# Richland County

## Multi-Hazard Mitigation Plan

## 2022

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# Executive Summary

Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Mitigation actions may be implemented before, during or after an event; however, they are most successful when based on a long-term plan developed before a disaster occurs.

The hazard mitigation planning process involves two main elements:

- Hazard profiles that include an assessment of community risks and vulnerabilities.
- A mitigation strategy that identifies actions to reduce or eliminate the impact of hazards on the community.

A list of priority hazards was developed through historic data analysis and public input. Key issues for each priority hazard are listed below.

## Flood Key Issues

Lone Tree Creek through Sidney contains vegetation and debris that impedes the creek's drainage capacity. Many properties throughout the county are located within the regulatory floodplain.

Heavy rain events occasionally overburden storm sewers in parts of Sidney and cause localized flash flooding. An increase of more severe events has been noted.

While rare, ice jams along the Yellowstone River have the potential to flood low-lying surrounding areas.

## Hazardous Materials Release Key Issues

The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent years. Several major highways and railroads are located near populated areas. There are also numerous fixed facilities that contain hazardous materials.

The fire departments receive Tier II reports, but their text-based report format makes them impractical for regular reference.

The closest state hazardous materials response team is in Billings, which is approximately 270 miles from Sidney and 280 miles from Fairview. Private contractors in Sidney can provide simple clean-up services.

## Severe Summer Storm Key Issues

Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.

Due to the energy-related growth, many new residents now reside in the area who may not be familiar with the hazards in the area.

## Severe Winter Storm Key Issues

Residents and travelers do not always follow travel restrictions, which presents a hazard to themselves and first responders.

A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. Many facilities throughout the county (churches, schools, civic buildings) are available to serve as winter shelters. Several local businesses have large portable generators that would be available for the county to use in the event of a major power outage.

### Drought Key Issues

Agriculture is a key component of the county's economy. A significant drought has the potential to greatly affect the industry and the county as a whole.

A significant and prolonged drought could affect municipal water supplies. There has been an increase in drought events in the past few years.

### Wildfire Key Issues

Wildfires are common in the county. Although local fire departments have excellent response capabilities, the potential remains for a large-scale wildfire in times of drought or windy conditions.

### Communicable Disease Key Issues

Human and agricultural disease have the potential to greatly impact the health and economy of the county as evidence by COVID-19.

### Landslide Key Issues

The northwest corner of the county is defined as a high susceptibility-high incidence landslide hazard area, and the eastern half of the county is defined as a moderate susceptibility area.

### Dam Failure Key Issues

Gartside Dam, located near Crane, is designated as a high hazard dam. Additionally, portions of Richland County, including half of Fairview, could be in the inundation area in the event of a failure of Fort Peck Dam in Richland County.

### Terrorism and Violence Key Issues

The multiple energy storage and distribution facilities located throughout the county may be a potential target for terrorism, although a specific threat has not been identified. Terrorism and violence are an ongoing concern, but it is very unlikely an event will occur in the county.

# Chapter 1: Introduction

## Hazard Mitigation Planning

Natural and human-caused hazards have a direct impact on residents and property in Richland County. While it is impossible to eliminate most hazards, it is possible to mitigate their negative effects. Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from hazards. Mitigation actions may be implemented before, during or after an event; however, they are most successful when based on a long-term plan developed before a disaster occurs. Successful mitigation actions must be practical, cost-effective, politically acceptable and supported by a sound planning process.

The plan is organized into five chapters:

**Chapter 1: Introduction**

General plan overview

**Chapter 2: Study Area Background**

Background information about each participating jurisdiction and identification of key facilities

**Chapter 3: Hazard Risks and Vulnerabilities**

Hazard profiles, assessment of risks and vulnerabilities, identification of key issues and potential action items

**Chapter 4: Mitigation Strategy**

Identification of goals and action items to mitigate risks of hazards in the community

**Chapter 5: Plan Maintenance**

Procedures for monitoring, evaluating and updating the plan

## Purpose

The purpose of the plan is to promote sound public policy designed to protect citizens, critical facilities, infrastructure, private property and the environment from natural and human-caused hazards. The Federal Emergency Management Agency (FEMA) identifies the primary benefits of hazard mitigation planning as:

- Identifying actions for risk reduction that are agreed upon by stakeholders and the public.
- Focusing resources on the greatest risks and vulnerabilities.
- Building partnerships by involving citizens, organizations and businesses.
- Increasing education and awareness of threats and hazards, as well as their risks.
- Communication priorities to state and federal officials.
- Aligning risk reduction with other community objectives.

The plan includes a risk and vulnerability assessment that residents, organizations, local governments and other interested participants can utilize when planning for hazards. The plan also includes an evaluation of mitigation projects that will assist each adopting jurisdiction in reducing risk and preventing loss from future hazard events.

Additionally, all participating jurisdictions are eligible to apply for funds through FEMA's Hazard Mitigation Grant Program (HMGP), Building Resilient Infrastructure and Communities (BRIC) program and Flood Mitigation Assistance (FMA) program to finance the implementation of mitigation projects.

## Authority

The Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 93-288), as amended by the Disaster Mitigation Act of 2000, provides legal basis for state, local and Tribal governments to reduce risks from natural hazards through mitigation planning. All state, local and Tribal governments are required to have an approved Multi-Hazard Mitigation Plan to receive funding for certain types of non-emergency disaster assistance, including mitigation projects.

This plan is an update of Richland County's 2014 Hazard Mitigation Plan. Hazard mitigation plans are required by FEMA to be updated every five years to maintain the jurisdiction's eligibility for grant funding.

Jurisdictions that participated in the planning process and are adopting the plan by the official method of approval based on legal authority are listed in Table 1. To be eligible for future funds through the Building Resilient Infrastructure and Communities (BRIC) program, the Hazard Mitigation Grant Program (HMGP) and Flood Mitigation Assistance (FMA) programs, jurisdictions must either adopt the plan and participate in the planning process or be sponsored by a jurisdiction that has done so. The only incorporated communities within Richland County are Sidney and Fairview. Adoption documentation can be found in Appendix B: Plan Adoption.

*Table 1 Adopting Jurisdictions*

| Jurisdiction | Adoption Date |
|---|---|
| Richland County | |
| City of Sidney | |
| Town of Fairview | |

## Acknowledgments

Numerous elected officials, city/town and county staff and members of the public participated in the planning process. The project would not have been possible without the assistance of Planning Team members and members of the public who participated in public meetings.

The project was primarily funded with a grant awarded through FEMA, administered by the Montana Department of Military Affairs – Disaster and Emergency Services Division (DES). Guidance from state and FEMA staff was instrumental in completing the project.

## The Planning Process

FEMA identifies four essential steps to the hazard mitigation planning process:

- **Resource organization**: Involving interested community members, and reaching out to critical stakeholders and those with technical expertise required during the planning process.
- **Risk assessment**: Identifying hazard characteristics and potential consequences, including effects on key facilities.
- **Development of mitigation strategies**: Determining priorities and ways to minimize effects of identified hazards.
- **Plan implementation and progress monitoring**: Implementing the plan brings it to life and periodic monitoring ensures the plan remains relevant as conditions change.

The success of the plan and implementation of action items is dependent on public participation during all four steps of the planning process. Public involvement for the plan included planning

team meetings, public meetings, and a community survey. Local planning documents were also reviewed and incorporated into the document when necessary. Detailed information about the planning process can be found in Appendix A: Plan Process and Development.

## Planning Teams and Jurisdiction Participation

### The Steering Committee

Hazard mitigation planning enhances collaboration and support among diverse parties whose interests can be affected by hazard losses. In 2021, a steering committee was formed to oversee all phases of the plan.

The Steering Committee, with representatives from each participating jurisdiction, provided extensive contributions to the information included in this plan. The planning process was based on Section 322 requirements of the Disaster Mitigation Act of 2000 (DMA 2000) and supporting guidance documents developed by FEMA.

*Table 2 Steering Committee Membership*

| Name | Title | Committee Position | Agency/Organization |
|---|---|---|---|
| Brandon Roth | DES Coordinator | Planning Team Member | Richland County Disaster and Emergency Services |
| James DeHerrera | Safety Specialist | Stakeholder | Sidney Sugars Inc / ACSC |
| Tom Halvorson | Civil Attorney | Jurisdiction Representative | Richland County |
| Mark Kraft | Chief of Police | Jurisdiction Representative | Sidney Police Department |
| Gabe Zeiler | Lieutenant | Jurisdiction Representative | Sidney Police Department |
| Molly Davidson | Engineer | Stakeholder | Morrison-Maierle, Inc |
| Julie Brodhead | Communicable Disease RN & Public Health Emergency Preparedness | Stakeholder | Richland County Health Department |
| Heather Luinstra | Registered Sanitarian | Stakeholder | Richland County Environmental Health |
| Heidi Stortroen | LPN | Stakeholder | Sidney Sugars Occupational Health |
| Jessica Gilbert | RSVP Program Director | Stakeholder | Richland County Health Department |
| Stephanie Reynolds | Communities in Action AmeriCorps Director | Stakeholder | Richland County Health Department |
| Jodi Berry | RCCOA Director | Stakeholder | Commission on Aging |
| Jeff Hintz | Director of Public Works | Jurisdiction Representative | City of Sidney |
| John Dynneson | Sheriff | Jurisdiction Representative | Richland County Sheriff's Office |
| Adam Smith | Public Works Director/Fire Warden | Jurisdiction Representative | Richland County Public Works / Sidney |

| | | | |
|---|---|---|---|
| | | | Volunteer Fire Department |
| Kale Rasmussen | Fire Marshall | Jurisdiction Representative | Sidney Volunteer Fire Department |
| Gail Staffanson | Superintendent of Schools | Stakeholder | Richland County Schools |
| Travis Rosaaen | Captain | Stakeholder | Sidney Police Department |
| Ray Trumpower | Judge | Jurisdiction Representative | Fairview |
| Tim Fine | Extension Agent | Stakeholder | Richland County |
| Patrick Gilchrist | Warning coordination meteorologist | Stakeholder | NWS Glasgow |
| Ryan Bernhart | Meteorologist | Stakeholder | NWS Glasgow |
| Mike Smith | DES Coordinator | Stakeholder | Williams County, ND |

Representatives not only attended the meetings, but also participated by gathering appropriate data and historical information, identified new mitigation strategies, updated past mitigation strategies, and participated in other efforts.

## Coordination with Agencies, Partners, and Stakeholders

The following agencies and partners were instrumental in the update process:

- Federal Emergency Management Agency (How-to Guides)
- National Weather Service (hazard profile)
- National Climate Data Center (hazard profile)
- Montana Disaster and Emergency Services (GIS data, flood data)
- Assessor (property data)
- Sidney Police Department (validate hazards and mitigation strategies)
- Richland County Public Works (validate hazards and mitigation strategies)
- Richland County Department of Health (validate hazards and mitigation strategies)
- Richland County Departments (Emergency Operations Plans, histories, mitigation actions, public input, GIS, transportation, property and infrastructure)

Neighboring counties (Williams County, Dawson County, McCone County, and Wibaux County) were granted access to the Plan for review and feedback. Additionally, hazard mitigation plans for the adjacent counties were reviewed to determine region-wide risks and mitigation opportunities. Notably, although each county plan serves as a standalone mitigation plan, the contract to update the mitigation plan covered all four counties (Dawson County, Richland County, McCone County, and Wibaux County), so synergies and regional considerations were prominent in the plan development process.

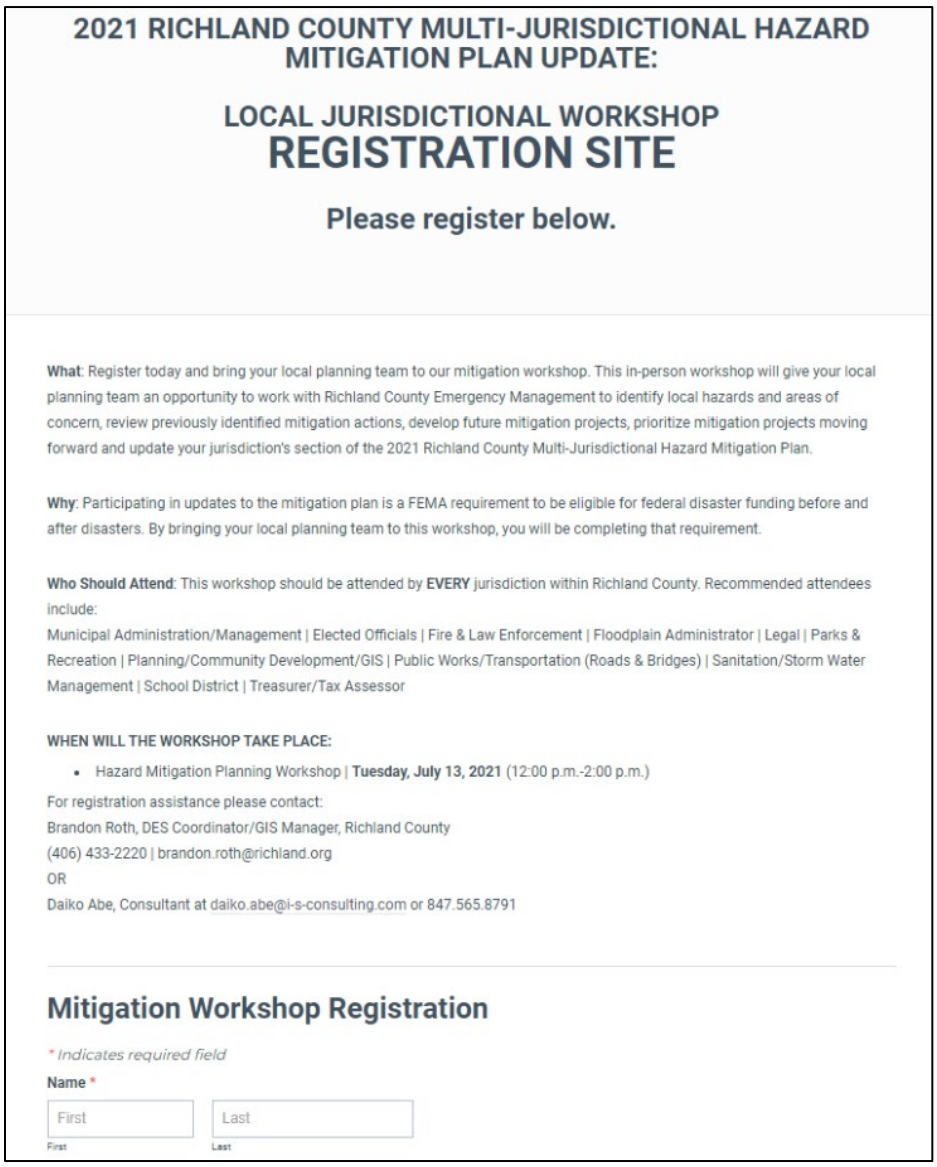
## Local Jurisdiction Plan Participation

### Local Outreach Meetings

The Core Planning Team worked with individual jurisdictions and planning partners in order to provide one-on-one guidance and support. Local outreach meetings occurred with participating jurisdiction.

