn	Billings		59102
Emergency Response/Medical	Billings Clinic	Billings	2800 10th Avenue North	59101
Emergency Response/Medical	Deaconess Hospital "Air Methods"	Billings	2401 Overlook Drive	59105
Emergency Response/Medical	Highgate Senior Living	Billings	3980 Parkhill Drive	59102
Emergency Response/Medical	Saint Vincent Hospital	Billings	1233 North 30th Street	59101
Emergency Response/Medical	South Central Regional Mental Health Center	Billings	1245 North 29th	59101
Emergency Response/Medical	St Vincent Healthcare	Billings	1233 30th Street	59102
Emergency Response/Medical	St Vincent Healthcare Airport Hangar	Billings	1234 30th Street	59105
Emergency Response/Medical	Westpark Village	Billings	2351 Solomon Avenue	59102
Emergency Response/Medical	Laurel Safety Complex	Laurel		59044
Emergency Response/Medical	Lockwood ambulance	Lockwood		
Emergency Response/Medical	Worden Ambulance	Worden		59088
Emergency Services/Law Enforcement	American Red Cross EOC	Billings		59101
Emergency Services/Law Enforcement	Billings Logan International Airport Police	Billings	1901 Terminal Circle	59105-1990
Emergency Services/Law Enforcement	Billings Police Department	Billings	220 North 27th Street	59101-1938
Emergency Services/Law Enforcement	Bureau of Land Management Billings Tanker Base	Billings	1299 Rimtop Drive	59105

**UPDATED Table D-1. Critical Facilities - Emergency Responders (fire, medical, law)**

<b>Critical Structure Type</b>	<b>Name</b>	<b>Community</b>	<b>Address</b>	<b>Zip</b>
Emergency Services/Law Enforcement	City/County Emergency Operations Center	Billings	2300 9th Avenue North	59101
Emergency Services/Law Enforcement	Dept. of Homeland Security Federal Protective Service	Billings	306 North 26th Street	59101
Emergency Services/Law Enforcement	Dispatch Center 9-1-1	Billings		59101
Emergency Services/Law Enforcement	Federal Bureau of Investigation Billings Office	Billings	2929 3rd Avenue North	59101-1944
Emergency Services/Law Enforcement	Internal Revenue Service Criminal Investigation Division	Billings	2900 4th Avenue North	59101-1266
Emergency Services/Law Enforcement	Lockwood Sheriff's Office	Billings	3329 Driftwood Lane	59101-6913
Emergency Services/Law Enforcement	Montana Highway Patrol District IV Office	Billings	615 South 27th Street	59101-4569
Emergency Services/Law Enforcement	Montana Narcotics Bureau	Billings	615 South 27th Street	59101-4569
Emergency Services/Law Enforcement	Montana State University Billings Police Department	Billings	1500 University Drive	59101-0245
Emergency Services/Law Enforcement	United States Drug Enforcement Administration	Billings	2929 3rd Avenue North	59101-1944
Emergency Services/Law Enforcement	United Way Volunteer Center	Billings	2920 2nd Ave N	59101
Emergency Services/Law Enforcement	Yellowstone County Sheriff's Office	Billings	219 North 26th Street	59101-2246
Emergency Services/Law Enforcement	Laurel City Police Department	Laurel	215 West 1st Street	59044-3003

**UPDATED Table D-2. Critical Facilities - Government, Airport, Utility**

Critical Structure Type	Name	Community	Address	Zip
Government - Military, National Guard	Billings AFRC	Billings	2915 Gabel Rd	59101
Government - Military, National Guard	Billings Organizational Maintenance Shop	Billings	5403 Neibauer Rd	59101
Government - State	Billings Phone Claims	Billings	624 N 24th St	59101
Government - State	DPHHS Leased - 6931 & 8037	Billings	2121 Rosebud Dr	59101
Government - State	MDT 24-Stall Equipment Storage	Billings	424 Morey St	59101
Government - State	MDT Office & Shop	Billings	424 Morey St	59101
Government - State	Region 5 Headquarters	Billings	2300 Lake Elmo Dr	59101
Government - State	Technical & Southern Field Office	Billings	2535 St John Ave	59101
Transportation Infrastructure - Airport	BILLINGS LOGAN INTL	Billings	1901 Terminal Circle	59101
Transportation Infrastructure - Airport	HAYNES	Billings		59101
Transportation Infrastructure - Airport	WILCOX	Billings	1812 66th St W	59101
Transportation Infrastructure - Airport	RUFF	Custer		59024
Transportation Infrastructure - Airport	COTTONWOOD	Laurel	Park City	59044
Transportation Infrastructure - Airport	LAUREL MUNI	Laurel	9470 Laurel Airport Rd	59044
Utility	Physical Plant	Broadview	324 N Rim Rd	59015

**UPDATED Table D-3. Critical Facilities - Emergency Shelters (schools, churches)**

Name	Community	Address	Zip
First Assembly of God Church Life Ctr			
SENIOR School			
West Side Baptist Church			
1st Congregational Church	Billings	310 N 27th St	59101
48th Street Church of Christ	Billings	14 48th St W	59101
ALKALI CREEK School	Billings	681 Alkali Creek Road	59101
ALTERNATIVE School	Billings		59101
American Red Cross Shelter	Billings		59101
ARROWHEAD School	Billings	2510 38th St. W	59101
BEARTOOTH School	Billings	1345 Elaine Street	59101
BENCH School	Billings	505 Milton Road	59101
BIG SKY School	Billings	3231 Granger Ave E	59101
Billings First United Methodist Church	Billings		59101
BITTERROOT School	Billings	1801 Bench Blvd	59101
Blue Creek School	Billings	3652 Blue Creek Rd	59101
BOULDER School	Billings	2202 32nd Street West	59101
BROADWATER School	Billings	415 Broadwater	59101
BURLINGTON School	Billings	2135 Lewis Avenue	59101
Canyon Creek School	Billings	3139 Duck Creek Rd	59101
CAREER EDUCATION CENTER	Billings		59101
CASTLE ROCK School	Billings	1441 Governor's Blvd	59101
CENTRAL HEIGHTS School	Billings	120 Lexington	59101
EAGLE CLIFF School	Billings	1201 Kootenai	59101
Elder Grove School	Billings	1532 South 64th Street West	59101
ELYSIAN School	Billings	6416 Elysian Road	59101
Emmanuel Baptist Church	Billings	328 Shiloh Rd	59101
Faith Evangelical Church	Billings	3145 Sweet Water Dr	59101
Fellowship Baptist Church	Billings	423 Westgate Dr	59101
First Alliance Church	Billings	1835 Central Ave	59101
First Baptist Church	Billings	218 N 34 St	59101
First Presbyterian Church	Billings	2420 13th St W	59101
Grace United Methodist Church	Billings	1935 Avenue B	59101
Heights Baptist Church	Billings	810 Garnet Ave	59101
HIGHLAND School	Billings	729 Parkhill Drive	59101
Independent Elementary School	Billings	2907 Roundup Road	59101
LEWIS & CLARK School	Billings	1315 Lewis Ave	59101
LINCOLN CENTER School	Billings		59101

**UPDATED Table D-3. Critical Facilities - Emergency Shelters (schools, churches)**

Name	Community	Address	Zip
Lockwood Evangelical Church	Billings		59101
LOCKWOOD INTERMEDIATE School	Billings	1932 US Hwy 87 E	59101
LOCKWOOD MIDDLE School	Billings	1932 US Hwy 87 E	59101
Lockwood School	Billings	1932 US Hwy 87 E	59101
Lutheran Church of The Good Shepherd	Billings	1108 24th St W	59101
MCKINLEY School	Billings	820 North 31st Street	59101
MEADOWLARK School	Billings	221 29th St W	59101
MILES AVENUE School	Billings	1601 Miles Ave	59101
MORIN School	Billings	8824 Pryor Road	59101
NEWMAN School	Billings	605 South Billings Blvd	59101
ORCHARD School	Billings	120 Jackson Street	59101
Parkhill Assembly of God Church	Billings	1707 Parkhill Dr	59101
Peace Lutheran Church	Billings	1301 Avenue D	59101
Pilgrim Congregational Church	Billings	409 S 36th St	59101
PIONEER School	Billings	1937 Dover Rd	59101
POLY School	Billings	2410 Poly Drive	59101
PONDEROSA School	Billings	4188 King Avenue East	59101
Rimrock Baptist Church	Billings		59101
RIMROCK School	Billings		59101
RIVERSIDE School	Billings	3700 Madison Ave	59101
ROSE PARK School	Billings	1812 19th Street West	59101
SANDSTONE School	Billings	1440 Nutter Blvd	59101
SKYVIEW School	Billings	1775 High Sierra Blvd	59101
St Bernard Church	Billings	226 Wicks Ln	59101
Trinity Baptist Church	Billings	1145 Nutter Blvd	59101
Trinity Lutheran School	Billings	2802 Belvedere Drive	59101
Unsell Activity Center, Central Acres Christian School	Billings	3204 Broadwater Ave	59101
WASHINGTON School	Billings	1044 Cook Ave	59101
WILL JAMES School	Billings	1200 30th St W	59101
Yellowstone Baptist College	Billings	1515 S Shiloh Rd	59101
Yellowstone Boys & Girls Ranch	Billings	1732 South 72nd Street West	59106
YWCA of Billings	Billings	909 Wyoming Avenue	59101
Broadview School	Broadview	13935 1st Street	59015
Custer Public School	Custer	304 4th Avenue	59024
Fred W Graff School	Laurel	417 East Sixth Street	59044
Laurel Baptist Church	Laurel	2920 Outfitter Trl	59044
Laurel High School	Laurel	203 E 8th St	59044

**UPDATED Table D-3. Critical Facilities - Emergency Shelters (schools, churches)**

<b>Name</b>	<b>Community</b>	<b>Address</b>	<b>Zip</b>
Laurel Middle School	Laurel	410 Colorado Ave	59044
South Elementary School	Laurel	606 South 5th Street	59044
West Elementary School	Laurel	502 8th Avenue	59044
WEST School	Laurel	502 8th Avenue	59044
Phys Ed Building at MSU-B	MSU Billings	1500 N 30th St	59101
SHEPHERD School	Shepherd	7842 Shepherd Rd	59079
Bethlehem Congregational Church UCC	Worden	4th St & Lewis Ave	59088
HUNTLEY PROJECT ELEMENTARY School	Worden	1477 Ash Street	59088
HUNTLEY PROJECT HIGH School	Worden	2436 North 15 Road	59088
HUNTLEY PROJECT MIDDLE School	Worden	1477 Ash Street	59088