**Mitigation Workshop**

A workshop was held on July 13, 2021 to identify hazards and update and consider new mitigation strategies.



2021 RICHLAND COUNTY MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN UPDATE:

LOCAL JURISDICTIONAL WORKSHOP
REGISTRATION SITE

Please register below.

**What**: Register today and bring your local planning team to our mitigation workshop. This in-person workshop will give your local planning team an opportunity to work with Richland County Emergency Management to identify local hazards and areas of concern, review previously identified mitigation actions, develop future mitigation projects, prioritize mitigation projects moving forward and update your jurisdiction's section of the 2021 Richland County Multi-Jurisdictional Hazard Mitigation Plan.

**Why**: Participating in updates to the mitigation plan is a FEMA requirement to be eligible for federal disaster funding before and after disasters. By bringing your local planning team to this workshop, you will be completing that requirement.

**Who Should Attend**: This workshop should be attended by **EVERY** jurisdiction within Richland County. Recommended attendees include:
Municipal Administration/Management | Elected Officials | Fire & Law Enforcement | Floodplain Administrator | Legal | Parks & Recreation | Planning/Community Development/GIS | Public Works/Transportation (Roads & Bridges) | Sanitation/Storm Water Management | School District | Treasurer/Tax Assessor

**WHEN WILL THE WORKSHOP TAKE PLACE:**

- Hazard Mitigation Planning Workshop | **Tuesday, July 13, 2021** (12:00 p.m.-2:00 p.m.)

For registration assistance please contact:
Brandon Roth, DES Coordinator/GIS Manager, Richland County
(406) 433-2220 | brandon.roth@richland.org
OR
Daiko Abe, Consultant at daiko.abe@i-s-consulting.com or 847.565.8791

Mitigation Workshop Registration

* Indicates required field

Name *

First Last

SAVE THE DATE

**Richland County, MT**
**2021 Hazard Mitigation Plan (HMP) Update**
***Local Jurisdiction Workshop***

**Tuesday, July 13, 2021**
12:00 PM - 2:00 PM

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Bring your local planning team to our mitigation workshop. This in-person workshop will give your local planning team an opportunity to work with the Hazard Mitigation Planning team to identify local hazards and areas of concern, review previously identified mitigation actions, develop future mitigation projects, prioritize mitigation projects moving forward and update your jurisdiction's section of the 2021 Richland County Mitigation Plan.

**Why**: Participating in updates to the mitigation plan is a FEMA Requirement to be eligible for some federal disaster funding before and after disasters. By bringing your local planning team to this workshop, you will be completing that requirement.

**Who**: This workshop is for every jurisdiction within Richland County. Recommended attendees include:

- Building Code Enforcement
- Administration/Management
- Elected Officials
- Fire & Law Enforcement
- Floodplain Administrator
- Legal
- Parks & Recreation
- Planning/Community Development/GIS
- Public Works/Transportation (Roads & Bridges)
- Sanitation/Storm Water Management/Utility Districts
- School Districts & Universities
- Treasurer/Tax Assessor

Registration information will be provided in the coming weeks.

**Sample Workshop Agenda:**
The purpose of this meeting is to engage and collect information from the individual jurisdictions of Richland County.

- Mitigation Overview
- Risk Summary/Risk Assessment Findings
- Jurisdiction Hazard Summary Activity and Breakout Session
- Review Ongoing Mitigation Actions/Projects
- Identify New Mitigation Actions

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MONTANA | Discover the Richness

## Richland County Hazard Mitigation Plan Update 2021

*Richland County, Montana*
*Tuesday, July 13, 2021 | 12:00 PM - 2:00 PM*
*Sidney Fire Hall - 1105 3rd Street NW Sidney, MT 59270*

# Workshop Agenda

Introductions

Mitigation Overview

Risk Summary/Risk Assessment

Jurisdiction/Agency Hazard Summary Worksheet

Review Ongoing Mitigation Actions/Projects

Identify New Mitigation Actions

1

### New Mitigation Actions

Each participating jurisdiction was required to consider and submit at least one new mitigation action as part of the 2022 update.

*Table 3 Plan Participation*

| Jurisdiction | Attended at least one meeting | Represented at Mitigation Workshop | Met with Core Planning Team | Submitted at least One New Mitigation Action | Reviewed Past Mitigation Actions |
|---|---|---|---|---|---|
| Richland County | Yes | Yes | Yes | Yes | Yes |
| City of Sidney | Yes | Yes | Yes | Yes | Yes |
| Town of Fairview | Yes | Yes | Yes | Yes | Yes |

## Public Involvement

Broad public participation in the planning process helps ensure that diverse points of view about the planning area's needs are considered and addressed. The public must have opportunities to comment on disaster mitigation plans during the drafting stages and prior to plan approval (44 CFR, Section 201.6(b)(1)). The following section details the public outreach strategy, including a combination of in-person and virtual methods.

### Richland Count County Hazard Mitigation Questionnaire

In accordance with best practices as outlined in CPG 101 and the Local Hazard Mitigation Guide, this public-private effort engaged the whole community as part of its public outreach strategy, reaching citizens and key stakeholders across all jurisdictions via a combination of in-person and virtual methods. Elements of virtual public outreach included the 2021 Richland County Preparedness Survey (http://richland.prepare2021.alchemer.com/s3/), and social media engagement through mediums like Facebook.

The 2021 survey included 35 questions and concluded with mitigation and preparedness resources for the public. The survey was shared electronically with the option of a hard copy survey upon request. 140 total residents participated. On average, residents spent 12 minutes to complete the questionnaire. The survey and related public outreach invitations were shared through multiple sources including:

- Facebook
- Local Radio
- Individual jurisdiction social media and e-mail lists
- Press release

## Richland County Hazard Mitigation Public Review

After the draft plan was completed, a link to the plan was placed on the Richland County website. The draft plan remained on the website until the FEMA-approved and formally adopted Plan was made available. Upon formal adoption of the Plan, the public engagement strategy shifted toward continual engagement of the public by soliciting and offering the public an opportunity and forum

to provide input regarding known hazards and risks, and implementation of identified mitigation strategies.

Throughout the plan development process, public and stakeholder input was incorporated into the Plan.


### How Public Input was Incorporated into the Plan

When asked to what degree of emphasis the public would expect their jurisdiction to mitigate hazards, these hazards received the highest percentages of “high priority” in the survey:

- Extreme Cold Incident (53.8%)
- Severe Winter Storm/Heavy Snowfall/Ice Storm (51.1%)
- Severe or Prolonged Drought (47.8%)
- Power Failure (44.6%)

Open-ended responses by the public offered greater insight to the damages experienced while residing in Richland County.

These, and related findings, helped the planning team determine meaningful mitigation projects. For example, some communities recognized the importance of creating greater resiliency and redundancy to mitigate power failure. Many participants indicated a lack of financial savings as a reason they may struggle to recover from a disaster. Public input also validated the County’s plans to utilize social media and local radio as a mechanism to inform and educate the public.

## Existing Plans and Studies

The following plans, studies and reports were used to inform this plan. A brief description of how the documents were used is provided.

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2014 Richland County Hazard Mitigation Plan

- Risk Assessment and Hazards
- Past Mitigation Projects

International Building Code, 2009

Richland County Growth Policy, 2015

- Geographic and Historic Overview
- Growth Policy Updates
- Natural and Cultural Resources
- Current Land Use and Future Land Use
- Wildland-Urban Interface
- Integration of the 2014 Richland County Multi-Hazard Mitigation Plan into the 2015 Growth Policy

Town of Fairview Growth Policy, 2015

- Geographic and Historic Overview
- Growth Policy Updates
- Natural and Cultural Resources

City of Sidney Growth Policy, 2015

- Geographic and Historic Overview
- Growth Policy Updates
- Natural and Cultural Resources

2018 State of Montana Multi-Hazard Mitigation Plan

- Risk Assessment and Hazards

# Chapter 2: Study Area Background

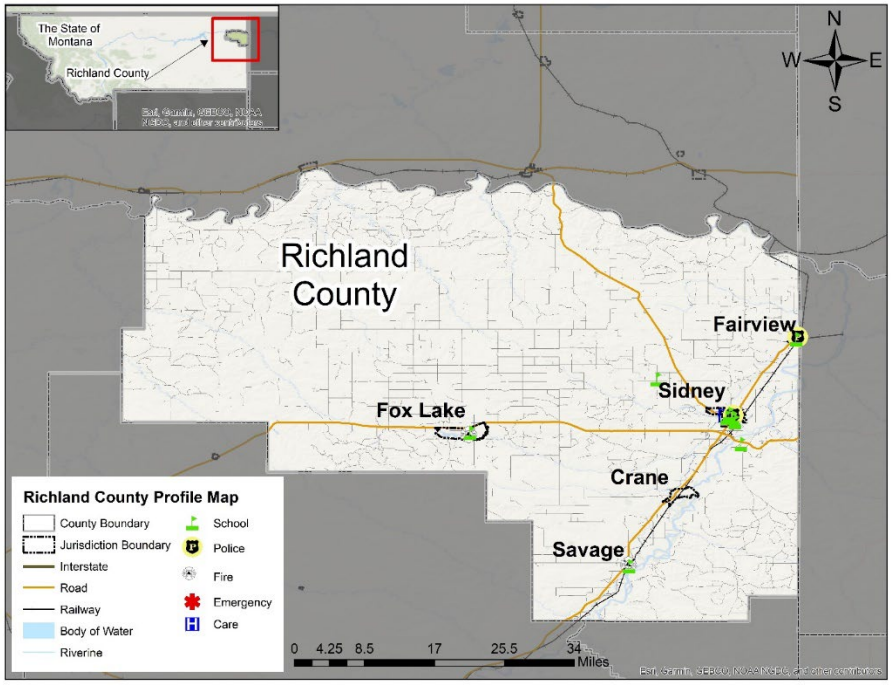
## Jurisdictional Information

Richland County was formed in 1914, when it was split from Dawson County. The county seat is Sidney, which incorporated in 1911. The town of Fairview is the county's other incorporated community. It has the unique distinction of being located on the Montana/North Dakota border, with most of the town being on the Montana side.

A general map of the county, including major features and neighboring jurisdictions, is shown in Figure 1. Highways are the major transportation corridors, and the Yellowstone Valley Railroad travels through Sidney and Fairview.

Unincorporated communities in the county are included as reference points. The two largest unincorporated communities are Savage and Lambert, with populations of approximately 300 and 150 respectively.

*Figure 1 County Profile*




## Population and Demographics

General demographic information for Richland County, incorporated communities and Montana is shown in Table 4. The county has a population density that is significantly lower than the state and has a lower proportion of residents aged 65 and older. Nearly all county residents classify themselves as White not Hispanic, were born in the United States, and speak English as a primary language. The county's median household income is significantly above the statewide median and the poverty rate is lower.

Approximately half of the county's residents live in Sidney, and the city shares a similar demographic profile as the county. Fairview is much smaller than Sidney and its demographic profile is somewhat unique in the county; it has lower median income and higher poverty levels than the county, and a slightly lower percentage of residents who are high school graduates.

*Table 4 Population Demographics*

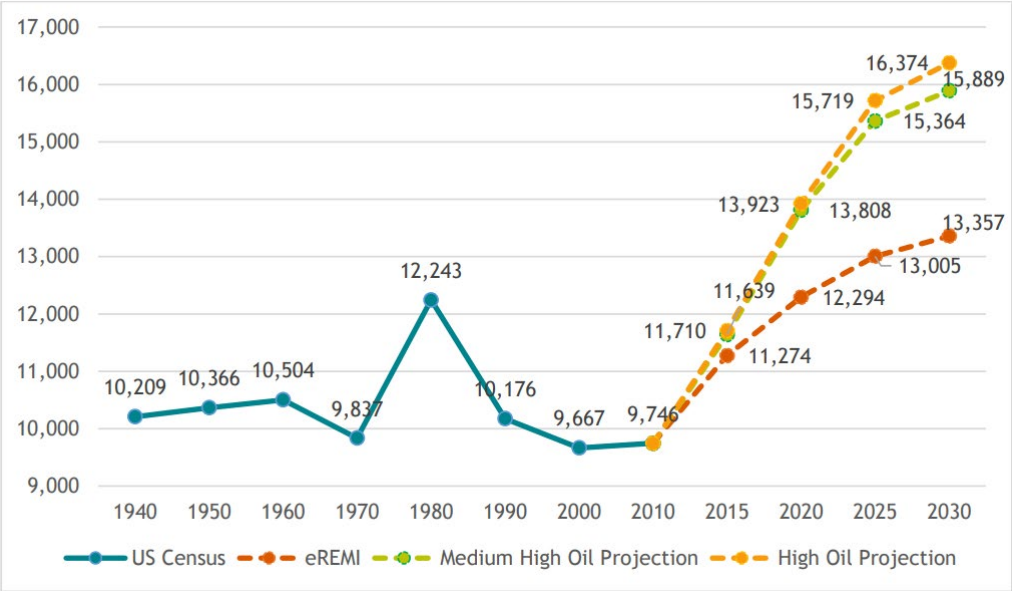
| | Richland County | City of Sidney | Town of Fairview | Montana |
|---|---|---|---|---|
| Population | 11,199 | 6,416 | 919 | 1,084,225 |
| Persons under 5 years | 6.1% | 6.5% | 7.3% | 5.5% |
| Persons under 18 years | 25.3% | 26.5% | 26.6% | 22.2% |

| | | | | |
|---|---|---|---|---|
| Persons 65 years and over | 14.7% | 13.6% | 18.0% | 19.5% |
| | | | | |
| White not Hispanic | 88.8% | 85.1% | 93.8% | 88.0% |
| Hispanic or Latino | 5.4% | 7.3% | 4.6% | 3.8% |
| Black or African American | 0.0% | 0.0% | 0.0% | 0.7% |
| American Indian and Alaska Native | 2.0% | 2.7% | 0.0% | 6.3% |
| Asian | 0.0% | 0.0% | 0.0% | 0.8% |
| Native Hawaiian/Pacific Islander | 0.2% | 0.3% | 0.0% | 0.0% |
| Two or more races | 3.4% | 4.6% | 3.5% | 3.4% |
| | | | | |
| Foreign born | 2.1% | 2.9% | 1.2% | 2.3% |
| Language other than English spoken at home | 5.3% | 6.4% | 2.5% | 4.0% |
| Median household income | $67,205 | $59,125 | $73,750 | $57,153 |
| Persons below poverty level | 5.8% | 5.4% | 3.9% | 12.6% |
| **Source**: US Census Bureau; 2019 total population, age and race/ethnicity estimates (county and state); 2019 total population, age and race/ethnicity estimates (town); 2019 American Community Survey origin, language, education and income estimates<br>Tables: DP02, S1501, S1901. S1701, S0101, DP05, S1901 | | | | |

Population peaked in Richland County during the oil boom of the late 1970s/early 1980s. The new population growth is expected to increase.

The majority of growth has been targeted in north Sidney with approximately 85 percent of acres and 55 percent of lots being developed north of Holly Street/MT-16. However, additional developments have occurred in south Sidney.

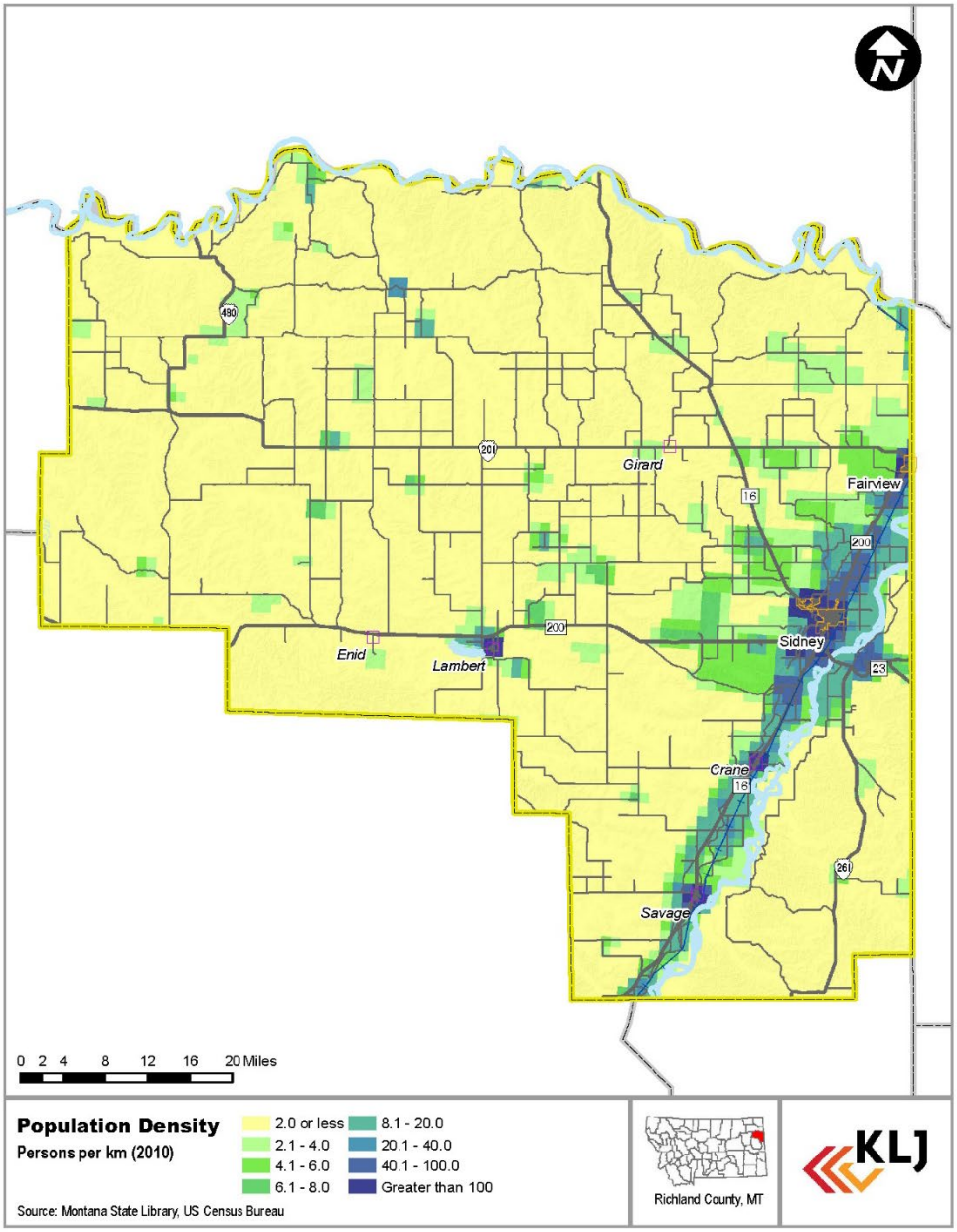
*Figure 2 Richland County Historical and Projected Population*




**Source**: US Census, MT Dept of Commerce, Growth Policy 2015

Population density is shown in Figure 3. A majority of the county's population is located along the Yellowstone River, including the incorporated communities of Sidney and Fairview. Much of the county is very low density, with two or less persons per square kilometer.

*Figure 3 Population Density*




## Climate and Weather

Richland County is in the West-Central Semi-Arid Prairies ecoregion as defined by Omernik. The ecoregion has a dry mid-latitude climate, marked by warm summers and cold winters. Aggregated weather statistics for Richland County are shown in Table 5. Weather extremes in the county are shown in Table 6.

*Table 5 Richland County Aggregated Weather Statistics*

| | Temperature (°F) | | Precipitation (In.) |
|---|---|---|---|
| | Avg Daily Max | Avg Daily Min | Avg Monthly |
| Jan | 27 | 7 | 0.45 |
| Feb | 32 | 11 | 0.37 |
| Mar | 46 | 21 | 0.58 |
| Apr | 61 | 32 | 1.17 |
| May | 71 | 43 | 2.40 |
| Jun | 79 | 52 | 2.75 |
| Jul | 87 | 57 | 2.65 |
| Aug | 86 | 55 | 1.30 |
| Sep | 76 | 46 | 1.62 |
| Oct | 59 | 34 | 1.08 |
| Nov | 42 | 21 | 0.59 |
| Dec | 31 | 11 | 0.51 |
| Note: Aggregated Monthly Statistics 2021 | | | |
| **Source**: Sidney-Richland Municipal Airport Climate, Weather By Month, Average Temperature (Montana, United States) | | | |

*Table 6 Richland County Weather Extremes, 1910-2020*

| | | |
|---|---|---|
| Daily | | |
| Highest Max Temperature | 110 °F | 7/27/1917 |
| Lowest Max Temperature | -28 °F | 1/12/1996 |
| Highest Min Temperature | 78 °F | 7/25/2007 |
| Lowest Min Temperature | -47 °F | 1/11/1987 |
| Highest Daily Precipitation | 2.97" | 6/18/1973 |
| Highest Daily Snowfall | 13.0" | 3/26/2011 |
| Annual | | |
| Wettest Year | 24.89" | 2019 |
| Driest Year | 7.84" | 1988 |
| Hottest Average Annual Temperature | 48.6 °F | 1987 |
| Coldest Average Annual Temperature | 37.2 °F | 1950 |
| Greatest Annual Snowfall | 77.8" | 2010-2011 |
| Least Annual Snowfall | 5.2" | 1914-15 |
| **Source**: NWS Coop Weather Station, Sidney | | |

## Economy

The agriculture industry in the county is summarized in Table 7. Spring wheat is the most common crop in terms of acreage. Other crops are also very important to the county's agricultural identity; the county is one of the state's leading producers of sugar beets, safflower and barley. Cattle and calves make up almost the entirety of the county's livestock industry, and the county is one of the state's top cattle producers.

*Table 7 Richland County Agriculture Summary*

| Crop | Acres Harvested | Production |
|---|---|---|
| Spring wheat (excluding durum) | 10,165,000 | 331,140,000 bu |
| Hay, alfalfa | 15,246,000 | 49,245,000 |
| Hay (excluding alfalfa) | 35,490,000 | 70,951,000 tons |
| Winter wheat | 25,464,000 | 1,277,365,000 bu |
| Barley | 1,948,000 | 117,673,000 bu |
| Sugar beets | 1,107,600 | 36,751,000 tons |
| Corn, silage | 6,481,000 | 130,317,000 tons |
| Peas, dry edible | 834,000 | |
| Safflower | 135,000 | 135,175,000 lb |
| Corn, grain | 85,388,000 | 15,115,170,000 bu |
| Spring wheat, durum | 1,534,000 | 37,259,000 bu |
| **Source**: USDA National Agricultural Statistics Service 10/23/2020 | | |

The most fertile area in the county lies along the western banks of the Yellowstone River, and was created by the Lower Yellowstone Project. The project, initially completed in 1909, constructed a primary irrigation canal of 71.6 miles to bring diverted water from the Yellowstone River to nearby fields. 225 miles of lateral canals run along the western banks of the Yellowstone River and provide irrigation to 52,000 acres of farmland in the counties of Richland, Dawson and McKenzie (North Dakota).

The energy development industry has historically been a large element of the local economy, and its influence has grown in recent years. The top industries in the county are shown in Table 8. It is important to note this information is an estimate based on limited surveys and may not give an exact representation of employment levels for different industries. The information is most useful for making relative comparisons between industry sectors.

*Table 8 Richland County Non-Farm Industries by Employment, 2019*

| Industry Sector | Estimate Employees |
|---|---|
| Agriculture, forestry, fishing and hunting, and mining | 1,139 |
| Construction | 596 |
| Manufacturing | 265 |
| Wholesale trade | 172 |
| Retail trade | 593 |
| Transportation and warehousing, and utilities | 454 |
| Information | 33 |
| Finance and insurance, and real estate and rental and leasing | 250 |
| Professional, scientific, and management, and administrative and waste management services | 520 |
| Educational services, and health care and social assistance | 981 |
| Arts, entertainment, and recreation, and accommodation and food services | 540 |
| Other services, except public administration | 277 |
| Public administration | 213 |
| **Source**: Census ACS 2019 | |

## Property Values and Key Facilities

Assessed values for properties in Richland County are shown in Table 9. Residential properties are the highest valued structure category in the county. Rural farmsteads, which include houses and surrounding outbuildings, and commercial structures also have a significant value in the county. Structure values are used in subsequent sections to estimate potential vulnerabilities to applicable hazards. Land values are not included in most analyses because it is unlikely that most hazard events would significantly damage the land itself.

*Table 9 Richland County Assessed Values, 2021*

| | Richland County | | Sidney | | Fairview | |
|---|---|---|---|---|---|---|
| Land Use | Structure | Land | Structure | Land | Structure | Land |
| Residential & Other Property Types | $640,824,299 | $225,243,380 | $334,762,264 | $124,010,766 | $14,343,328 | $4,958,449 |
| Exempt* | $78,719,824 | $46,202,266 | $21,230,179 | $13,497,360 | $78,719,824 | $46,202,266 |
| Farmstead | $104,062,990 | $51,241,979 | $3,727,250 | $528,185 | $1,513,180 | $228,601 |
| Agricultural | $111,900 | $36,638 | $0 | $0 | $0 | $0 |
| Commercial | $59,066,844 | $6,763,629 | $26,509,032 | $2,833,203 | $46,571 | $46,571 |
| Vacant | $635,039 | $17,393,986 | $329,309 | $8,810,786 | $0 | $30,022 |
| Total | $883,420,896 | $346,881,878 | $386,558,034 | $149,680,300 | $94,622,903 | $51,465,909 |

**All Property Types**: Apartment Urban, Agricultural - Rural, Centrally Assessed, Centrally Assessed Non-Value Property, Commercial Urban , Exempt Property, Partial Exempt, Farmstead - Rural, Farmstead - Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Industrial - Rural , Industrial - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, RV Park, Vacant Land - Rural, Vacant Land - Urban, and Blanks

**Residential & Others includes**: Apartment Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, and Blanks

**Commercial**: Industrial - Rural, Industrial - Urban, Centrally Assessed, Centrally Assessed Non-Value Property, and Commercial Urban

**Source**: Montana 2021 Tax Assessor Reports

An important element to hazard mitigation planning is to determine key facilities that may need special consideration during the preparation of mitigation action items and the risk assessment. Key facilities fall into several categories:

- Facilities that are essential to the health and welfare of the entire population, and may become especially important following hazard events. Examples include hospitals, emergency operations centers, police and fire stations, and community shelters.
- Utility systems whose disruption would have a significant impact. Examples include lift stations, wells, water treatment facilities and electrical distribution “choke points.”
- Facilities containing a high density of population, especially those containing vulnerable populations. Examples include schools, retirement homes and large employers.
- Significant hazardous materials facilities, including facilities producing or housing hazardous materials on-site.