**UPDATED Table D-4. Critical Facilities - Primary/Secondary Education (source? GIS date?)**

Name	Community	Address	Zip
Academic Support Center	MSU Billings	1500 N 30th St	59101
Adelphi Christian Academy	Billings	3212 1st Ave South	59101
Alkali Creek School	Billings	681 Alkali Creek Road	59101
Apostle Lutheran School	Billings	3140 Broadwater Ave	59102
Apsaruke Hall	MSU Billings	1500 N 30th St	59101
Arrowhead School	Billings	2510 38th St. W	59102
Base Line School	Yellowstone		
Beartooth School	Billings	1345 Elaine Street	59105
Bench School	Billings	505 Milton Road	59105
Big Sky Elementary	Billings	3231 Granger Ave E	59102
Billings Career Center	Billings	3723 Central Ave	59102
Billings Central Catholic High School	Billings	3 Broadwater Ave	59101
Billings Christian School	Billings	4525 Grand Ave	59106
Billings Senior High School	Billings	425 Grand Ave	59101
Billings West High School	Billings	2201 St. Johns Ave	59102
Bitterroot School	Billings	1801 Bench Blvd	59105
Blue Creek School	Billings	3652 Blue Creek Rd	59101
Boulder School	Billings	2202 32nd Street West	59102
Broadview Schools	Broadview	13935 1st Street	59015
Broadwater School	Billings	415 Broadwater	59102
Burlington School	Billings	2135 Lewis Avenue	59102
Canyon Creek Schools	Billings	3139 Duck Creek Rd	59101
Castle Rock 7-8	Billings	1441 Governor's Blvd	59105
Central Acres School	Billings	3204 Broadwater Ave	59102
Central Heights School	Billings	120 Lexington	59102
Cisel Hall	MSU Billings	1500 N 30th St	59101
College of Education and Human Services Building	MSU Billings	1500 University Dr	59101
College of Technology	MSU Billings	3803 Central Ave	59101
Crossroads Alternative High School	Billings	1320 Grand Ave	59102
Custer Schools	Custer	304 4th Avenue	59024
Eagle Cliffs Elementary	Billings	1201 Kootenai	59105
Elder Grove Schools	Billings	1532 South 64th Street West	59106
Elysian Schools	Billings	6416 Elysian Road	59101
Fairview School	Yellowstone		
Fred W Graff School	Laurel	417 East Sixth Street	59044
Hawthorn School	Billings		59105
Highland School	Billings	729 Parkhill Drive	59102

**UPDATED Table D-4. Critical Facilities - Primary/Secondary Education (source? GIS date?)**

Name	Community	Address	Zip
Huntley Project 7-8	Worden	2427 North 15 Road	59088
Huntley Project High School	Worden	2436 North 15 Road	59088
Huntly Project Elementary K-6	Worden	1477 Ash Street	59088
Independent Elementary School	Billings	2907 Roundup Road	59105
Laurel High School	Laurel	203 E 8th St	59044
Laurel Middle School	Laurel	410 Colorado Ave	59044
Lewis & Clark 7-8	Billings	1315 Lewis Ave	59102
Liberal Arts Building	MSU Billings	1500 N 30th Ave	59101
Lincoln Center	Billings	415 North 30 Street	59101
Lockwood Intermediate School	Billings	1932 US Hwy 87 E	59101
Lockwood Middle School	Billings	1932 US Hwy 87 E	59101
Lockwood Primary	Billings	1932 US Hwy 87 E	59101
McDonald Hall	MSU Billings	1236 N Broadway	59101
McKinley School	Billings	820 North 31st Street	59101
McMullen Hall	MSU Billings	1500 N 30th St	59101
Meadowlark School	Billings	221 29th St W	59102
Miles Avenue School	Billings	1601 Miles Ave	59101
Montana State University - Billings	MSU Billings	1500 University Drive	59101
Morin School	Billings	8824 Pryor Road	59101
MSU - Billings College of Technology	MSU Billings	3803 Central Ave	59102
Newman School	Billings	605 South Billings Blvd	59101
North Park Head Start Center	Billings	615 19th Street	59501
Old Rimrock School	Billings	Rimrock Rd	59101
Orchard School	Billings	120 Jackson Street	59101
Petro/Rimrock/SUB Complex	MSU Billings	1500 N 30th St	59101
Physical Education Building	MSU Billings	1500 N 30th St	59101
Pine Hill School	Billings	Pine Hills Rd	59101
Pioneer School	Billings	1937 Dover Rd	59105
Pleasant Valley School	Yellowstone		
Poly Drive School	Billings	2410 Poly Drive	59102
Ponderosa School	Billings	4188 King Avenue East	59101
Progressive School	Billings	4100 McGirl Rd	59105
Rimrock School	Billings	2802 13th Street West	59102
Riverside 7-8	Billings	3700 Madison Ave	59101
Rocky Mountain College	Billings	1511 Poly Drive	59102
Rose Park School	Billings	1812 19th Street West	59102
Sandstone School	Billings	1440 Nutter Blvd	59105
Scandia School	Shepherd	Scandia Rd	59079

**UPDATED Table D-4. Critical Facilities - Primary/Secondary Education (source? GIS date?)**

<b>Name</b>	<b>Community</b>	<b>Address</b>	<b>Zip</b>
Science Building	MSU Billings	1500 N 30th Ave	59101
Shepherd Elementary	Shepherd	7842 Shepherd Rd	59079
Shepherd Jr/Sr High Schools	Shepherd	7842 Shepherd Rd	59079
Shiloh Christian Pre-School	Billings	328 S Shiloh Rd	59106
Skyview High School	Billings	1775 High Sierra Blvd	59105
South Elementary School	Laurel	606 South 5th Street	59044
St Francis Intermediate School	Billings	1734 Yellowstone Ave	59102
St Francis Primary School	Billings	511 Custer Ave	59101
St Francis Upper School	Billings	205 N 32nd St	59101
Trinity Lutheran School	Billings	2802 Belvedere Drive	59102
Two Pine School	Molt	Molt Rd	59057
Walla Walla Univ., School of Social Work/Sociology	Billings	2520 5th Ave So	59101
Washington School	Billings	1044 Cook Ave	59102
West School	Laurel	502 8th Avenue	59044
Will James 7-8	Billings	1200 30th Street West	59102
Yellowstone Baptist College	Billings	1515 S Shiloh Rd	59106
Yellowstone Boys & Girls Ranch	Billings	1732 South 72nd Street West	59106
Yellowstone Valley Christian	Laurel	400 7th Ave	59044

# **Appendix E. List of Plans Reviewed**

*Yellowstone County  
Multi-Jurisdictional Pre-Disaster Mitigation Plan,  
Update 2011*

**List of Existing Study/Reference/Guidance Documents**

Existing Study/Reference/Guidance	Date	Cited by
FEMA Preliminary Flood Insurance Study, Yellowstone County	2010	
FEMA Local Multi-Hazard Mitigation Planning Guidance	2008	CV-Scope B
New Flood Study Data from US Army Corps of Engineers		CV-Scope B
Flood Hazard Mitigation Plan for Laurel		CV-Scope B
FEMA Crosswalk Plan from 2004 PDM	2004	CV-Scope B
West Billings Flood Control, Stormwater and Ground Water Recharge Measures (Scope A deliverables)		CV-Scope B
Yellowstone County 2004 Pre-Disaster Mitigation Plan	2004	CV-Scope B
Yellowstone County Community Wildfire Protection Plan	2006	CV-Scope B
Yellowstone County Emergency Operations Plan		CV-Scope B
State of Montana Multi-Hazard Mitigation Plan and Statewide Hazard Assessment	2010	CV-Scope B
Yellowstone County and City of Billings Growth Policy	2008	
Yellowstone County Wildfire Protection Plan	2006	
West Billings Flood Hazard Study	2007	
Cooney Dam Emergency Action Plan		Yellowstone 2004
Anita Dam Emergency Action Plan and Inundation Map		Yellowstone 2004
Billings Housing Needs Assessment, Community Development Division	2010	
Seismic Hazard Susceptibility in Southwestern Montana: Comparison at Dillon and Bozeman	1999	
Hazus-MH: Earthquake Event Report, Scenario Hebgen – Normal – 7.3	2010	
Billings Clinic Vulnerability Analysis Matrix	2009	
Montana Pre Disaster Mitigation Plan- Draft	2010	

# **Appendix F. Proposed Pre Disaster Mitigation Project Summaries**

*Yellowstone County  
Multi-Jurisdictional Pre-Disaster Mitigation Plan,  
Update 2011*

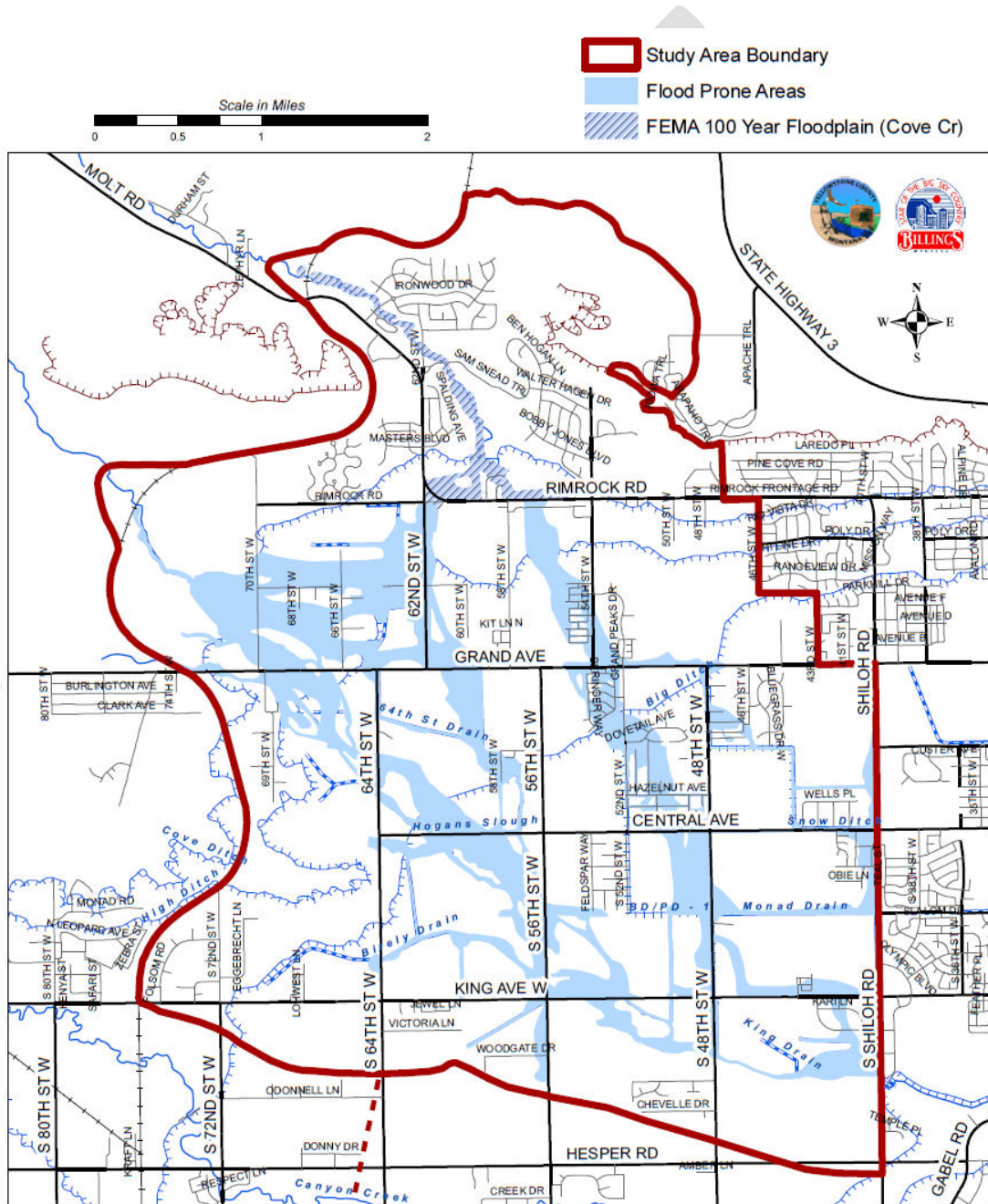
*F1-West Billings Flood Mitigation Feasibility Study  
F2-Arrow Island Weir Project  
F3-Riverside Park Project*