- Facilities that are a key element to the local economy, and could cause significant economic damage if their function was disrupted.
- Historic, cultural and natural resource areas that are important to the community.

Key facilities for Richland County are listed in Table 10. The planning team reviewed the key facilities list in the previous plan and made any necessary updates. These facilities are discussed in applicable sections throughout the document.

*Table 10 Key Facilities in Richland County*

| Facility | Location | Reason for Inclusion |
|---|---|---|
| Airport | Sidney | Economic Asset |
| Anheuser Busch | Sidney | Economic Asset |
| Town Hall | Fairview | Essential Facility |
| City Hall | Sidney | Essential Facility |
| Fire Station (New since 2018) | Sidney | Essential Facility |
| City Shop | Sidney | Essential Facility |
| County Courthouse | Sidney | Essential Facility |
| County Shop/Public Works | Sidney | Essential Facility |
| Crestwood Inn | Sidney | Vulnerable Populations |
| Eastern Agricultural Research Center | Sidney | Economic Asset |
| Energy Production and Oil Field Service Companies | Various | Economic Asset |
| Fire Station | Fairview, Savage, Lambert | Essential Facility |
| Franz Construction | Sidney | Economic Asset |
| Law and Justice Center | Sidney | Vulnerable Populations |
| Library | Sidney | Cultural Asset |
| Lower Yellowstone Irrigation Project | Various | Economic Asset |
| Power/Transmission Lines | Various | Critical Infrastructure |
| Schools | Various | Vulnerable Populations |
| Sewer/Water Infrastructure | Various | Critical Infrastructure |
| Sidney Health Center Campus | Sidney | Vulnerable Populations |
| Sugar Beet Plant | Sidney | Economic Asset |
| The Lodge at Lone Tree | Sidney | Vulnerable Populations |

# Chapter 3: Hazard Risks and Vulnerabilities

## Hazards Overview

Richland County is subject to numerous natural and human-caused hazards. Many hazards are capable of creating significant levels of damage and having a negative effect on the local economy.

Table 11 lists federal disaster and emergency declarations for Richland County from 1990 to 2020. While the county may not have been the epicenter of the listed events, it experienced enough of an impact to be included within the declaration boundary.

*Table 11 Richland County Presidential Disaster and Emergency Declarations, 1990-2020*

| Date | Declaration | Hazard(s) | Damages* |
|---|---|---|---|
| January 20, 2020 & Continuing | EM-3476 | COVID-19 | TBD |
| January 20, 2020 & Continuing | DR-4508 | COVID-19 Pandemic | $44,949,133.15 |
| March 1, 2014 – March 16, 2014 | DR 4172 | Ice Jams and Flooding | |
| April 4, 2011 - July 22, 2011 | DR 1996 | Flood, Severe Storm | $37,459,869 |
| Aug 29 - Oct 1, 2005 | EM 3253 | Hurricane Katrina Evacuation^ | $119,960 |
| Oct 31, 2000 - Nov 20, 2000 | DR 1350 | Winter Storm | $2,127,262 |
| March 1, 1997 - Aug 6, 1997 | DR 1183 | Flood, Severe Storm | N/A |
| *Damages include public and individual federal assistance over entire disaster area | | | |
| ^38 states were included in disaster declaration to supplement local efforts to help Hurricane Katrina evacuees | | | |
| **Source**: FEMA 2021 | | | |

The Spatial Hazards Events and Losses Database for the United Sates (SHELDUS), maintained by Arizona State University, contains aggregated information from the National Climatic Data Center's monthly storm data publications. The data includes every reported storm event that caused a fatality or property/crop damage. Table 12 shows summarized SHELDUS statistics for Richland County. This information does not include every storm event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy on the county level. SHELDUS statistics are most useful for comparing relative occurrences of storm events. Detailed information regarding storm events can be found in each corresponding hazard profile.

*Table 12 Summary of Richland County Natural Hazard Events, 1960-2019*

| | |
|---|---|
| Severe Summer Storm | 87 events |
| Severe Winter Storm | 23 events |
| Flood | 14 events |
| Wildfire | 1 event |
| Note: All natural hazard events that caused reported damages or injuries/fatalities | |
| **Source**: SHELDUS | |

Additional hazard statistics for recent years are provided from the NOAA National Climatic Data Center's Storm Data and Unusual Weather Phenomena database. The Storm Data and Unusual Weather Phenomenon database provides a comprehensive list of weather events and provides greater narrative description than SHELDUS.

The 2018 Montana Multi-Hazard Mitigation Plan served as the basis for selecting the hazards that are profiled in this chapter. Earthquake and volcanic eruption are featured in the statewide plan and not profiled in this document due to the limited risk found in the county.

**Profiled natural hazards:**

- Drought
- Flood
- Landslide
- Severe Summer Storm
- Severe Winter Storm
- Wildfire

**Profiled human-caused/technological hazards:**

- Communicable Disease
- Dam Failure
- Hazardous Materials Release
- Terrorism and Violence

Natural hazards are listed first, followed by human-caused/technological hazards. Each profiled hazard includes the following information:

- **Hazard Profile**: Definition of the hazard and general overview.
- **Location**: Location is the geographic areas within the planning area that are affected by the hazard.
- **Extent**: Extent is the strength or magnitude of the hazard
- **Local Risk and Probability**: Previous occurrences and specific risk for the jurisdiction.
- **Vulnerabilities**: Vulnerability analysis of population, key facilities and property.
- **Existing Capabilities**: Current actions taken by the jurisdiction to address the hazard.
- **Key Issues**: The primary issues that affect the jurisdiction and the basis for determining action items.
- **Potential Action Items**: A preliminary list of action items to address key issues. These items are refined and prioritized in the mitigation strategy section of the plan.

The profiles include an analysis of the probability and magnitude of each event to determine overall hazard risk.

# Drought

| | |
|---|---|
| **Overall Risk:** | Medium (all jurisdictions) |
| **Probability:** | Medium (Significant hazard event is likely to occur within 25 years) |
| **Magnitude:** | Medium |
| **Seasonal Pattern:** | None |
| **Duration:** | Months/Years |
| **Speed of Onset:** | Slow |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Economic loss |
| | Increased fire potential |
| | Loss of potable water |
| | Pest infestation |

## Hazard Profile

Drought is generally defined as a deficiency of precipitation over an extended period. If severe enough, this deficiency has potential to reduce soil moisture and water below the minimum necessary for sustaining plant, animal and human life systems. It is a normal, recurrent phenomenon that takes place in nearly all climate zones. Droughts appear gradually, and it is often difficult to pinpoint their beginning and end. Droughts can last multiple years, and even persist over decades. Significant droughts in the Northern Great Plains region over the previous 100 years are shown below.

- 1917-1923
- 1929-1940
- 1958-1961
- 1976-1977
- 1980-1981
- 1988-1992
- 2000-2008
- 2017-2018
- 2020-2021

Droughts are often measured by impacts, most notably agricultural damage and municipal water supplies shortage. The impacts are highly variable based on time of year, amount of stored water in the soil and meteorological factors such as temperature, humidity and wind. Impacts are also greatly affected by human factors such as local water demand and water management practices.

The drought cycle often begins long before any impacts. A typical drought may begin with limited winter snowfall, followed by below-average precipitation in the spring. The initial impact would be a lack of normal spring greening, resulting in fire danger and presenting a challenge for the livestock industry. Spring planting plans may be affected next, which would impact farmers as well as agriculture-related businesses. These effects would be compounded if the drought extended through the summer. Extended drought would affect water-related recreational opportunities, hydro-electric power production and municipal water supplies.

Grasshopper populations also tend to increase during dry cycles. Grasshoppers present a threat to crops and rangeland, and they can cause catastrophic damage in a short period of time.

## Location

The entire county is vulnerable to the hazard.

## Extent

The United States Drought Monitor has a map that identifies areas of drought and labels them by intensity. D1 is the least intense level and D4 the most intense. Drought is defined as a moisture deficit bad enough to have social, environmental, or economic effects. D0 areas are not in a drought but are experiencing abnormally dry conditions that could turn into drought or are recovering from drought but are not yet back to normal.

*Table 13 National Drought Information System Alerts for Droughts*

| Alert | Criteria | Palmer Drought Index |
|---|---|---|
| D0 Abnormally Dry | Going into drought: short-term dryness slowing planting, growth of crops or pastures. Coming out of drought: some lingering water deficits; pastures or crops not fully recovered. | -1.0 to -1.9 |
| D1 Moderate Drought | Some damage to crops, pastures, streams, reservoirs, or wells low, some water shortages developing or imminent, and voluntary water-use restrictions requested. | -2.0 to -2.9 |
| D2 Severe Drought | Crop or pasture losses are likely, water shortages common and water restrictions imposed. | -3.0 to -3.9 |
| D3 Extreme Drought | Major crop and pasture losses with widespread water shortages or restrictions. | -4.0 to -4.9 |
| D4 Exceptional Drought | Exceptional and widespread crop and pasture loss, shortages of water in reservoirs, streams, and wells creating water emergencies. | -5.0 or less |

**Source**: U.S. Drought Monitor Classification Scheme, from the United States Drought Monitor

The Palmer Drought Severity Index (PDSI) developed by Wayne Palmer in the 1965, measures drought severity using temperature, precipitation and soil moisture (Utah Division of Water Resources 2007a). The PDSI has become the "semi-official" drought index as it is standardized across various climates. The index uses zero as normal and assigns a number between 6 and -6, with dry periods having negative numbers and wet periods expressed using positive numbers (NDMC 2006).

*Table 14 Palmer Drought Severity Index (NDMC 2006)*

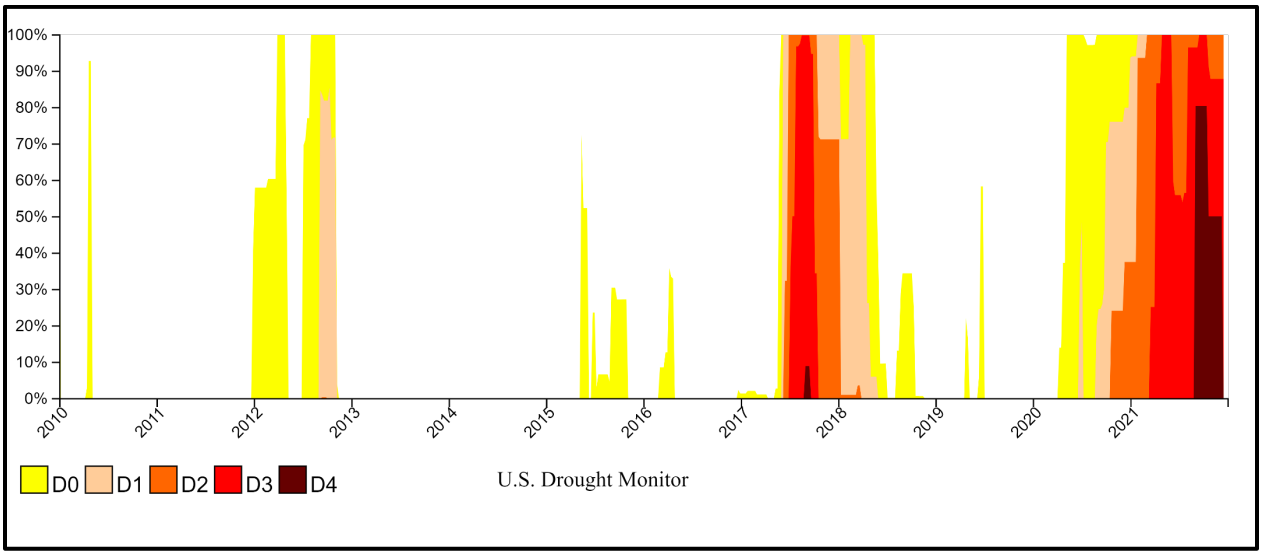
| | |
|---|---|
| 4.0 or more | Extremely wet |
| 3.0 to 3.99 | Very wet |
| 2.0 to 2.99 | Moderately wet |
| 1.0 to 1.99 | Slightly wet |
| 0.5 to 0.99 | Incipient wet spell |
| 0.49 to -0.49 | Near normal |
| -0.5 to -0.99 | Incipient dry spell |
| -1.0 to -1.99 | Mild drought |
| -2.0 to -2.99 | Moderate drought |
| -3.0 to -3.99 | Severe drought |
| -4.0 or less | Extreme drought |

Damage can also be measured by damage to the agriculture industry including reduced rangeland productivity, forced reduction of foundation stock, reduced grazing availability on public lands, cost of acquiring supplemental feed or finding new pasture, disruption of reproduction cycles, high cost/unavailability of water for livestock, and wildfire threat to rangeland, increased fuel and labor costs associated with replanting second crops, and reduced revenues to main street businesses in agricultural communities.

## Local Risk and Probability

It is difficult to predict when a drought will appear. Historic trends show that wetter-than-normal periods tend to alternate with drier-than-normal periods; however, numerous factors beyond rainfall contribute to drought status. In response, scientists have developed several indices that assimilate data regarding rainfall, snowpack, streamflow and other water supply indicators. The indices are aggregated by the National Drought Mitigation Center at University of Nebraska – Lincoln (UNL). UNL developed the US Drought Monitor, which reports drought status on a weekly basis. Up-to-date information is available at http://droughtmonitor.unl.edu/.

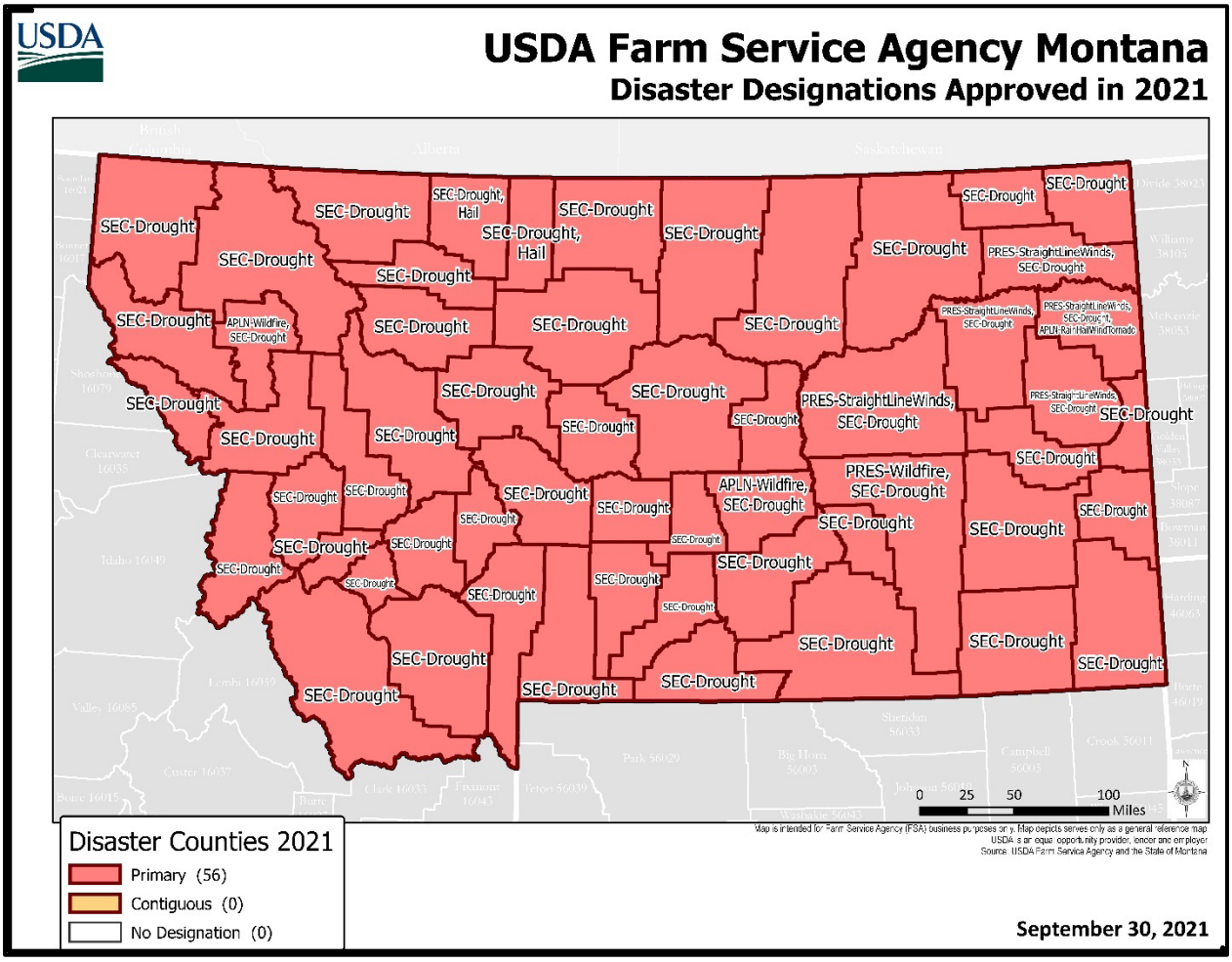
*Figure 4 Richland County Historical Drought Conditions, 2010 to 2021*




**Source**: https://www.drought.gov/states/montana/county/richland

It is important to note there is no apparent pattern of drought impacts, as both 1990 and 2008 (large impact years) were followed and preceded by years with minimal drought impacts. Drought conditions will return to the county at some point in the future, but it is impossible to confidently predict the exact timing and severity of these events.

*Figure 5 Montana Drought Declaration, 2021*




According to the National Weather Service, the average annual precipitation in Sidney is 14.04 inches. The lowest annual precipitation recorded since 1910 is 7.72 inches in 1983.

Sidney and Fairview receive water from municipal wells, and county residents receive water from personal wells. There is no history of drought-related potable water shortage in the county.

## Vulnerabilities

### Population

Drought has no direct impact on human life, but it greatly increases the risk of wildfire, which is a potentially life-threatening hazard. Drought accompanied by high temperatures can increase the threat of heat-related illness for persons who spend a significant amount of time outdoors or do not have adequately cooled homes. Elderly persons are at increased risk of heat-related illness. As of 2019, approximately 11,199 people live in the county, 14.7 % of which are 65 years of age or older.

Prolonged drought could also affect municipal water supplies. Bottled water could be brought in as an emergency measure, but a lack of household water could create health and sanitation issues for residents.

### Key Facilities

No key facility in Richland County is physically impacted by drought.

### Property

Drought has no direct impact on structures, but it can have a significant economic impact on agriculture and related industries.

The drought that lasted throughout the 1930s produced the greatest yield reduction for crops within the county; however, modern farming practices make it unlikely that an equivalent drought would produce such dramatic yield decreases. In the event of a prolonged drought, it can be assumed that harvested acreage would decrease as wheat production becomes less viable, which would amplify the drought's economic impact on farmers.

*Table 15 Premium Subsidies by Cause of Loss (Drought) 1995-2020 for Richland County*

| Cause of Loss | Premium subsidies 1995-2020 | Percent Cause of Loss (Heat, Excess Moisture, Hail, Drought, Flood, Cold Winter, Freeze, Other, etc.) |
|---|---|---|
| Drought | $3,936,975 | 42.34% |

*Note: The premium subsidies by cause of loss in the table are lower than total premium subsidies because the USDA Risk Management Agency only reports premium subsidies by cause of loss for policies that paid an indemnity. Non-indemnified policies and their associated premium subsidies are not reported by cause of loss.*

*Table 16 Drought Crop Impacts in Richland County*

| Year | Spring Wheat Yield (bu/acre) | Spring Wheat (acres harvested) |
|---|---|---|
| 2020 | 31.1 | 177,800 |
| Year | Spring Wheat Yield (bu/acre) | Spring Wheat (acres harvested) |
| 2010 (no drought) | 37.2 | 154,000 |
| 2008 | 16.5 | |
| 1988 | 10 | |
| 1980 | 16 | |
| 1959 | 10.9 | |
| 1934 | 4 | |
| **Source**: USDA National Agricultural Statistics Service | | |

It is more difficult to measure direct economic loss for livestock producers. Cattle and calves numbers regularly fluctuate based on a wide number of factors. Richland County has had an average inventory of 32,129 head since 2000 according to the USDA National Agricultural Statistics Service. Although producers generally reduce their herds in times of prolonged drought, cattle numbers in Richland County have seemingly not been significantly impacted by past droughts. The biggest drought year in recent history was 2021. There were 31,500 head recorded for 2021. However, there were 32,000 head in 2020; 32,500 head in 2019. It is not entirely plausible that drought influenced the reduced number of cattle given these trends.

Livestock numbers, however, do not show the complete picture of drought impacts on livestock producers. There are other less measurable impacts from drought, including:

- Reduced rangeland productivity
- Forced reduction of foundation stock
- Reduced grazing availability on public lands
- Cost of acquiring supplemental feed or finding new pasture
- Disruption of reproduction cycles
- High cost/unavailability of water for livestock
- Wildfire threat to rangeland

Beyond agricultural impacts, there is also a greater threat of structure damage in a drought-affected area, as drought increases the risk of wildfire and may create water shortages that inhibit adequate fire response.

### Existing Capabilities

The local water conservation district provides assistance with water conservation measures and aquifer management.

The USDA Farm Service Agency and Montana State University Extension both have a field office located in Sidney. Both offices offer seminars and general education relating to drought management best practices. The USDA Farm Service Agency field office assists with the distribution of drought indemnity payments to agricultural producers.

### Future Development/Trends and Impact on Hazard Risk

The impact of future development on the drought hazard would be through limiting groundwater resources. The Montana DEQ carefully monitors and regulates public water systems. Water will continue to be a vital resource to agricultural users, especially the Lower Yellowstone Irrigation Project (LYIP), and the continued use and guarantee of available water will undoubtedly shape the future of farming in Richland County. If the LYIP is forced to pump water, it could adversely impact local famers, Sidney Sugars, and others that rely on LYIP for accessible and affordable water

### Key Issues and Potential Action Items

**Key Issue**: Agriculture is a key component of the county's economy. A significant drought has the potential to greatly affect the industry and the county as a whole.

- *Potential Action Item*: Encourage coordination among water suppliers, water managers and water users.
- *Potential Action Item*: Continue supporting the USDA Farm Service Agency and Montana State University Extension, and provide assistance as needed to local farmers and ranchers.

**Key Issue**: A significant and prolonged drought could affect municipal water supplies.

- *Potential Action Item*: Educate residents in town about water saving techniques to help preserve municipal water supplies.

- *Potential Action Item*: Conduct a water supply study and incorporate study results into relevant plans including the County's Growth Policy update; results may impact future growth areas.

## Flood

| | |
|---|---|
| **Overall Risk:** | Medium (county, Sidney, Fairview) |
| **Probability:** | Medium (county, Sidney, Fairview) |
| **Magnitude:** | High (county, Sidney, Fairview) |
| **Seasonal Pattern:** | March - October |
| **Duration:** | One week |
| **Speed of Onset:** | Varies depending on type of flood event |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Blocked roads |
| | Economic loss |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Localized evacuation |
| | Permanent loss of businesses |
| | Power loss |
| | Property damage or loss |
| | Release of hazardous materials |
| | School closure |

### Hazard Profile

Floods are part of the Earth's natural hydrologic cycle. The cycle circulates water throughout the environment and maintains a balance between water in the air, on the surface and in the ground. A flood occurs when the hydrologic cycle becomes temporarily out of balance. Two primary flood types affect Montana: riverine flooding and shallow flooding.

Riverine flooding occurs in close proximity to established water channels. There are three types of riverine flooding events.

- Overbank flooding is the most common type of flooding in the United States, and occurs when excess water overloads its normal channels and spills into the surrounding area. This can be caused by an excess of water coming from upstream channels or by a blockage of downstream channels.
- Flash flooding occurs when a severe storm produces large amounts of rainfall in a short time. Flash floods typically begin and end quickly. Rural areas with steep slopes and narrow stream channels are especially vulnerable.
- Riverine erosion occurs when erosion alters the path of water channels. Riverine erosion can undercut structures that are along the water channel and alter the hazard area of the surrounding floodplain.

Shallow flooding occurs in flat areas that lack defined channels, making it difficult for water to drain away easily. There are three types of shallow flooding events.

- Sheet flow follows an intense or prolonged rainfall, sheet flow occurs when there are inadequate channels and the water cannot soak into the ground. Sheet flow floodwater

spreads out over a large area and maintains a relatively uniform depth. Urban areas dominated by impervious surfaces are especially vulnerable to sheet flow events.

- Ponding occurs in flat areas when runoff collects in depressions and cannot drain out. Uneven roads are common locations for ponding.
- Urban drainage systems include ditches, storm sewers and retention ponds. The systems often do not have capacity to handle large rain events, resulting in shallow flooding in localized areas.

A number of unique hazards may contribute to riverine flooding and shallow flooding events, including dam failures, ice jams and other blockages caused by mud or debris.

Typical insurance policies do not cover flood damages, so FEMA created the National Flood Insurance Program (NFIP) to provide flood insurance for property owners. Participation in NFIP is based on an agreement between communities and FEMA. The NFIP makes flood insurance available to residents in communities that adopt and enforce floodplain management ordinances and follow other basic requirements.

A Flood Insurance Rate Map (FIRM) is created to determine flood insurance rates for each participating community. The FIRM identifies Special Flood Hazard Areas (SFHA) that have a one percent annual chance of flooding. These areas are commonly referred to as the 100-year floodplain. Areas outside of the SFHA are considered to be in the Non-Special Flood Hazard Area (NSFHA). Structures in the NSFHA may still be at risk from flooding, as one in every four floods occurs in an NSFHA. Flood insurance is required for all property owners who acquire a loan from a federally regulated, supervised, or insured financial institution for the acquisition or improvement of land, facilities or structures located within a SFHA.