# **F1-West Billings Flood Mitigation Feasibility Study**

## EXECUTIVE SUMMARY

### West Billings Flood Mitigation and Groundwater Recharge Study

Atkins completed a feasibility analysis of flood mitigation alternatives for the West Billings Flood Mitigation and Groundwater Recharge Study. In 2006, a flood study mapped the 100-year floodplain within a 20-square mile area west of Billings and corroborated the 1937 historic flood event which inundated downtown Billings. The 2006 study identified a large portion of the project area subject to flooding in a 100-year event. The Feasibility Study was intended to identify and evaluate alternatives to mitigate flooding impacts in the project Study Area, and to assess the potential of mitigation measures to enhance groundwater recharge in the West Billings area.



Prior to evaluating potential alternatives, Atkins worked with the West Billings Steering Committee to weight criteria that are most important to the public for a preferred alternative. The Screening Criteria Weighting included 10 factors that are critical in selecting a preferred alternative. The table below identifies the criteria included and the rank and weighting factor to be used in evaluating potential alternatives.

**Screening Criteria Weighting Factors**

Criteria Number	Criteria	Relative Score	Rank	Tier	Weighting Factor
1	Flood Reduction	22	1	A	5
2	Downstream Impacts	21.3	2	A	5
7	Implementability	20.2	3	A	5
4	Future Flexibility	18.2	4	B	3
3	Groundwater Recharge	18.1	5	B	3
8	Cost	17.7	6	B	3
9	Funding Options	16.3	7	C	1
5	Regulatory Issues	16.1	8	C	1
6	Land Ownership	15.7	9	C	1
10	Recreational Opportunities and Aesthetics	14.3	10	C	1

The potential options considered included a variety of conveyance and storage options that are specific to flooding in West Billings. In order to have the greatest flood mitigation benefit, options need to occur higher in the drainage and control flood water routing or temporarily store flood water to minimize adverse impacts downstream. Options lower in the drainage will be beneficial but unlikely to reduce flooding impacts in the upper portions of the project area. The First Level Screening Summary below identifies three retained options that impact flood waters higher in the drainage and three in the downstream end of the project area.

**First Level Screening Summary**

Option	Summary	Retain/Eliminate
<i>Conveyance</i>		
<b>Cove Creek split at Rimrock Rd Modification</b>	<b>Large potential for flood reduction</b>	<b>Retain</b>
<b>Greenway Development</b>	<b>Large potential for flood reduction</b>	<b>Retain</b>
Drain Ditch Network Modification	Would conflict with current functions, greenway development and serves the same purpose.	Eliminate
Canal Improvements	Already exist but should be verified	Eliminate
<b>Canyon Creek Flood Relief Channels</b>	<b>Potential for flood reduction in project area.</b>	<b>Retain</b>
<i>Storage</i>		
Small Stormwater Storage Impoundments	Minor potential for flood reduction	Eliminate
<b>Large Storage Impoundments</b>	<b>Large potential for flood reduction, specific sites to be determined.</b>	<b>Retain</b>
Shiloh Drain Stormwater Detention	Already functions in this capacity with minor potential for increase.	Eliminate
<b>Sharptail Pond Stormwater Detention</b>	<b>Potential for flood reduction</b>	<b>Retain</b>
<b>Gravel Pits Stormwater Detention</b>	<b>Potential for flood reduction</b>	<b>Retain</b>

### First Level Screening Summary

Option	Summary	Retain/Eliminate
Other Stormwater Detention	Addressed under other options	Eliminate
On-Channel Reservoirs	Addressed under other options	Eliminate
Wetlands	Incorporate as component of other options.	Eliminate
Infiltration Basins	Minor potential for flood reduction. Incorporate on an individual development basis.	Eliminate

The Second Level Detailed Screening combined options passing the first level screening into selected alternatives and a subsequent detailed analysis of these alternatives. These alternatives were scored against the weighted criteria developed by the Steering Committee. Based on the second level screening, the three highest scoring alternatives include:

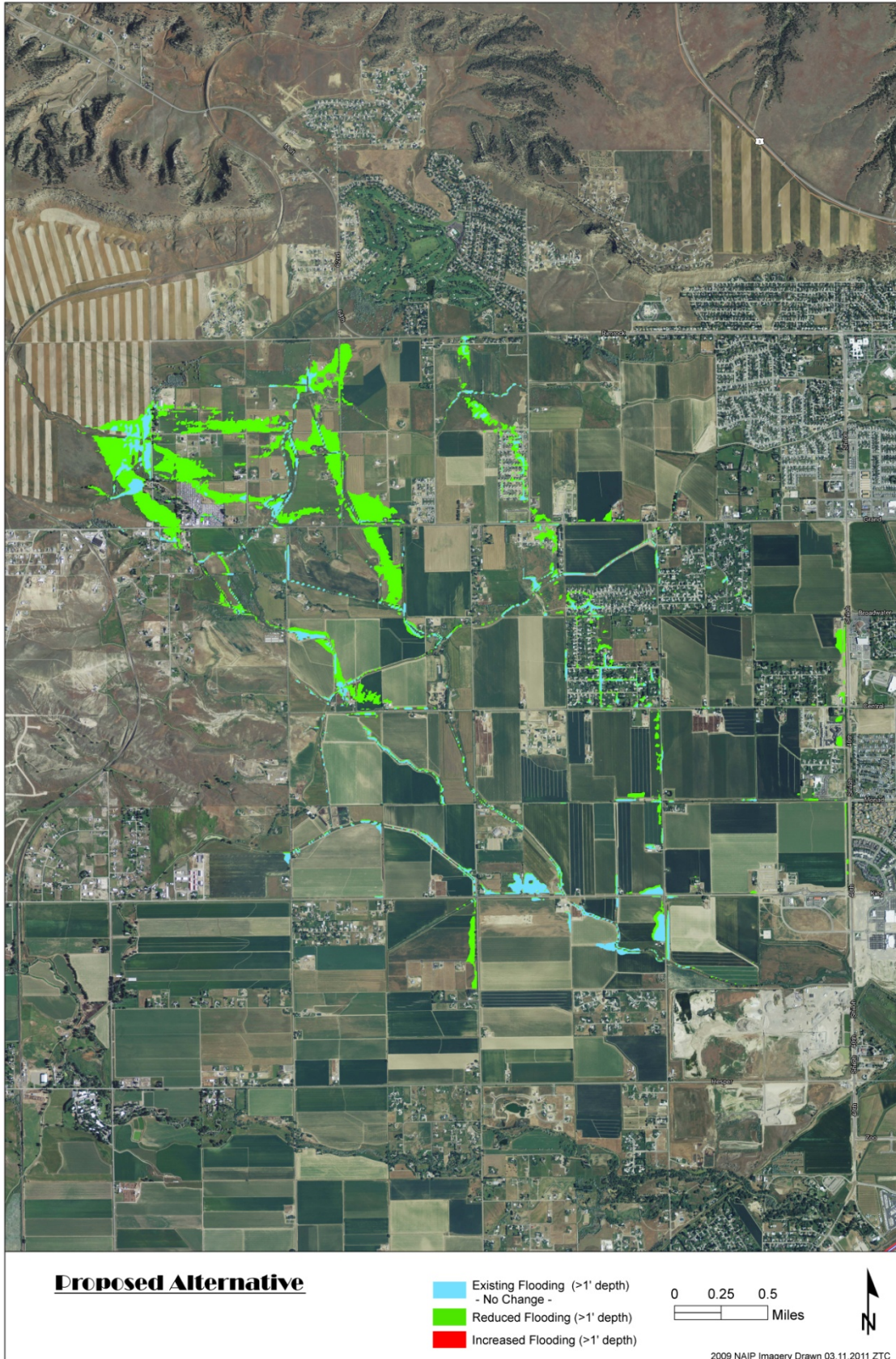
- Alternative 1 includes large storage impoundments located upstream of the project area on Cove Creek and Little Cove Creek. The storage impoundments would remain empty to maximize storage capacity during a sudden spring/summer rain event. The design requires that the impoundment detain (slow) rather than retain (store) flood water. The design concept includes an embankment to hold back flood waters, culvert that allows a portion of the flood water to pass through impoundment and an emergency spillway. Alternative 1 received an overall weighted score of 60.
- Alternative 3 includes the split of Cove Creek flow to both sides of 56<sup>th</sup> Street and development of a Greenway on the west side of 56<sup>th</sup> to accommodate increased flow in a wider floodplain channel. Alternative 3 is the second ranked alternative with an overall weighted score of 57 points.
- Alternative 5 and 6 is a combination of Alternative 3 with flood storage at the downstream end of the project area in either Knife River Gravel Pit (Alt 5) or Sharptail Pond (Alt 6). These two alternatives were both scored 56 points.

A Steering Committee meeting on March 24, 2011 discussed the proposed alternatives. After discussion of the proposed components and the modeled results the Steering Committee focused on impacts downstream of the project area beyond Shiloh Road. The Committee recommended using Alternative 1, with improved conveyance at road and ditch crossings and a bypass channel to route flow rates greater than 300 cfs to the Knife River gravel pit. The figure below shows the reduction of flood hazard areas as a result of the improvements. Specific components include:

1. Detention storage impoundments on Cove and Little Cove Creek drainages. The areas within these impoundments would be dry the majority of the time and available for recreational use such as ball fields.
2. Larger outlet pipes on the proposed Cove and Little Cove Creek impoundments (6' diameter) to reduce the required storage volume.
3. Increased number of pipes or pipe size beneath numerous roads and canals to reduce ponding upstream (see **Table** below).
4. No greenways are utilized for flood control but could be a separate component for recreational value.
5. Bypass channel to the Knife River gravel pit to reduce peak flow rate beneath Shiloh Road to less than 300 cfs.