### Location

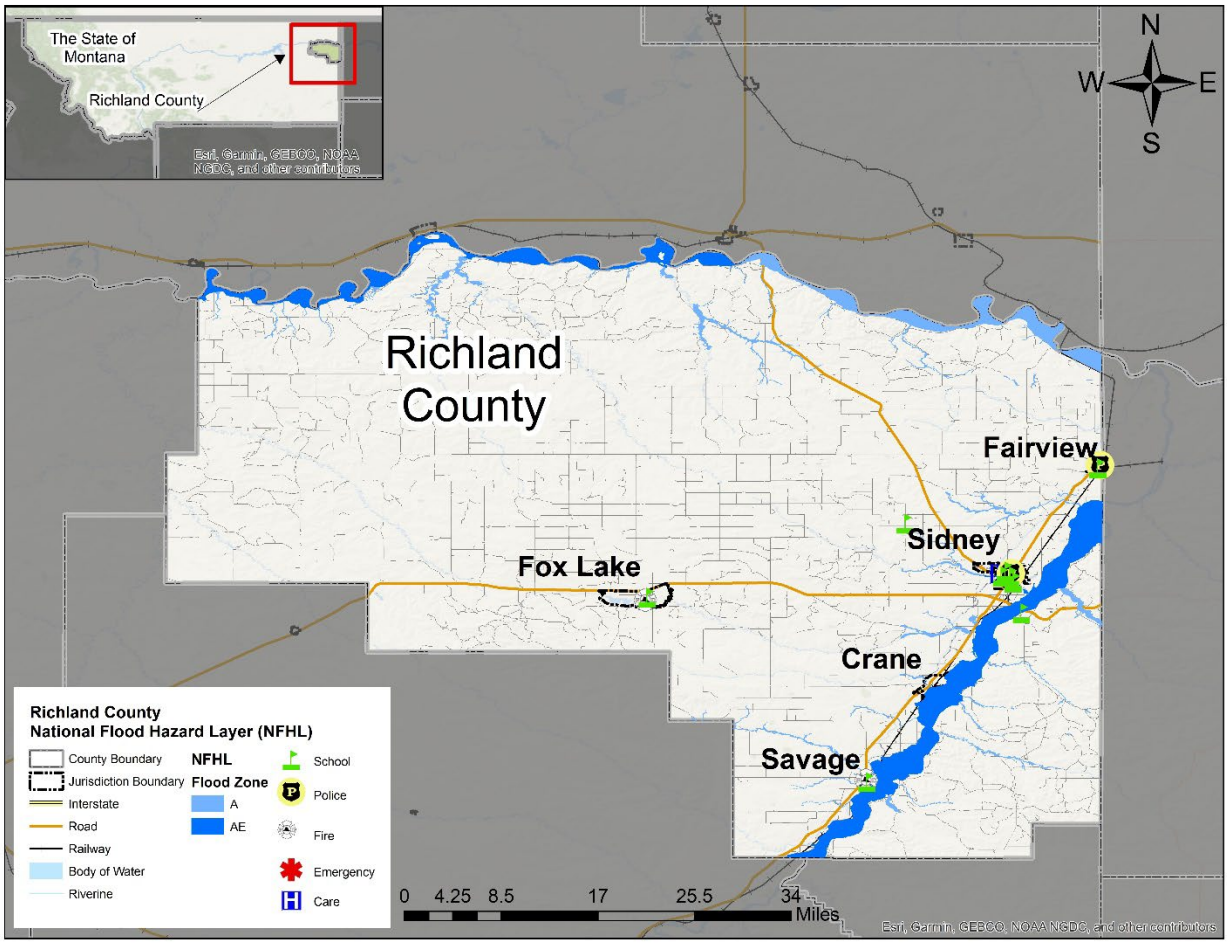
Riverine flooding is the primary flooding hazard in the county, with Lone Tree Creek, the Yellowstone River and the Missouri River causing the greatest potential impacts. Lone Tree Creek travels through the southwest portion of Sidney, and both Sidney and Fairview are located near the Yellowstone River.

### Extent

The State of Montana measures the magnitude of a flood event in terms of severity; how much precipitation occurred and under what conditions, how many evacuations were required, and level of response necessary. Terms used to convey a flood's magnitude are 100-year flood and 500-year flood. A 100-year flood has a 1% chance of occurring in any given year and a 500-year flood has a .2% chance.

States and jurisdictions all over the United States continuously complete flood mitigation projects to decrease the vulnerability of flood. Therefore, studies of specific geographic areas, or flood maps. will provide more detail on how much water is likely to come in, the risk to any infrastructure, and the potential economic loss. The damages of a flood can be minor or very catastrophic.

*Figure 6 100-year Floodplain*




## Local Risk and Probability

Riverine flooding in the county is most commonly caused by heavy rain/flash flooding, snow melt/ice jams and increased seasonal moisture.

Flash flooding is a significant hazard for the county. Flash flooding can present a risk to people and property due to its rapid onset, often with little or no warning.

Flash flooding can overwhelm drainage systems and cause roads to flood. People in low-lying areas who do not seek high ground can be swept away if a fast-moving current develops. Flash flooding centered around Sidney can temporarily overburden Lone Tree Creek and cause localized riverine flooding. In Fairview, water draining from the hills west of town can present a potential flash flooding hazard during storm events.

A significant flash flooding event in the county occurred in July 1997, when six inches of rain fell in four hours. Five bridges in the county were damaged and numerous roads were closed due to washouts. There was concern that the Vaux Dam near Sidney would fail, but it experienced no significant issues.

Snow melt/ice jams are common in the county during the spring months. Ice jams are generally caused by prolonged cold periods followed by a rapid increase in temperatures. According to the state Multi-Hazard Mitigation Plan, Montana leads the nation with the most reported ice jams. According to the Lower Yellowstone Ice Jam Study, a two to three-mile jam typically forms on the Yellowstone River near Sidney at the bend adjacent to the city's lagoons.

*Figure 7 Ice jam on the Yellowstone River in March 2011*
*Photo courtesy Butch Renders.*

*Table 17 Ice Jams*

| City | River | Jam date | Jam type | Damages |
|---|---|---|---|---|
| Sidney | Yellowstone River | 02/26/2015 | Freeze-up | - |
| Sidney | Alkali Creek | 03/09/2014 | Unknown | - |
| Sidney | Alkali Creek | 04/14/2013 | Unknown | - |
| Sidney | Alkali Creek | 04/16/2011 | Unknown | - |
| Sidney | Yellowstone River | 03/19/2011 | Break-up | - |
| Sidney | Yellowstone River | 03/17/2011 | Break-up | - |
| Sidney | Alkali Creek | 03/08/2010 | Unknown | - |
| Sidney | Alkali Creek | 02/28/2007 | Unknown | - |
| Sidney | Alkali Creek | 03/06/2005 | Unknown | - |
| Sidney | Alkali Creek | 03/16/2004 | Unknown | - |
| Sidney | Alkali Creek | 03/17/2003 | Unknown | - |
| Sidney | Yellowstone River | 03/18/2003 | Unknown | - |
| Sidney | First Hay Creek | 04/10/2003 | Unknown | - |
| Sidney | First Hay Creek | 04/06/2002 | Unknown | - |
| Sidney | Yellowstone River | 01/15/2000 | Unknown | - |
| Sidney | First Hay Creek | 03/15/1999 | Unknown | - |
| Sidney | Yellowstone River | 02/14/1997 | - | - |
| Sidney | First Hay Creek | 02/10/1996 | Unknown | - |
| Sidney | Yellowstone River | 03/14/1996 | Unknown | - |
| Sidney | Yellowstone River | 02/13/1996 | Break-up | High water |
| Sidney | Yellowstone River | 03/06/1994 | - | - |
| Sidney | Yellowstone River | 03/29/1989 | Unknown | - |
| Sidney | Yellowstone River | 11/11/1986 | Unknown | - |
| Sidney | Yellowstone River | 02/27/1986 | - | - |
| Sidney | Yellowstone River | 03/24/1985 | Unknown | - |
| Sidney | Yellowstone River | 02/23/1982 | Unknown | - |
| Sidney | Alkali Creek | 04/17/1979 | Unknown | - |
| Sidney | Yellowstone River | 03/19/1979 | - | - |
| Sidney | Alkali Creek | 03/20/1978 | Unknown | - |

| | | | | |
|---|---|---|---|---|
| Sidney | Lone Tree Creek | 03/15/1972 | Break-up | Severe flooding |
| Sidney | Yellowstone River | 02/17/1971 | - | - |
| Sidney | Yellowstone River | 03/26/1969 | Break-up | $230,000 and 14,000 acres flooded |
| Sidney | Yellowstone River | 03/21/1969 | - | - |
| Sidney | Yellowstone River | 03/17/1966 | - | - |
| Sidney | Yellowstone River | 04/07/1965 | - | - |
| Sidney | Yellowstone River | 03/17/1961 | - | - |
| Sidney | Yellowstone River | 03/21/1960 | - | $69,000 estimated rural damages |
| Sidney | Yellowstone River | 03/21/1959 | - | $30,000 USD estimated rural damages |
| Sidney | Yellowstone River | 03/26/1956 | - | - |
| Sidney | Yellowstone River | 04/03/1955 | - | $1,800 estimated rural damages |

| City | River | Jam date | Jam type | Damages |
|---|---|---|---|---|
| Fairview | Yellowstone River | 03/24/2018 | Break-up | Minor flooding was reported in Richland Park, along County Road 130. Mostly farmland affected. |
| Fairview | Yellowstone River | 02/12/1996 | Break-up | - |

| City | River | Jam date | Jam type | Damages |
|---|---|---|---|---|
| Savage | Yellowstone River | 03/24/2018 | Break-up | minor flooding |
| Savage | Yellowstone River | 03/20/2009 | Break-up | - |
| Savage | Yellowstone River | 03/18/2003 | Break-up | - |
| Savage | Yellowstone River | 02/13/1996 | Break-up | Flooding |
| Savage | Yellowstone River | 03/04/1994 | Break-up | - |
| Savage | Burns Creek | 02/26/1986 | Unknown | - |
| Savage | Burns Creek | 02/19/1983 | Unknown | - |
| Savage | Burns Creek | 02/20/1982 | Unknown | - |
| Savage | Burns Creek | 03/28/1979 | Unknown | - |
| Savage | Burns Creek | 03/21/1978 | Unknown | - |
| Savage | Burns Creek | 03/22/1967 | Unknown | - |
| Savage | Burns Creek | 04/03/1965 | Break-up | - |
| Savage | Burns Creek | 02/06/1964 | Unknown | - |
| Savage | Burns Creek | 02/06/1963 | - | - |
| Savage | Burns Creek | 03/21/1962 | - | - |
| Savage | Burns Creek | 02/07/1961 | - | - |
| Savage | Burns Creek | 03/30/1958 | - | - |
| Savage | Yellowstone River | 03/10/1943 | Break-up | Severe flooding |

**Source**: https://icejam.sec.usace.army.mil/

In March 2011, four jams were reported along the Yellowstone River, from Terry to northeast of Sidney near the state border. The river stage at the Sidney monitoring station reached 22.0 feet (3 feet above flood stage). Reported impacts were primarily lowland flooding in surrounding agricultural lands, and Richland Park in Sidney was flooded.

The last major flood event in the county occurred due to increased seasonal moisture. Rainfall across the area in May 2011 was 300 to 600 percent of normal, which caused flooding impacts throughout the county. Many gravel roads near the Yellowstone River became impassable, campgrounds along the river were flooded and cattle near Savage were isolated by flood waters. The river stage at the Sidney monitoring station reached 21.92 feet (2.92 feet above flood stage).

Richland County, Sidney and Fairview are all NFIP participants. The NFIP participation for each jurisdiction is summarized in Table 18. Flood insurance claims in the county have been minimal. There are no repetitive loss properties.

*Table 18 NFIP Participation in Richland County*

| Jurisdiction | Policies in Force | Total Coverage | Insurance Claims Since 1978 | Total Paid Since 1978 | Floodplain Administrator | Enforced Floodplain Management Ordinances |
|---|---|---|---|---|---|---|
| Richland County | 11 | $2,390,800 | 6 | $15,944 | Yes | Yes |
| Fairview, town | 3 | $243,000 | 1 | $3,138 | Yes | Yes |
| Sidney, city | 5 | $1,812,000 | 2 | $5,441 | Yes | Yes |
| Note: Policy and claim information as of 9-30-2021<br>**Source:** NFIP, 2021 | | | | | | |

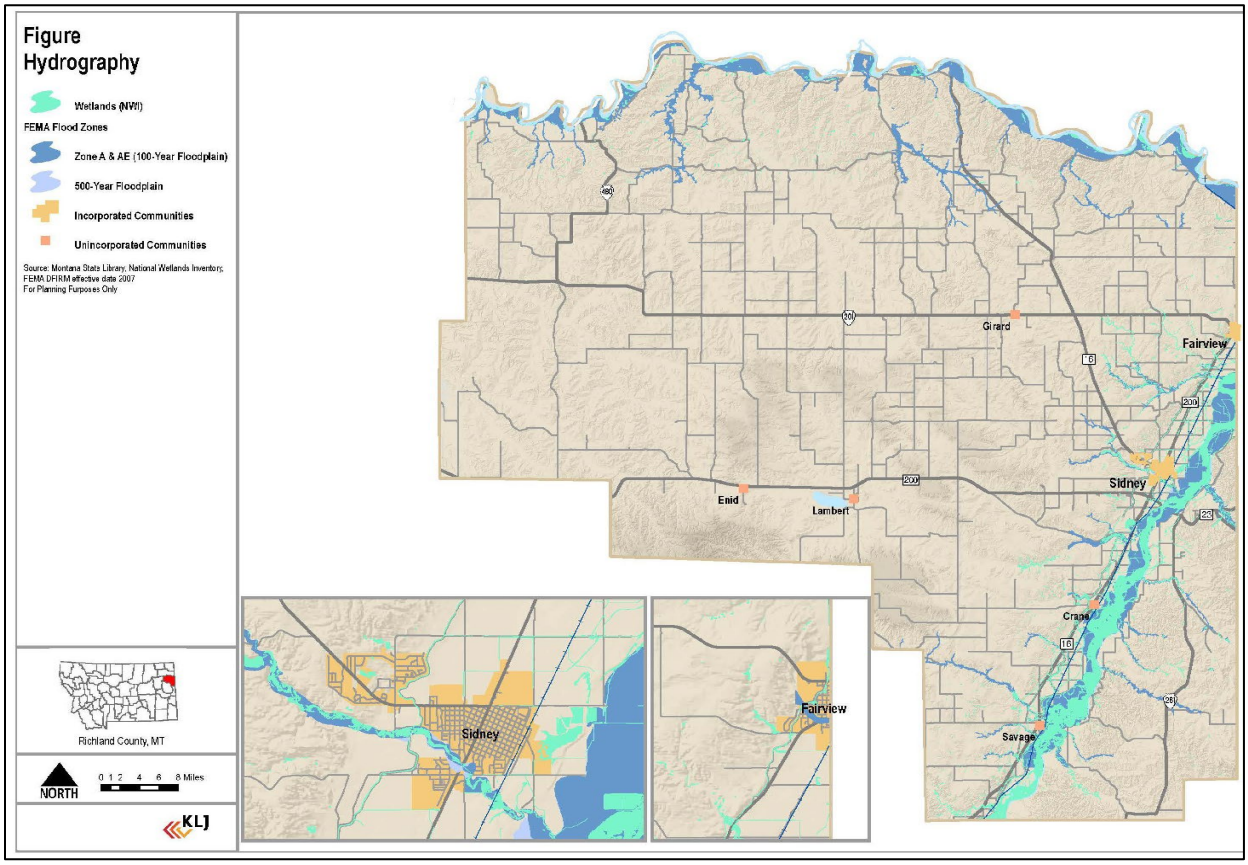
DFIRMs (Digital Flood Insurance Rate Maps) are available for major creeks and rivers in the county. Mapped flood areas include the Missouri River, Yellowstone River and their immediate tributaries. The DFIRMs are effective as of 2007. As shown on the map, the Sidney flood zone is along Lone Tree Creek through the southwest portion of the city. The Fairview flood zone is along a low-lying area in the southern portion of the town. The flood zone is primarily along the eastern edge of the community and does not enter urbanized areas. There are no mapped flood zones for Lambert.

*Table 19 Flood Events in Richland County, 1960-2020*

| | |
|---|---|
| Events* | 14 |
| Annual Probability | 26.4% |
| Injuries** | 0.08 |
| Fatalities** | 0 |
| Damages**^ | $2,746,167 |
| Source: SHELDUS, 2021 | |
| *Events causing recorded injuries/fatalities or damages | |
| **Total taken from entire disaster area and divided by number of affected counties | |

As shown in Table 19, the SHELDUS database reports 14 flood events in Richland County between 1960 and 2020. Five of the events occurred in March, three each in June and July, and one each in February, May, and September. This information does not include every flood event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy on the county level. SHELDUS statistics are most useful for comparing relative occurrences of storm events.

*Figure 8 Mapped Flood Areas*




The NOAA National Climatic Data Center's Storm Data and Unusual Weather Phenomena database provides more detailed information about storm events in the county. Nine flood events were reported in the county between May 2013 and September 2019 (excluding duplicate same-day reports). These events featured the following as the primary contributing element(s):

- 6 featured heavy rain/flash flooding
- 3 featured an ice jam/rapid snowmelt

## Vulnerabilities

### Population

Vulnerable populations can be determined by analyzing the intersections of floodplains and census blocks. Population is taken from 2010 census block statistics (2020 Census data was not available during the update).

The vulnerable population figures in rural areas of the county are a very rough estimate. Many census blocks, especially in rural areas, are hundreds of acres and only partially bisected by the floodplain. This makes it difficult to get a precise measurement of the amount of residents living in a floodplain.

- 1,397 residents in rural Richland County live in a census block bisected by a floodplain.
- 138 residents in Sidney live in a census block bisected by a floodplain.

- 44 residents in Fairview live in a census block bisected by a floodplain.

It is important to note that most of these residents most likely do not live in a specific floodplain area, but it is impossible to determine with certainty due to the large size of most census blocks in the county. Also note that this analysis does not differentiate between 100-year and 500-year floodplains due to the generally large size of census blocks.

This analysis focuses on residents living in floodplain areas, but all people that travel through the county are vulnerable to flooding due to the road hazards that are common during flood events.

**Key Facilities**

The only key facility located within a designated floodplain is The Lodge at Lone Tree Creek (an assisted living facility), although the structure appears to be constructed above the base flood elevation. Sidney High School and West Side Elementary are located near the designated floodplain.

**Property**

Property losses in the county can be estimated by utilizing FEMA FIRMs. Values for properties within the 100-year floodplain are shown in Table 20. It is important to note that many properties are partially bisected by the floodplain, but it is not possible to determine how many actual structures are within the hazard area. All properties that are bisected by the floodplain are included in the analysis. There are no projected growth areas within a floodplain.

The SHELDUS database records 14 major flood events since 1960. The average property damage for these events (in 2012 dollars) was $112,417 and the average crop damage was $83,738. The greatest impact on crops occurs in the Yellowstone River valley. Beyond inundation of fields, farmers rely on irrigation from the river to provide water for their crops. A flood in 1997 damaged the valley's irrigation canals, which left many farmers in the area without irrigation for 10 days.

*Table 20 Richland County Properties within 100-Year Flood Hazard Area*

| | | | | |
|---|---|---|---|---|
| Richland County | | | | |
| Land Use | Number of Properties | Total Value (Land & Structures) | Properties with Structures | Structure Value |
| Residential & Other Property Types | 238 | $35,576,561 | 158 | $24,895,426 |
| Exempt | 185 | $20,604,679 | 4 | $8,107,730 |
| Farmstead | 204 | $37,057,782 | 200 | $24,423,630 |
| Agricultural | 1 | $148,538 | 1 | $111,900 |
| Commercial | 7 | $15,357,012 | 2 | $14,441,610 |
| Vacant | 791 | $28,283,895 | 1 | $17,010 |
| Total | 1426 | $137,028,467 | 366 | $71,997,306 |
| Sidney | | | | |

| Land Use | Number of Properties | Total Value (Land & Structures) | Properties with Structures | Structure Value |
|---|---|---|---|---|
| Residential & Other Property Types | 9 | $4,267,176 | 9 | $2,525,087 |
| Exempt* | 2 | $244,010 | 0 | $0 |
| Farmstead | 6 | $1,784,593 | 6 | $1,589,280 |
| Agricultural | 0 | $0 | 0 | $0 |
| Commercial | 1 | $13,907,644 | 1 | $13,205,280 |
| Vacant | 0 | $0 | 0 | $0 |
| Total | 18 | $20,203,423 | 16 | $17,319,647 |
| Fairview | | | | |
| Land Use | Number of Properties | Total Value (Land & Structures) | Properties with Structures | Structure Value |
| Residential & Other Property Types | 29 | $3,928,670 | 25 | $2,725,198 |
| Exempt | 6 | $532,329 | 0 | $0 |
| Farmstead | 2 | $640,153 | 2 | $583,320 |
| Agricultural | 0 | $0 | 0 | $0 |
| Commercial | 0 | $0 | 0 | $0 |
| Vacant | 15 | $453,897 | 0 | $0 |
| Total | 52 | $5,555,049 | 27 | $3,308,518 |

All Property Types: Apartment Urban, Agricultural - Rural, Centrally Assessed, Centrally Assessed Non-Value Property, Commercial Urban , Exempt Property, Partial Exempt, Farmstead - Rural, Farmstead - Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Industrial - Rural , Industrial - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, RV Park, Vacant Land - Rural, Vacant Land - Urban, and Blanks

Residential & Others includes: Apartment Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, and Blanks

Spatial Analysis, Montana 2021 Tax Assessor Data, https://svc.mt.gov/msl/mtcadastral

*Table 21 Premium Subsidies by Cause of Loss (Flood) 1995-2020 for Richland County*

| Cause of Loss | Premium subsidies 1995-2020 | Percent Cause of Loss (Heat, Excess Moisture, Hail, Drought, Flood, Cold Winter, Freeze, Other, etc.) |
|---|---|---|
| Flood | $24,799 | 0.3% |

*Note: The premium subsidies by cause of loss in the table are lower than total premium subsidies because the USDA Risk Management Agency only reports premium subsidies by cause of loss for policies that paid an indemnity. Non-indemnified policies and their associated premium subsidies are not reported by cause of loss.*

Key problem areas identified by the steering committee include, but are not limited to the following:

- Flooding of certain areas of downtown
- E Holly St

- West Holly St
- North and South Meadow Village subdivisions
- Flooding on 22nd Ave NW
- Flooding on 9th Ave SE
- Railroad R-O-W along tracks
- Meadows area (stormwater flooding)
- Anderson area (stormwater flooding)
- 5th Avenue (stormwater flooding)
- Wagon Wheel (stormwater flooding)
- 11th Ave (stormwater flooding)

### Existing Capabilities

The county, Sidney and Fairview have a floodplain administrator and floodplain ordinances that are actively enforced. The floodplain administrator also provides educational materials about floodproofing techniques, living in a floodplain and NFIP facts and myths. This information is available on the county's website.

### Future Development/Trends and Impact on Hazard Risk

Floodplain regulations restrict development in areas within the 100-year floodplain of a watercourse. The purpose of these regulations is to protect the watercourses and their flood storage areas, as well as the public health, safety, and welfare. Title 76, Chapter 5 of the Montana Code Annotated mandates that local governments adopt floodplain management regulations.

### Key Issues and Potential Action Items

**Key Issue**: Lone Tree Creek through Sidney contains vegetation and debris that impedes the drainage capacity of the creek.

- *Potential Action Item*: Investigate potential flood control projects and protocols to ensure Lone Tree Creek can flow freely.
- *Potential Action Item*: Identify and mitigate flood damage risk for the Highway 16 bridge and high-risk sewer lines across Lone Tree Creek.

**Key Issue**: Several properties throughout the county are located within the regulatory floodplain.

- *Potential Action Item*: Conduct NFIP community workshops to provide information and incentives for property owners to acquire flood insurance or install floodproofing.
- *Potential Action Item*: Achieve certification with the Community Rating System (CRS). The CRS rewards communities that exceed minimum NFIP requirements. A benefit of CRS participation is discounted flood insurance premiums for policyholders.
- *Potential Action Item*: Adopt standards for rebuilding roads in areas subject to flood events.

**Key Issue**: Heavy rain events occasionally overburden storm sewers in parts of Sidney and cause localized flash flooding.

- *Potential Action Item*: Assess need to enlarge storm drains in targeted areas of Sidney.
- *Potential Action Item*: Work with the railroad to develop necessary drainage improvements along the rail and city's right-of-way in Sidney.

- *Potential Action Item*: Develop a rapid warning system to warn residents in low-lying areas of flash flood.
  *Potential Action Item*: Educate residents about safety during flood conditions, including the dangers of driving on flooded roads.

**Key Issue**: While rare, ice jams along the Yellowstone River have the potential to flood low-lying surrounding areas.

- *Potential Action Item*: Construct ice control structure in strategic location to minimize risk of ice jams to people and property.

**Key Issue**: There are three bridges in Richland County that have critical scour potential: a crossing of Charlie Creek 45 miles northwest of Sidney, a crossing of Hardscrabble Creek 35 miles northwest of Sidney and a crossing of Four Mile Creek nine miles northwest of Fairview. Scour is the hole left behind when sediment is washed away from the bottom of a river. Scour action is particularly strong during floods.

- *Potential Action Item*: Develop a monitoring program to track scour impact following a flooding event and work with Montana Department of Transportation to repair scour damage.

## Dam Failure

| | |
|---|---|
| **Overall Risk:** | Low (county, Sidney, Fairview) |
| **Probability:** | Low |
| **Magnitude:** | Low (county, Sidney); Medium (Fairview) |
| **Seasonal Pattern:** | None |
| **Duration:** | 24 hours |
| **Speed of Onset:** | Quick |
| **Identified Risks:** | Agricultural loss (crops, livestock) |
| | Economic loss |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Localized evacuation |
| | Loss of power |
| | Release of hazardous materials |

### Hazard Profile

A dam is defined as an artificial barrier across a watercourse or natural drainage area that may impound or divert water. Dams have many potential uses, including hydro-electric power generation, irrigation, flood control, water supply and recreation. Dam structures can be earthen or from manmade materials. Dam failure is a sudden, uncontrolled release of impounded water, and can have a devastating effect on people and property downstream.

The Association of State Dam Officials identifies five primary causes of dam failure, which are often interrelated:

- Overtopping of a dam occurs when water from the reservoir spills over the top of the dam, creating instability in the structure. Overtopping can occur during a major flood event if the spillways are not adequately designed or if there is blockage in the spillway. Approximately 34 percent of all dam failures in the United States are due to overtopping.

- Foundation defects, including settlement and slope instability, cause about 30 percent of all dam failures.
- Piping is a term used to describe the process that occurs as seepage pathways create eroded pipes through a structure. Seepage often occurs around hydraulic structures and earthen features, and if left unchecked can gradually reduce the dam structure's stability. About 20 percent of all dam failures in the United States are caused by piping.
- Structural failure of materials used to construct dam.
- Inadequate maintenance.

The Association of State Dam Officials and the US Army Corps of Engineers utilizes a rating system to determine potential hazard to property or life if a dam were to suddenly fail.

- **Low**: Dams located in rural or agricultural areas where there is little possibility of future development. Failure of low hazard dams may result in damage to agricultural land, township and county roads and farm buildings other than residences. No loss of life is expected if the dam fails.
- **Significant**: Dams located in predominantly rural or agricultural areas where failure may damage isolated homes, main highways, railroads or cause interruption of minor public utilities. Potential for the loss of life may be expected if the dam fails.
- **High**: Dams located upstream of developed and urban areas where failure may cause serious damage to homes, industrial and commercial buildings and major public utilities. Potential for loss of life if the dam fails. High hazard dam reservoirs must be at least 50 acre-feet.