**Proposed Pipe Changes**

Link	Previous Pipe Size (feet)	New Pipe Size (feet)	Pipe Length (feet)	Description
LCC_Pipe	2	6	100	Outlet from Little Cove Creek Impoundment
Cove_Pipe	2	6	100	Outlet from Cove Creek Impoundment
C-104	3	6	94.5	Birely Drain Pipe under High Ditch
C-101	4	8	52	Birely Drain Pipe under 62nd Street
C-99a	0	8	85.58	Birely Drain Pipe under Grand. Added new culvert adjacent to existing culvert C-99
C-99a	6	8	85.58	Birely Drain Pipe under Grand. Increased pipe size
C-98	4	6	62.38	Birely Drain Pipe under Broadwater (?)
C-121	2	6	106.28	Birely Drain side ditch under King Avenue. Circular
C-112	2	6	61.33	Bierly Drain under 56th. Arch
C-111	3	6	86.1	Bierly Drain adjacent to King Ave - Circular pipe under private approach.
C-110	3	6	42.09	Bierly Drain adjacent to King Ave - Circular pipe under private approach.
C-109	2.5	6	41.41	Bierly Drain adjacent to King Ave - Circular pipe under private approach.
C-108	2.5	6	30.47	Bierly Drain adjacent to King Ave - Circular pipe under private approach.
C-107	3	6	38.6	Bierly Drain adjacent to King Ave - Circular pipe under private approach.
C-129	1.5	6	72.29	50th street drain under King Ave. Circular pipe.
C-12	1 at 8'	2 at 8'	122.73	Hogans Slough under King Ave. Circular pipe.



## **F2-Arrow Island Weir Project**

Revised: 2/16/10 (310 form 270)  
Form may be downloaded from:  
[www.dnrc.mt.gov/permits/default.asp](http://www.dnrc.mt.gov/permits/default.asp)

**AGENCY USE ONLY:** Application # \_\_\_\_\_ Date Received \_\_\_\_\_  
Date Accepted \_\_\_\_\_ / Initials \_\_\_\_\_ Date Forwarded to DFWP \_\_\_\_\_

## JOINT APPLICATION FOR PROPOSED WORK IN MONTANA'S STREAMS, WETLANDS, FLOODPLAINS, AND OTHER WATER BODIES

Use this form to apply for one or all local, state, or federal permits listed below. "Information for Applicant" includes agency contacts and instructions for completing this application. To avoid delays, submit all required information, including a project site map and drawings. Incomplete applications will result in the delay of the application process. Other laws may apply. It is the applicant's responsibility to obtain all permits and landowner permission, when applicable, before beginning work.

✓	PERMIT	AGENCY	FEE
	310 Permit	Local Conservation District	No fee
	SPA 124 Permit	Department of Fish, Wildlife and Parks	No fee
	Floodplain Permit	Local Floodplain Administrator	Varies by city/county (\$25 - \$500+)
	Section 404 Permit, Section 10 Permit	U. S. Army Corps of Engineers	Varies (\$0 - \$100)
	318 Authorization 401 Certification	Department of Environmental Quality	\$250 (318); \$400 - \$20,000 (401)
	Navigable Rivers Land Use License or Easement	Department of Natural Resources and Conservation, Trust Lands Management Division	License \$25; Easement \$50, plus annual fee

### A. APPLICANT INFORMATION

NAME OF APPLICANT: Dan Reyer and Yellowstone County Parks  
Has the landowner consented to this project?  Yes  No  
Mailing Address: P.O. Nox 309, Shepherd 59079 Day Phone: 698 2861  
Physical Address: \_\_\_\_\_ Evening phone: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_ E-Mail: skylineserviceinc@yahoo.com

NAME OF LANDOWNER (if different from applicant): \_\_\_\_\_  
Mailing Address: \_\_\_\_\_ Day Phone: \_\_\_\_\_  
Physical Address: \_\_\_\_\_ Evening Phone: \_\_\_\_\_  
City/State/Zip: \_\_\_\_\_ E-Mail: \_\_\_\_\_

NAME OF CONTRACTOR/AGENT (if one is used): Roger Perkins, PE AQUONEERING  
Mailing Address: 6143 Victoria Lane Day Phone: 206- 4644  
Physical Address: \_\_\_\_\_ Evening Phone: \_\_\_\_\_  
City/State/Zip: Billings, MT 59106 E-Mail: Aquoroger@gmail.com

### B. PROJECT SITE INFORMATION

NAME OF STREAM or WATER BODY at project location Yellowstone Nearest Town Shepherd  
Address/Location: N/A Geocode (if available): \_\_\_\_\_  
1/4 1/4 SE 1/4, Section 12, Township 2N, Range 27E, County Yellowstone  
Longitude 46D 56' 02", Latitude 108D 18' 07"

The state owns the beds of certain state navigable waterways. Is this a state navigable waterway? Yes or No.  
If yes, send copy of this application to appropriate DNRC land office – see Information for Applicant.

ATTACH A PROJECT SITE MAP OR A SKETCH that includes: 1) the water body where the project will take place, roads, tributaries, landmarks; 2) a circled "X" representing the exact project location. IF NOT CLEARLY STATED ON THE MAP OR SKETCH, PROVIDE WRITTEN DIRECTIONS TO THE SITE.

*This space is for all Department of Transportation and SPA 124 permits (government projects).*

Project Name \_\_\_\_\_  
Control Number \_\_\_\_\_ Contract letting date \_\_\_\_\_

## C. PROJECT INFORMATION

### 1. TYPE OF PROJECT (check all that apply)

- |   |  |  |
|---|--|--|
| <input type="checkbox"/> Bridge/Culvert/Ford Construction | <input type="checkbox"/> Fish Habitat                      | <input type="checkbox"/> Mining            |
| <input type="checkbox"/> Bridge/Culvert/Ford Removal      | <input type="checkbox"/> Recreation (docks, marinas, etc.) | <input type="checkbox"/> Dredging          |
| <input type="checkbox"/> Road Construction/Maintenance    | <input type="checkbox"/> New Residential Structure         | <input type="checkbox"/> Core Drill        |
| X Bank Stabilization/Alteration                           | <input type="checkbox"/> Manufactured Home                 | <input type="checkbox"/> Placement of Fill |
| <input type="checkbox"/> Flood Protection                 | <input type="checkbox"/> Improvement to Existing Structure | <input type="checkbox"/> Diversion Dam     |
| <input type="checkbox"/> Channel Alteration               | <input type="checkbox"/> Commercial Structure              | <input type="checkbox"/> Utilities         |
| <input type="checkbox"/> Irrigation Structure             | <input type="checkbox"/> Wetland Alteration                | <input type="checkbox"/> Pond              |
| <input type="checkbox"/> Water Well/Cistern               | <input type="checkbox"/> Temporary Construction Access     | <input type="checkbox"/> Debris Removal    |
| <input type="checkbox"/> Excavation/Pit                   | <input type="checkbox"/> Other _____                       |  |

### 2. **PLAN OR DRAWING** of the proposed project **MUST** be attached. This plan or drawing must include:

- a plan view (looking at the project from above)
- dimensions of the project (height, width, depth in feet)
- location of storage or stockpile materials
- drainage facilities
- an arrow indicating north
- a cross section or profile view
- an elevation view
- dimensions and location of fill or excavation sites
- location of existing or proposed structures, such as buildings, utilities, roads, or bridges

### 3. IS THIS APPLICATION FOR an annual maintenance permit? Yes No (If yes, an annual plan of operation must be attached to this application – see “Information for Applicant”)

### 4. **PROPOSED CONSTRUCTION DATE.** Include a project timeline. Start date Before high water \_\_\_\_\_ Finish date \_\_\_\_\_/\_\_\_\_\_/\_\_\_\_\_ Is any portion of the work already completed? Yes No (If yes, describe the completed work.)

### 5. **WHAT IS THE PURPOSE** of the proposed project?

Protection of concrete lateral , homes and farm land

### 6. **WHAT IS THE CURRENT CONDITION** of the proposed project site? Include a description of the existing vegetation, bank condition, bank slope, and height. What other structures are nearby?

Bank eroded, temporary repair of lost concrete. Park is riparian (see Photos attached)

### 7. **PROVIDE A BRIEF DESCRIPTION** of the proposed project.

5 bednway weirs

### 8. **PROJECT DIMENSIONS.** How many linear feet of bank will be impacted? How far will the proposed project encroach into and extend away from the water body?

About 1000 feet (see exhibit) 60 feet long 250' spacing, keyed

### 9. **VEGETATION.** What type and how much vegetation will be removed or covered with fill material? Vegetation at keys will be removed. Seed stock and natural revegetation will rapidly occur.

10. **MATERIALS.** Describe the materials to be used and how much.

Cubic yards/Linear feet	Size and Type	Source
500 cy	Concrete rubble and sandstone	Billings, Pryor

11. **EQUIPMENT.** What equipment is proposed to be used for the work? Where and how will the equipment be used on the stream bank and/or the waterbody?

Excavator and loader

12. **CONSIDER THE IMPACTS OF THE PROPOSED PROJECT, EVEN IF TEMPORARY.** Describe planned efforts during and after construction to:

- Minimize erosion, sedimentation, or turbidity? Work from bank at low flow
- Minimize stream channel alterations? Bend way weirs accomplish this.
- Minimize effects to stream flow or water quality caused by materials used or removal of ground cover? Seeding and leave slash and behind avoid trees.
- Minimize effects on fish and aquatic habitat? Weirs improve habitat
- Minimize risks of flooding or erosion problems upstream and downstream? Minimal by HEC-RAS analysis.
- Revegetate/protect existing vegetation and control weeds? Yes

13. **WHAT ARE THE NATURAL RESOURCE BENEFITS** of the proposed project?

Riparian area is park will remain and homesand irrigation system will be protected.

14. **LIST ALTERNATIVES** to the proposed project. Why was the proposed alternative selected?

Armoring with continuous riprap. Cost and aesthetics..

**D. ADDITIONAL INFORMATION FOR SECTION 404, SECTION 10, AND FLOODPLAIN PERMITS.** If applying for a Section 404 or Section 10 permit, fill out questions 1-3. If applying for a floodplain permit, fill out questions 3-6. (Additional information is required for floodplain permits – See “Information for Applicant.”)

1. Will the project involve placement of fill material in a wetland? If yes, describe. How much wetland area will be filled? Calculate the area impacted by fill activity or other disturbance. Note: A delineation of the wetland may be required. No wetland



## SUPPLEMENT TO DAN REYER APPLICATION

### INTRODUCTION

Aquoneering was contacted by Dan Reyer as to a bank erosion progression into an elevated concrete lined irrigation lateral. His property lies downstream of Arrow Island Park and upstream of two homes in the Yellowstone River Flood Plain. The lateral acts as a dike and does provide some diversion protection of high water flow in the river.

We expect that the river will continue to erode westerly into flood plain and the elevated ditch without stabilization. As is typical of erosion through a bend, the downstream section scallops first. Eventually the homes downstream will be threatened as the river erodes into the terrace. There is a need for bank stabilization on this reach. This work will need to extend onto County Park property upstream as well.

### GEOMORPHIC ANALYSIS

This general reach is classified as a "Rosgen C-4" and two pages are appended for information. "The C4 stream type, characterized by the presence of point bars and other depositional features, is very susceptible to shifts in both lateral and vertical stability caused by direct channel disturbance and changes in flow and sediment regimes of the controlling watershed." Sinuosity is typically about 1.2 according to Rosgen. In addition, this sub-reach was studied in the Yellowstone River Study – "Work Order #3: Geomorphic Parameters and GIS Development". The reach is designated B-5 and is described as "Unconfined Ana-branching". This reach geomorphology is different from the upstream (Partially Confined /Straight), probably due the geologic influence of bedrock and a wider alluvial valley. A couple of pages from this report are attached which detail geomorphic parameters and their changes with time. Of note is the high braiding parameter. The typical major meander bend radius is typical for the Yellowstone River, at about 4,500 to 5,500 feet. We also note that the parameters have remained relatively constant over time and man's activity has not resulted in instability. Width/Depth ratios are close to that expected for a river of this type. Bathymetric survey indicates a riffle and bar upstream of the site and a bank full water depth of 10 to 12 feet at the project. As expected, the river runs deep at this outside bend.

### FLOOD POTENTIAL

The concrete lined ditch is elevated, providing protection to two homes and a barn downstream. A preliminary DFIRM analysis has been completed and the cross section near the lost concrete ditch is appended. Two cross sections downstream show the effect of the ditch for flood protection. We modeled removal of the ditch in HEC-RAS and appended the cross section. Flood waters will overflow the bank without the ditch and travel to the lower area to the west and north.

A GPS survey of the affected properties was conducted. The datum was tied to that used in the HEC-RAS study. A 60 penny nail was set as a BM near the corner post on the Reyer Fence. Its elevation is 2990.36 for future reference.

The following elevations were observed:

Remaining Concrete ditch	2994 to 2992		
Ground elevation at erosion	2991.1		
100 Year Water Surface	2991.50		
Barn on Shannon Property	2986.41		
Lynette Greenwood Home	2992.73	Ground=2987.11	Lowest Elevation=2985
James Greenwood Home	2991.88	Ground= 2991.5	Lowest Elevation= 2990

From this data, there is potential for flood damage if water is not held back by the ditch earthwork, located on the Reyer property. With time, the river could adopt a low flow channel against the bluff, resulting in more serious problems for these homeowners.

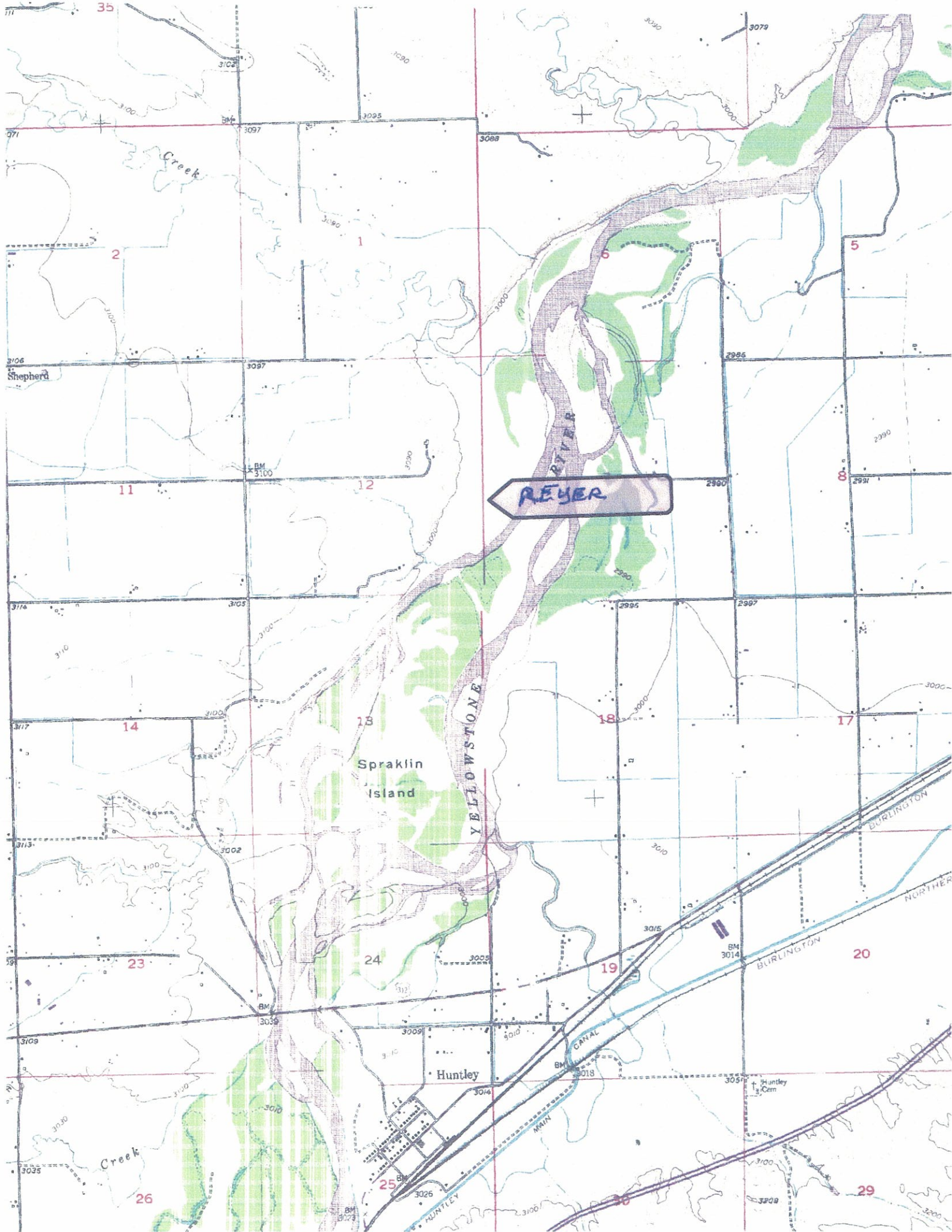
#### **BENDWAY WEIR PLAN**

Given the straight bank, the meander bend the river wants and the location of the riffle upstream, we need to place at least two of the weirs on park land. We have been working with Cal Cummin as to County permission as the Park will benefit from the stabilization work as well,

We would propose construct up to 5 bendway weirs placed on this radius, with a spacing of about 250 feet and a depth of 4 to 6 feet above the river bed (see exhibit). The two upstream weirs on Park ground would be keyed into the bank, back into the terrace. The river would be allowed to erode away the bank until the erosion stabilizes. Thus, part of the weir would be under water and part under bank after construction.

Given observations in the field, we would suggest a staged approach to stabilization, starting with 5 bendway weirs as shown on the plan exhibit attached. The weirs would be spaced as per the attached spreadsheet at about 250 feet. We anticipate use of concrete rubble and sandstone rock.

Dimensions, riprap size, filters, etc. would be per the attached sheets. It is important to install a filter fabric at the gravel-rock interface in the keyway to minimize flanking. Experience has indicated that a 30 to 40 degree angle upstream limits downstream countercurrent erosion to a more acceptable level. The work should be done as soon as ice goes out this spring and the upstream weir should be placed first. Observation of the deflection of the current will dictate the location of the next weir downstream. The engineer should be present during installation.



## **F3-Riverside Park Project**

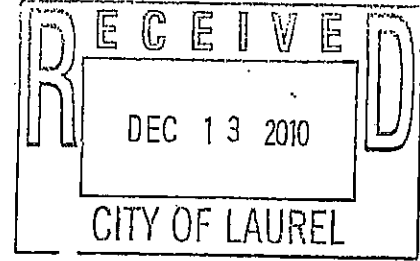


REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
CORPS OF ENGINEERS, OMAHA DISTRICT  
1616 CAPITOL AVENUE  
OMAHA NE 68102-4901

November 22, 2010

*Copied to:*  
*Mayor*  
*Planner* 12/13/2010  
*PWD*



Planning, Programs, and Project Management Division

Mayor Kenneth E. Olson, Jr.  
P.O. Box 10  
Laurel, Montana 59044

Dear Mayor Olson:

Thank you for your letter requesting assistance under the Corps of Engineers Section 14 Program. The Corps has authority to assist with Emergency Stream bank Erosion under Section 14 of the Flood Control Act of 1946. The purpose of the Section 14 program is to construct emergency stream bank and shoreline protection to prevent natural erosion processes from damaging highways, highway bridge approaches, public works, churches, public and private non-profit hospitals, schools, and other public or non-profit facilities offering public services.

Riverside Park and the abandoned landfill were visited by my staff on August 6, 2010. Mr. Kurt Markegard, Bill Sheridan and James Caniglia accompanied the Corps team. In Riverside Park, the campground, restroom and WWII buildings are impacted by increased ground water elevations and not imminently threatened by erosion. The boat ramp owned by Montana Department of Fish and Wildlife is the only public infrastructure imminently threatened as it has impacted by erosion and is no longer functional. However, the Montana Department of Fish and Wildlife plans to utilize a nearby ramp and close this impacted boat ramp. Additionally, the cost of stabilizing the shoreline would exceed the cost of reconstructing the ramp to current standards which would make it much less susceptible to erosion. The western portion of the landfill, owned by Cenex Harvest States (CHS) involves the majority of the landfill shoreline. The publically-owned shoreline is approximately 25 feet in length. Limited erosion is occurring in this area leaving few items exposed in this specific area. There is no public infrastructure involved at the landfill.

At this time, the assessment is one of "no action" for both locations. It is recommended the City of Laurel monitor the erosion occurring in the park. If it appears that public infrastructure is imminently threatened in the future, contact should be made for a determination on eligibility at that time.

Riverside Park is eligible for National Register listing. Mr. Caniglia has requested information to assist in addressing the park from a historical perspective. His request has been forwarded to one our cultural resources representatives. She will be contacting him shortly to answer specific questions Mr. Caniglia may have.

If you have questions, please contact Ms. Gwyn Jarrett at (402)995-2717.

Sincerely,

KAYLA A. ECKERT UPTMOR  
Chief, Planning Branch





## Yellowstone River eating away levee that protects Laurel park, boat ramp

**BRETT FRENCH** Of The Gazette Staff | Posted: Sunday, September 26, 2010 9:55 pm

Laurel is losing ground — about 20 feet of it so far — to the Yellowstone River along an old levee that protects its popular Riverside Park east of town. The river has also washed away about half of the park's concrete boat ramp and buckled a portion of what's left.

"We're seeing a bunch of erosion," said Kurt Markegard, Laurel's director of public works, as he pointed out problems at the site on Friday. "People call me who want to launch here, and they want to know what's up."

Markegard isn't sure what to tell callers. He said many of the state and federal officials he has contacted have given him the runaround.

"Our intent is to work with all government agencies to come to some sort of resolution," Markegard said. "But I'd like to get something done prior to it becoming an emergency situation."

The levee rises roughly 10 feet above the park and runs from the Highway 212 bridge northeast about 400 yards — the entire length of the park.

The erosion began with high river flows in 2008, Markegard said, but has accelerated this year. A power pole that was planted on the levee had to be moved after the bank eroded up to its base. A deep hole marks where the pole stood at what is now the edge of the sloughed-off levee. Trees along the bank have fallen in. And a portion of the bank has washed away, revealing old sandbags. Markegard isn't sure when those were added to the levy. Rusted metal riprap juts from the bank in places.

### Many roadblocks

There are several problems in the way of getting the problem fixed. Permits required to work in the river cost money. Material, such as gravel or rock fill, is an expense. And Laurel's budget for such work is minimal.

Any streambank stabilization would likely be expensive. When the city looked at protecting the bank downstream of its water plant recently, the projected cost was \$1.2 million, and that was a smaller job.

Tom Reilly of Fish, Wildlife and Parks — the state agency that built the boat ramp in 1987 — said a new boat ramp would cost roughly \$50,000. But he thinks the boat ramp should be moved closer to the Highway 212 bridge to protect it from further erosion. Right now, though, the agency has no plans to construct a new ramp, although it could be considered during the upcoming legislative session.

An Army Corps of Engineers hydrologist looked at the site this summer to assess whether the project was worth considering. Before any work could begin, though, Markegard said an agency official told him a \$100,000 study would be needed to determine how to fix the problem. (She later could not be reached for comment.)

Markegard said he was told the agency would fund up to 65 percent of \$1.5 million worth of work. Laurel would have to find the other 35 percent — \$525,000 — only a part of which can be in-kind. At least 5 percent, or \$75,000, is required in cash.

Because of the high cost of any work, Markegard has been beating on doors to try and find partners willing to pitch in for the work, but so far he's had no luck.

### Built for railroad

But Markegard isn't sure that Laurel should be solely responsible for funding its share of the work. He said the levee was likely built in the late 1800s to protect a bridge owned by Rocky Fork Railroad Co., which hauled coal from mines near Red Lodge. The land for Riverside Park was donated to the city in the 1920s, but has never been annexed, so it's still in the county.

"It was mostly the federal government that did this, but now they don't recognize it," Markegard said. "Now they're only talking about matching funds. That's what sticks in my throat."

There's more to the park than just a boat ramp. The 25-acre parcel contains several buildings that may qualify for the National Register of Historic Places. The rock structures were built by the Work Projects Administration in the 1930s. The buildings now serve as clubhouses for groups like the Laurel Rod and Gun Club, American Legion and Jaycees. There's also a shooting range at the park, spaces for RV parking and a picnic area.

Two natural gas pipelines and two oil pipelines cross the river at the park. The CHS refinery in Laurel in its safety plan cites use of the ramp to launch boats in case of a spill in the river, Markegard noted.

Markegard will talk to the Laurel City Council at its meeting Tuesday night about the problem at Riverside Park and what he has found in his research. He's unsure of what the next step should be, but he knows one thing.

"It's two years later and we're still sitting here," he said.

Contact Brett French, Gazette Outdoors editor, at [french@billingsgazette.com](mailto:french@billingsgazette.com) or at 657-1387.

# Laurel public works warns of levee collapse along river



HUNTLEY 348-21

## WE HAVE:

- Window Scrapers
- Snow Shovels
- Mapp Gas
- Pipe Dope
- Jumper Cables
- Window Insulation Kit
- Christmas Lights
- Softener Salt
- Ice Melt
- Batteries
- Night Lights
- Furnace Filters
- PVC Pipe & Fittings
- Brass Pipe & Fittings
- Tarps
- Breakers
- Saw Blades
- Insert Fittings
- Barbed Fittings
- Sharkbite Fittings
- Pressure Switches
- Cord
- Chain
- Cable
- Spray Paint
- Dryer Vents
- Hitch Pins
- Corner Braces
- Extension Cords
- Faucet Washers
- Toilet Repair Kits
- Arrow Staples/Rivets
- Magic Brooms
- Paint Brushes
- Light Bulbs
- Filson Vests
- Eye Bolts

thority or vested interest to deal with the problem.

The portion of river of concern is changing dramatically all the time. It was because of changes in the river's course that Laurel had to build a new water intake in 2003.

The changes continue: earlier this year, 16 feet of river bank eroded away in one weekend, said Markegaard.

Markegaard suggested maybe the bank needs to be "armored" to stabilize the levee, but he also said that among the experts he has consulted, there were those who believed that nothing would prevent the levee from going — and that it could go any day.

If the levee goes, the city of Laurel will probably lose most of Riverside Park, an area that has served as access to the river and has a boat ramp. The boat ramp has already been undercut by the river, is no longer useable

and has been closed. Fish, Wildlife and Parks, which is the agency responsible for maintaining the ramp, has said they have no money to repair it, said Markegaard.

The Army Corps of Engineers has looked at the river situation. Markegaard said they informed him they could spend up to \$100,000 to do an assessment of the problem and then could provide a grant of up to \$1.5 million to fix it, but the grant would require a 35 percent match from the local community in some manner. Markegaard said that Laurel cannot afford to do it, but he is moving forward in submitting an application to the Corps. In the meantime, he hopes to find someone interested in dealing with the situation to assist in matching the grant.

said Markegaard, and the survey's revealed that for at least one of them, the cover has already been reduced to only about two feet of material. Williston's pipeline already ruptured once several years ago, and they had to replace it.

Markegaard said he has already warned the City of Billings' water department and the Lockwood water district that they should be prepared for the possibility of that happening again in the near future.

"I'm bringing it to your attention," said Markegaard, "because it's not just a Laurel issue." But, apparently no one else is stepping forward.

Markegaard said that he has contacted Fish, Wildlife and Parks, the state department of transportation, the conservation district, the railroad and the refineries. From the responses he has received, most deny having any au-

PIPELINES AT RISK

by Evelyn Pyburn

LAUREL — A levee that is being undercut by the Yellowstone River west of Laurel poses a threat to infrastructure — it's a problem that should be of concern to entities other than the city of Laurel, said Kurt Markegaard, Laurel's public works director.

The issue should be of special concern to the owners of pipelines under the river, believes Markegaard, since if the levee goes, the river will likely scour the river bottom removing the cover over their pipelines.

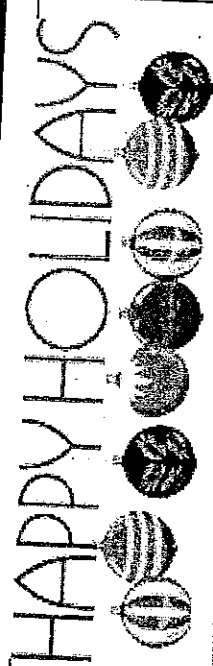
There are three pipelines crossing the river at that point — the Williston pipeline, ExxonMobil's pipeline, and another that serves the CHS refinery in Laurel.

The federal Department of Conservation recently required that the companies do a survey of their pipelines,

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# **Appendix G. Crosswalk**

*Yellowstone County  
Multi-Jurisdictional Pre-Disaster Mitigation Plan,  
Update 2011*

**LOCAL MITIGATION PLAN REVIEW SUMMARY**

The plan cannot be approved if the plan has not been formally adopted. Each requirement includes separate elements. All elements of the requirement must be rated “Satisfactory” in order for the requirement to be fulfilled and receive a score of “Satisfactory.” Elements of each requirement are listed on the following pages of the Plan Review Crosswalk. A “Needs Improvement” score on elements shaded in gray (recommended but not required) will not preclude the plan from passing. Reviewer’s comments must be provided for requirements receiving a “Needs Improvement” score.

**Prerequisite(s) (Check Applicable Box)**

**1. Adoption by the Local Governing Body: §201.6(c)(5) OR**

NOT MET	MET

2. Multi-Jurisdictional Plan Adoption: §201.6(c)(5)  
**AND**


3. Multi-Jurisdictional Planning Participation: §201.6(a)(3)

**Planning Process**

4. Documentation of the Planning Process: §201.6(b) and §201.6(c)(1)

N	S

**Risk Assessment**

5. Identifying Hazards: §201.6(c)(2)(i)

6. Profiling Hazards: §201.6(c)(2)(i)

7. Assessing Vulnerability: Overview: §201.6(c)(2)(ii)

**8. Assessing Vulnerability: Addressing Repetitive Loss Properties. §201.6(c)(2)(ii)**

9. Assessing Vulnerability: Identifying Structures, Infrastructure, and Critical Facilities: §201.6(c)(2)(ii)(B)

10. Assessing Vulnerability: Estimating Potential Losses: §201.6(c)(2)(ii)(B)

11. Assessing Vulnerability: Analyzing Development Trends: §201.6(c)(2)(ii)(C)

12. Multi-Jurisdictional Risk Assessment: §201.6(c)(2)(iii)

N	S

\*States that have additional requirements can add them in the appropriate sections of the *Local Multi-Hazard Mitigation Planning Guidance* or create a new section and modify this Plan Review Crosswalk to record the score for those requirements.

**SCORING SYSTEM**

Please check one of the following for each requirement.

**N – Needs Improvement:** The plan does not meet the minimum for the requirement. Reviewer’s comments must be provided.

**S – Satisfactory:** The plan meets the minimum for the requirement. Reviewer’s comments are encouraged, but not required.

**Mitigation Strategy**

- 13. Local Hazard Mitigation Goals: §201.6(c)(3)(i)
- 14. Identification and Analysis of Mitigation Actions: §201.6(c)(3)(ii)
- 15. Identification and Analysis of Mitigation Actions: NFIP Compliance. §201.6(c)(3)(ii)**
- 16. Implementation of Mitigation Actions: §201.6(c)(3)(iii)
- 17. Multi-Jurisdictional Mitigation Actions: §201.6(c)(3)(iv)

N	S

**Plan Maintenance Process**

- 18. Monitoring, Evaluating, and Updating the Plan: §201.6(c)(4)(ii)
- 19. Incorporation into Existing Planning Mechanisms: §201.6(c)(4)(ii)
- 20. Continued Public Involvement: §201.6(c)(4)(iii)

N	S

**LOCAL MITIGATION PLAN APPROVAL STATUS**

**PLAN NOT APPROVED**   
**See Reviewer’s Comments**  
**PLAN APPROVED**

<b>Local Mitigation Plan Review and Approval Status Jurisdiction:</b> Yellowstone County, Montana	<b>Title of Plan:</b> Yellowstone County PDM Plan Update	<b>Date of Plan:</b>
<b>Local Point of Contact:</b> Duane Winslow	<b>Address:</b> Yellowstone County Courthouse Room 312 217 N. 27 <sup>th</sup> Ave Billings, MT 59101	
<b>Title:</b> Emergency and General Services Director		
<b>Agency:</b> Office of Emergency Management		
<b>Phone Number:</b> (406) 256-2775	<b>E-Mail:</b> DWinslow@co.yellowstone.mt.gov	

<b>State Reviewer:</b>	<b>Title:</b>	<b>Date:</b>
------------------------	---------------	--------------

<b>FEMA Reviewer:</b>	<b>Title:</b>	<b>Date:</b>
<b>Date Received in FEMA Region VIII</b>		
<b>Plan Not Approved</b>		
<b>Plan Approvable Pending Adoption</b>		
<b>Date Approved</b>		

Jurisdiction:	DFIRM		NFIP Status*			CRS Class
	In Plan	NOT in Plan	Y	N	N/A	
1. Yellowstone County			X			
2. City of Billings			X			
3. City of Laurel			X			
4. Town of Broadview				X		
5. [ATTACH PAGE(S) WITH ADDITIONAL JURISDICTIONS]						

\* Notes:                    Y = Participating                    N = Not Participating                    N/A = Not Mapped

**PREREQUISITE(S)**

**1. Adoption by the Local Governing Body**

**Requirement §201.6(c)(5):** [The local hazard mitigation plan **shall** include] documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval of the plan (e.g., City Council, County Commissioner, Tribal Council).

Element	Location in the Plan	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Has the local governing body adopted the <b>new or updated</b> plan?	<i>vii-x</i>			
B. Is supporting documentation, such as a resolution, included?	<i>vii-x</i>			
SUMMARY SCORE				

**2. Multi-Jurisdictional Plan Adoption**

**Requirement §201.6(c)(5):** For multi-jurisdictional plans, each jurisdiction requesting approval of the plan **must** document that it has been formally adopted.

Element	Location in the Plan	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the <b>new or updated</b> plan indicate the specific jurisdictions represented in the plan?	Preface, Page <i>xi</i>			
B. For each jurisdiction, has the local governing body adopted the <b>new or updated</b> plan?	<i>vii-x</i>			
C. Is supporting documentation, such as a resolution, included for each participating jurisdiction?	<i>vii-x</i>			
SUMMARY SCORE				

**3. Multi-Jurisdictional Planning Participation**

**Requirement §201.6(a)(3):** *Multi-jurisdictional plans (e.g., watershed plans) may be accepted, as appropriate, as long as each jurisdiction has participated in the process ... Statewide plans will not be accepted as multi-jurisdictional plans.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			NOT MET	MET
A. Does the <b>new or updated</b> plan describe <b>how</b> each jurisdiction participated in the plan's development?	Appendix C			
B. Does the updated plan identify all participating jurisdictions, including new, continuing, and the jurisdictions that no longer participate in the plan?	Preface, Page x			
<b>SUMMARY SCORE</b>				

**PLANNING PROCESS:** §201.6(b): *An open public involvement process is essential to the development of an effective plan.*

**4. Documentation of the Planning Process**

**Requirement §201.6(b):** *In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:*

- (1) *An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval;*
- (2) *An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process; and*
- (3) *Review and incorporation, if appropriate, of existing plans, studies, reports, and technical information.*

**Requirement §201.6(c)(1):** *[The plan shall document] the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the plan provide a narrative description of the process followed to prepare the <b>new or updated</b> plan?	Section 2.1, pages 2-1 & 2-2,			
B. Does the <b>new or updated</b> plan indicate who was involved in the <b>current</b> planning process? (For example, who led the development at the staff level and were there any external contributors such as contractors? Who participated on the plan committee, provided information, reviewed drafts, etc.?)	Section 2.1, pages 2-1 & 2-2, Appendix C			
C. Does the <b>new or updated</b> plan indicate how the public was involved? (Was the public provided an opportunity to comment on the plan during the drafting stage and prior to the plan approval?)	Section 2.2, page 2-3 Appendix C			
D. <b>Does the new or updated plan discuss the</b> opportunity for neighboring communities, agencies, businesses, academia, nonprofits, and other interested parties to be involved in the planning process?	Section 2.1, pages 2-1 & 2-2, Appendix C			
E. Does the planning process describe the review and incorporation, if appropriate, of existing plans, studies, reports, and technical information?	Section 2.3 Appendix F			
F. Does the updated plan document how the planning team reviewed and analyzed each section of the plan and whether each section was revised as part of the update process?	Section 2.1, pg 2-2			
<b>SUMMARY SCORE</b>				

**RISK ASSESSMENT:** §201.6(c)(2): *The plan shall include a risk assessment that provides the factual basis for activities proposed in the strategy to reduce losses from identified hazards. Local risk assessments must provide sufficient information to enable the jurisdiction to identify and prioritize appropriate mitigation actions to reduce losses from identified hazards.*

**5. Identifying Hazards**

**Requirement §201.6(c)(2)(i):** *[The risk assessment shall include a] description of the type ... of all natural hazards that can affect the jurisdiction.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan include a <b>description</b> of the types of <b>all natural hazards</b> that affect the jurisdiction?	Section 3.0, pgs 3-1 – 3-41			
<b>SUMMARY SCORE</b>				

**6. Profiling Hazards**

**Requirement §201.6(c)(2)(i):** *[The risk assessment shall include a] description of the ... location and extent of all natural hazards that can affect the jurisdiction. The plan shall include information on previous occurrences of hazard events and on the probability of future hazard events.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the risk assessment identify the <b>location</b> ( <i>i.e.</i> , geographic area affected) of each natural hazard addressed in the <b>new or updated</b> plan?	Section 3.0, pgs 3-1 – 3-41			
B. Does the risk assessment identify the <b>extent</b> ( <i>i.e.</i> , magnitude or severity) of each hazard addressed in the <b>new or updated</b> plan?	Section 3.0, pgs 3-1 – 3-41			
C. Does the plan provide information on <b>previous occurrences</b> of each hazard addressed in the <b>new or updated</b> plan?	Section 3.0, pgs 3-1 – 3-41			
D. Does the plan include the <b>probability of future events</b> ( <i>i.e.</i> , chance of occurrence) for each hazard addressed in the <b>new or updated</b> plan?	Section 3.0, pgs 3-1 – 3-41			
<b>SUMMARY SCORE</b>				

**7. Assessing Vulnerability: Overview**

**Requirement §201.6(c)(2)(ii):** *[The risk assessment shall include a] description of the jurisdiction's vulnerability to the hazards described in paragraph (c)(2)(i) of this section. This description shall include an overall summary of each hazard and its impact on the community.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S

A. Does the <b>new or updated</b> plan include an <b>overall summary</b> description of the jurisdiction's <b>vulnerability</b> to each hazard?	Section 3.0, pgs 3-1 – 3-41		
B. Does the <b>new or updated</b> plan address the <b>impact</b> of each hazard on the jurisdiction?	Section 3.0, pgs 3-1 – 3-41		
<b>SUMMARY SCORE</b>			

**8. Assessing Vulnerability: Addressing Repetitive Loss Properties**

**Requirement §201.6(c)(2)(ii):** *[The risk assessment] must also address NFIP insured structures that have been repetitively damaged floods.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the new or updated plan describe vulnerability in terms of the types and numbers of <i>repetitive loss properties</i> located in the identified hazard areas?	Section 3.1.1 pg 3-6 Section 4.2 pg 4-5	<b>Note: This requirement becomes effective for all local plans approved after October 1, 2008.</b>		
<b>SUMMARY SCORE</b>				

**9. Assessing Vulnerability: Identifying Structures**

**Requirement §201.6(c)(2)(ii)(A):** *The plan **should** describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard area ... .*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan describe vulnerability in terms of the <b>types and numbers</b> of <b>existing</b> buildings, infrastructure, and critical facilities located in the identified hazard areas?	Section 3.1.1, Pg 3-10	<i>Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.</i>		
B. Does the <b>new or updated</b> plan describe vulnerability in terms of the <b>types and numbers</b> of <b>future</b> buildings, infrastructure, and critical facilities located in the identified hazard areas?	Section 3.1.1, Pg 3-10	<i>Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.</i>		
SUMMARY SCORE				

**10. Assessing Vulnerability: Estimating Potential Losses**

**Requirement §201.6(c)(2)(ii)(B):** *[The plan **should** describe vulnerability in terms of an] estimate of the potential dollar losses to vulnerable structures identified in paragraph (c)(2)(ii)(A) of this section and a description of the methodology used to prepare the estimate ... .*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan estimate <b>potential dollar losses</b> to vulnerable structures?	Section 3.0, pgs 3-1 – 3-41	<i>Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.</i>		
B. Does the <b>new or updated</b> plan describe the <b>methodology</b> used to prepare the estimate?	Section 3.1, pg 3-1	<i>Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.</i>		
SUMMARY SCORE				

**11. Assessing Vulnerability: Analyzing Development Trends**

**Requirement §201.6(c)(2)(ii)(C):** [The plan **should** describe vulnerability in terms of] providing a general description of land uses and development trends within the community so that mitigation options can be considered in future land use decisions.

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan describe land uses and development trends?	Section 1.2, Page 1-4	<b>Note: A "Needs Improvement" score on this requirement will not preclude the plan from passing.</b>		
<b>SUMMARY SCORE</b>				

**12. Multi-Jurisdictional Risk Assessment**

**Requirement §201.6(c)(2)(iii):** For multi-jurisdictional plans, the risk assessment **must** assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan include a risk assessment for each participating jurisdiction as needed to reflect unique or varied risks?	Section 3.0, pgs 3-1 – 3-41			
<b>SUMMARY SCORE</b>				

MITIGATION STRATEGY: §201.6(c)(3): The plan shall include a mitigation strategy that provides the jurisdiction's blueprint for reducing the potential losses identified in the risk assessment, based on existing authorities, policies, programs and resources, and its ability to expand on and improve these existing tools.

**13. Local Hazard Mitigation Goals**

**Requirement §201.6(c)(3)(i):** [The hazard mitigation strategy **shall** include a] description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A Does the <b>new or updated</b> plan include a description of mitigation <b>goals</b> to reduce or avoid long-term vulnerabilities to the identified hazards?	Section 4.1 Pg 4-2 – 4-5			
<b>SUMMARY SCORE</b>				

**14. Identification and Analysis of Mitigation Actions**

**Requirement §201.6(c)(3)(ii):** *[The mitigation strategy shall include a] section that identifies and analyzes a comprehensive range of specific mitigation actions and projects being considered to reduce the effects of each hazard, with particular emphasis on new and existing buildings and infrastructure.*

Element	Location in the Plan (section or annex and page #)	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan identify and analyze a <b>comprehensive range</b> of specific mitigation actions and projects for each hazard?	Section 4.2 Pg 4-5 – 4-6			
B. Do the identified actions and projects address reducing the effects of hazards on <b>new</b> buildings and infrastructure?	Section 4.2 Pg 4-5 – 4-6			
C. Do the identified actions and projects address reducing the effects of hazards on <b>existing</b> buildings and infrastructure?	Section 4.2 Pg 4-5 – 4-6			
<b>SUMMARY SCORE</b>				

**15. Identification and Analysis of Mitigation Actions: NFIP Compliance**

**Requirement: §201.6(c)(3)(ii):** [The mitigation strategy] must also address the jurisdiction’s participation in the NFIP, and continued compliance with NFIP requirements, as appropriate.

Element	Location in the Plan	Reviewer’s Comments	SCORE	
			N	S
<b>A. Does the new or updated plan describe the jurisdiction (s) participation in the NFIP?</b>	Section 2.4, Pg 2-3 – 2.4 & Section 3.1.1 pg. 3-6	<b>Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.</b>		
<b>B. Does the mitigation strategy identify, analyze and prioritize actions related to continued compliance with the NFIP?</b>	Section 2.4, Pg 2-3 – 2.4 & Section 4.2 Pg 4-5 – 4-6	<b>Note: This requirement becomes effective for all local mitigation plans approved after October 1, 2008.</b>		
<b>SUMMARY SCORE</b>				

**16. Implementation of Mitigation Actions**

**Requirement: §201.6(c)(3)(iii):** *[The mitigation strategy section shall include] an action plan describing how the actions identified in section (c)(3)(ii) will be prioritized, implemented, and administered by the local jurisdiction. Prioritization shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> mitigation strategy include how the actions are <b>prioritized</b> ? (For example, is there a discussion of the process and criteria used?)	Section 4.4, Pg 4-6 – 4-8			
B. Does the <b>new or updated</b> mitigation strategy address how the actions will be implemented and administered, including the responsible department, existing and potential resources and the timeframe to complete each action?	Section 4.4, Pg 4-6 – 4-8			
C. Does the <b>new or updated</b> prioritization process include an emphasis on the use of a <b>cost-benefit review</b> to maximize benefits?	Section 4.4, Pg 4-6 – 4-8			
D. Does the <b>updated</b> plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged ( <i>i.e.</i> , deferred), does the updated plan describe why no changes occurred?	Section 4.1 Pg 4-2 - 4-5			
<b>SUMMARY SCORE</b>				

**17. Multi-Jurisdictional Mitigation Actions**

**Requirement §201.6(c)(3)(iv):** For multi-jurisdictional plans, there **must** be identifiable action items specific to the jurisdiction requesting FEMA approval or credit of the plan.

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan include identifiable <b>action items</b> for each jurisdiction requesting FEMA approval of the plan?	Section 4.1 Pg 4-2 - 4-5			
B. Does the <b>updated</b> plan identify the completed, deleted or deferred mitigation actions as a benchmark for progress, and if activities are unchanged ( <i>i.e.</i> , deferred), does the updated plan describe why no changes occurred?	Section 4.1 Pg 4-2 - 4-5			
<b>SUMMARY SCORE</b>				

PLAN MAINTENANCE PROCESS

**18. Monitoring, Evaluating, and Updating the Plan**

**Requirement §201.6(c)(4)(i):** [The plan maintenance process **shall** include a] section describing the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle.

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan describe the method and schedule for <b>monitoring</b> the plan, including the responsible department?	Section 5.1, Pg 5-1			
B. Does the <b>new or updated</b> plan describe the method and schedule for <b>evaluating</b> the plan, including how, when and by whom ( <i>i.e.</i> the responsible department)?	Section 5.1, Pg 5-1			
C. Does the <b>new or updated</b> plan describe the method and schedule for <b>updating</b> the plan within the five-year cycle?	Section 5.1, Pg 5-1			
<b>SUMMARY SCORE</b>				

**19. Incorporation into Existing Planning Mechanisms**

**Requirement §201.6(c)(4)(ii):** *[The plan shall include a] process by which local governments incorporate the requirements of the mitigation plan into other planning mechanisms such as comprehensive or capital improvement plans, when appropriate.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan identify other local planning mechanisms available for incorporating the mitigation requirements of the mitigation plan?	Section 5.2, Page 5-1			
B. Does the <b>new or updated</b> plan include a process by which the local government will incorporate the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?	Section 5.2, Page 5-1			
C. Does the <b>updated</b> plan explain how the local government incorporated the mitigation strategy and other information contained in the plan (e.g., risk assessment) into other planning mechanisms, when appropriate?	Section 5.2, Page 5-1			
<b>SUMMARY SCORE</b>				

**Continued Public Involvement**

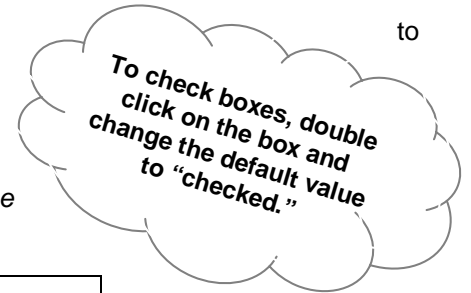
**Requirement §201.6(c)(4)(iii):** *[The plan maintenance process shall include a] discussion on how the community will continue public participation in the plan maintenance process.*

Element	Location in the Plan	Reviewer's Comments	SCORE	
			N	S
A. Does the <b>new or updated</b> plan explain how <b>continued public participation</b> will be obtained? (For example, will there be public notices, an on-going mitigation plan committee, or annual review meetings with stakeholders?)	Section 5.4, Page 5-2			
<b>SUMMARY SCORE</b>				

**MATRIX A: PROFILING HAZARDS**

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful ensure that their plan addresses each natural hazard that can affect the jurisdiction. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each applicable hazard. An “N” for any element of any identified hazard will result in a “Needs Improvement” score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*



to

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Location		B. Extent		C. Previous Occurrences		D. Probability of Future Events	
	Yes	N	S	N	S	N	S	N	S
Avalanche	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expansive Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hailstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hurricane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landslide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Severe Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tornado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volcano	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Windstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

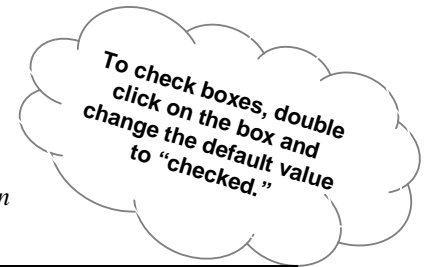
§201.6(c)(2)(i) Profiling Hazards

- A. Does the risk assessment identify the location (*i.e.*, geographic area affected) of each hazard addressed in the **new or updated** plan?
- B. Does the risk assessment identify the extent (*i.e.*, magnitude or severity) of each hazard addressed in the **new or updated** plan?
- C. Does the plan provide information on previous occurrences of each natural hazard addressed in the **new or updated** plan?
- D. Does the plan include the probability of future events (*i.e.*, chance of occurrence) for each hazard addressed in the plan?

**MATRIX B: ASSESSING VULNERABILITY**

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure that the new or updated plan addresses each requirement. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each applicable hazard. An “N” for any element of any identified hazard will result in a “Needs Improvement” score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk. Note: Receiving an N in the shaded columns will not preclude the plan from passing.*



Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	§201.6(c)(2)(ii) Assessing Vulnerability: Overview	A. Overall Summary Description of Vulnerability		B. Hazard Impact		§201.6(c)(2)(ii) Assessing Vulnerability: Identifying Structures	A. Types and Number of Existing Structures in Hazard Area (Estimate)		B. Types and Number of Future Structures in Hazard Area (Estimate)		§201.6(c)(2)(ii) Assessing Vulnerability: Estimating Potential Losses	A. Loss Estimate		B. Methodology			
	Yes		N	S	N	S		N	S	N	S		N	S	N	S	N	S
	Avalanche		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Coastal Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Dam Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Earthquake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Expansive Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Levee Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Flood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hailstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Hurricane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Land Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Landslide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Severe Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tornado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Tsunami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Volcano	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Windstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Legend:**

**§201.6(c)(2)(ii) Assessing Vulnerability: Overview**

- A. Does the **new or updated** plan include an overall summary description of the jurisdiction’s vulnerability to each hazard?
- B. Does the **new or updated** plan address the impact of each hazard on the jurisdiction?

**§201.6(c)(2)(ii)(A) Assessing Vulnerability: Identifying Structures**

- A. Does the **new or updated** plan describe vulnerability in terms of the types and numbers of existing buildings, infrastructure, and critical facilities located in the identified hazard areas?

- B. Does the **new or updated** plan describe vulnerability in terms of the types and numbers of future buildings, infrastructure, and critical facilities located in the identified hazard areas?

**§201.6(c)(2)(ii)(B) Assessing Vulnerability: Estimating Potential Losses**

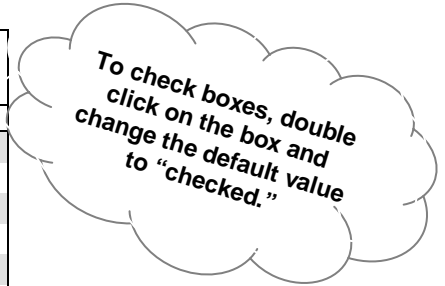
- A. Does the **new or updated** plan estimate potential dollar losses to vulnerable structures?
- B. Does the **new or updated** plan describe the methodology used to prepare the estimate?

**MATRIX C: IDENTIFICATION AND ANALYSIS OF MITIGATION ACTIONS**

This matrix can assist FEMA and the State in scoring each hazard. Local jurisdictions may find the matrix useful to ensure consideration of a range of actions for each hazard. **Completing the matrix is not required.**

*Note: First, check which hazards are identified in requirement §201.6(c)(2)(i). Then, place a checkmark in either the N or S box for each **applicable** hazard. An “N” for any identified hazard will result in a “Needs Improvement” score for this requirement. List the hazard and its related shortcoming in the comments section of the Plan Review Crosswalk.*

Hazard Type	Hazards Identified Per Requirement §201.6(c)(2)(i)	A. Comprehensive Range of Actions and Projects	
	Yes	N	S
Avalanche	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Erosion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Coastal Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Dam Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Drought	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Earthquake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Expansive Soils	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Levee Failure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Flood	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hailstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Hurricane	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Land Subsidence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Landslide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Severe Winter Storm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tornado	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Tsunami	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Volcano	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Wildfire	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Windstorm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**Legend:**

§201.6(c)(3)(ii) Identification and Analysis of Mitigation Actions  
 A. Does the **new or updated** plan identify and analyze a comprehensive range of specific mitigation actions and projects for each hazard? **Appendices**

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