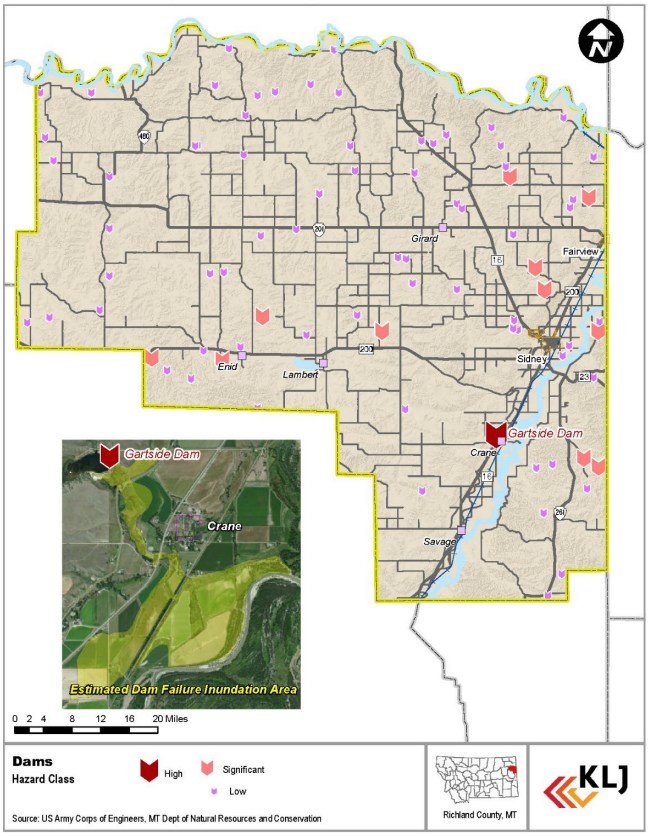
Montana Code Annotated (MCA) 815-15-212 mandates that all high hazard dams are required to have emergency procedures and warning plans. Warning plans must include a map of the evacuation area, notification directory, name of the dam owner or responsible entity, availability of materials for emergency repairs and a list of contractors that could provide emergency assistance.

According to Montana Fish, Wildlife & Parks (FWP), 169 dams in Montana are rated as having a high hazard potential.

### Location

There are many dams in Richland County. Only one dam is categorized as high risk.

*Figure 9 Dams*




## Extent

The severity of dam failure depends on the size of the dam and the circumstances of the failure. Consequences of dam failure can be loss of property, loss of income, destruction of cropland, destruction of roads and utilities, and loss of life.

## Local Risk and Probability

The most significant dam failure event in Richland County occurred in March of 1951 when the Vaux dam failed near Sidney, causing flooding in the city and considerable damage. The hazard associated with the Vaux dam significantly decreased in the proceeding decades, and the dam currently holds less than 50 acre-feet of water. There is no other history of major dam failure in Richland County.

There are 79 dams in the county according to Montana FWS. Dam locations and classifications are shown in Figure 9. All are made of rolled earth, and most are used for recreation, livestock, or flood control. There are 11 dams rated as having a significant hazard and one dam rated as having a high hazard. The high hazard dam, Gartside Dam, is operated by Montana FWP.

| Dam | Description | Classification |
|---|---|---|
| Gartside | Emergency Action Plan: Yes<br>Primary Purpose: Recreation | High |
| Kuester | Emergency Action Plan: Not Required<br>Primary Purpose: Fire Protection, Stock, Or Small Fish Pond | Significant |

| | | |
|---|---|---|
| Olson (Richland) | Emergency Action Plan: Not Required<br>Primary Purpose: Fire Protection, Stock, Or Small Fish Pond | Significant |
| Folkoord | Emergency Action Plan: Not Required<br>Primary Purpose: Fire Protection, Stock, Or Small Fish Pond | Significant |
| Linde | Emergency Action Plan: Not Required<br>Primary Purpose: Irrigation | Significant |
| Salsbury (Richland) | Emergency Action Plan: Not Required<br>Primary Purpose: Flood Risk Reduction | Significant |
| Lars Borg | Emergency Action Plan: Not Required<br>Primary Purpose: Fire Protection, Stock, Or Small Fish Pond | Significant |
| Steinreisser #10 | Emergency Action Plan: Not Required<br>Primary Purpose: Fire Protection, Stock, Or Small Fish Pond | Significant |
| Prevost #2 | Emergency Action Plan: Not Required<br>Primary Purpose: Fire Protection, Stock, Or Small Fish Pond | Significant |
| Delaney | Emergency Action Plan: Not Required<br>Primary Purpose: Irrigation | Significant |
| Burke | Emergency Action Plan: Not Required<br>Primary Purpose: Fire Protection, Stock, Or Small Fish Pond | Significant |

Fort Peck Dam in McCone County could also present a hazard to the county in the event of a failure. The dam is located on the Missouri River about 50 miles upstream of the Richland County border. The dam is 250 feet tall, 21,000 feet long and has a base width of 3,500 feet. Its impoundment basin, Fort Peck Lake, is the fifth largest manmade lake in the United States. The dam's emergency operations plan indicates that portions of Richland County would be inundated in the event of a failure. The most notable inundation area is the eastern half of Fairview; flood waters would arrive 1.2 days following dam failure and peak elevation would occur 2.1 days after failure. Fort Peck Dam is operated by the US Army Corps of Engineers and its failure is very unlikely.

## Existing Capabilities

An emergency plan is available for Gartside Dam, the only high hazard dam in the county.

## Vulnerabilities

### Population

The inundation area for Gartside Dam is south of Crane and primarily in agricultural fields. There are three residences within the inundation area.

### Key Facilities

No key facilities are in the flood inundation area.

### Property

Property damages can be estimated by comparing parcel values with the estimated inundation area. Estimated structure value within the inundation area is $767,548 including three residences

and several outbuildings. A flood that inundated the agricultural fields in the area would also have a significant economic impact due to lost productivity.

### Future Development/Trends and Impact on Hazard Risk

Future development trends are not expected to increase the risk to this hazard.

### Key Issues and Potential Action Items

**Key Issue**: Gartside Dam, located near Crane, is designated as a high hazard dam. Additionally, portions of Richland County, including half of Fairview, could be in the inundation area in the event of a failure of Fort Peck Dam in McCone County.

- *Potential Action Item*: Provide assistance, as requested, to Montana FWP and the US Army Corps of Engineers to ensure continued safety of high hazard dams in the region.

## Severe Summer Storm

| | |
|---|---|
| **Overall Risk:** | High (all jurisdictions) |
| **Probability:** | High (Significant hazard event is likely to occur annually) |
| **Magnitude:** | Medium |
| **Seasonal Pattern:** | May - October |
| **Duration:** | A few minutes to six hours |
| **Speed of Onset:** | Quick |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Economic loss |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Permanent loss of businesses |
| | Power loss |
| | Property damage or loss |
| | Release of hazardous materials |

### Hazard Profile

Severe summer storms are a common occurrence throughout the world. Summer storms with the most severity are generally associated with frontal systems. Cold air is denser than warm air, and as a cold front approaches a warm air mass, the warm air is rapidly lifted into the troposphere, creating an unstable situation. Four severe summer storm elements that pose the greatest risk to life and property are tornadoes, wind, hail and lightning.

Tornadoes are the most destructive weather phenomenon on earth. They can produce winds ranging from 65 mph to more than 300 mph, and pose severe danger to life and property. Peak tornado season is from June to August, and most occur during evening hours. Tornadoes typically travel from southwest to northeast at a speed between 30 and 70 mph, and are generally on the ground for less than 10 minutes; however, tornado

*Figure 10 Tornado near Lambert in July 2011.*

Photo courtesy Andrea Zelinky.

characteristics are highly unpredictable and can change rapidly.

Most tornado fatalities are caused by flying debris. Wind, hail and scud clouds may mask the presence of a tornado and associated debris, which makes a public warning system critical for preventing loss of life and injuries.

Straight line winds are a common element of severe summer storms, and typically responsible for most damage associated with the storms. Strong winds often form on the leading edge of severe storms. A downburst can occur when air is carried into a storm's updraft and cools rapidly. Cold air is denser than warm air, so during warm days a downburst can develop as cold air rushes down to the surface. Downbursts with a diameter of less than 2.5 miles are called microbursts, and those with a diameter greater than 2.5 miles are called macrobursts. They can extend for hundreds of miles and support wind gusts greater than 100 mph.

Hail presents a hazard for property, crops, livestock and occasionally human life. Hail events range from an area of a few acres up to hundreds of square miles, although small events are most common. Hailstones can fall to the surface at more than 100 mph, and reach more than seven inches in diameter; however, most hailstones do not exceed two inches in diameter. Hailstones with a diameter of at least 0.75 inches are considered to be severe. Hail rarely causes human fatalities, but hailstones larger than 0.5 inches can pose significant danger.

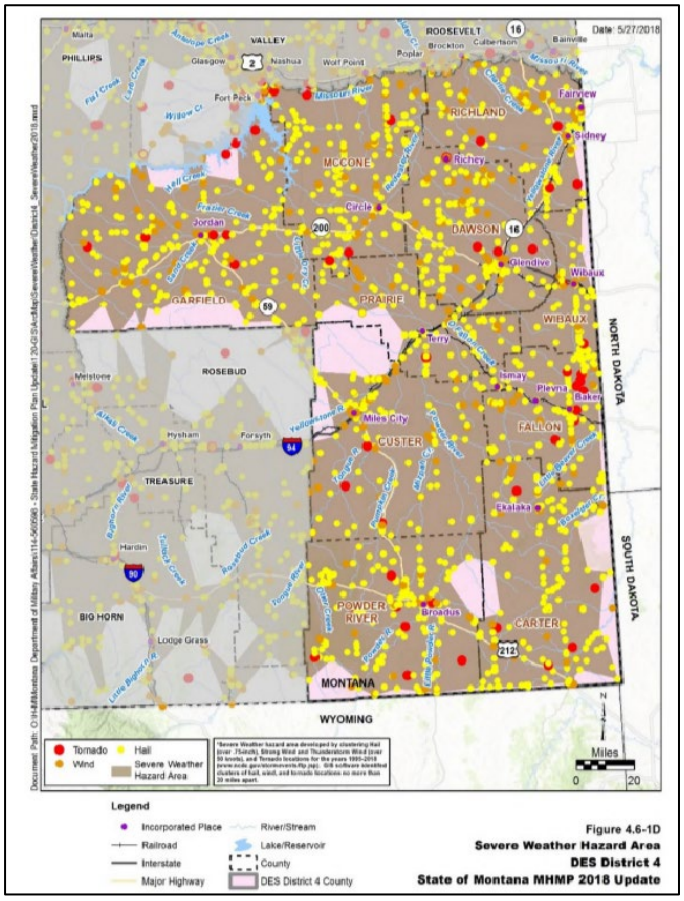
Lightning strikes pose multiple threats to life and property. A lightning strike can electrocute humans and animals, vaporize materials, cause fire and cause an electrical surge that may damage equipment. Human deaths from lightning strikes are somewhat uncommon. According to the National Weather Service, 29 recorded lightning fatalities occurred in Montana from 1959-2016. Livestock deaths and property damage are the most common lightning-related threats in Montana.

In addition to these four elements, heavy rain is often associated with severe summer storms, which can lead to a flooding hazard.

### Location

The entire county is exposed to the risk of tornadoes, wind, hail and lightning. Richland is in eastern Montana where dry thunderstorms is more common. Dry thunderstorms produce huge amounts of lighting strikes.

*Figure 11 Montana District 4 Severe Summer Activity Map*




**Source**: 2018 Montana State HMGP

## Extent

The magnitude of severe weather is measured by the severity of the event and the resulting damage.

Tornadoes were originally categorized using the Fujita Scale (F-Scale) or Pearson Fujita Scale, introduced in 1971, based on a relationship between the Beaufort Wind Scales (B-Scales) (measure of wind intensity) and the Mach number scale (measure of relative speed). The Fujita Scale is used to rate the intensity of a tornado by examining the damage caused by the tornado after it has passed over a man-made structure. The F-Scale categorizes each tornado by intensity and area. The scale is divided into six categories, F0 (Gale) to F5 (Incredible). The table below explains each of the F-Scale categories.

**Enhanced Fujita (EF) Scale**

On February 1, 2007, the National Weather Service adopted “Enhanced Fujita (EF) Scale”. The EF Scale evaluates and categorizes tornado events by intensity. Both the original Fujita Scale and the EF Scale estimate the intensity of a tornado (3-second gust speed) based on the magnitude of damage. The original scale had a lack of damage indicators and with the increasing standards for buildings, rating of tornadoes was becoming inconsistent. The EF Scale evaluates tornado damage with a set of 28 indicators (see NOAA website). Each indicator is a structure with a typical damage description for each magnitude of a tornado.

*Table 22 Fujita VS Enhanced Fujita Scale*

| FUJITA SCALE | | | DERIVED EF SCALE | | OPERATIONAL EF SCALE | |
|---|---|---|---|---|---|---|
| F Number | Fastest 1/4-mile (mph) | 3 Second Gust (mph) | EF Number | 3 Second Gust (mph) | EF Number | 3 Second Gust (mph) |
| 0 | 40-72 | 45-78 | 0 | 65-85 | 0 | 65-85 |
| 1 | 73-112 | 79-117 | 1 | 86-109 | 1 | 86-110 |
| 2 | 113-157 | 118-161 | 2 | 110-137 | 2 | 111-135 |
| 3 | 158-206 | 162-209 | 3 | 138-167 | 3 | 136-165 |
| 4 | 207-260 | 210-261 | 4 | 168-199 | 4 | 166-200 |
| 5 | 261-318 | 262-317 | 5 | 200-234 | 5 | Over 200 |

**Source**: National Oceanic and Atmospheric Administration

## Local Risk and Probability

Severe summer storm events are common in Richland County, with wind and hail being the most frequently reported events. Tornadoes are rare, but they do have a history in the area. The most impactful tornado event in the area was an EF3 that traveled through Wibaux County in July 1983. It caused two injuries and one fatality. While there is no history of a tornado causing injuries or fatalities in Richland County, the potential for a tornado exists; the impact would be devastating if a large tornado were to directly strike a populated area.

*Figure 12 Historical Probability of a Tornado Event in the United States*

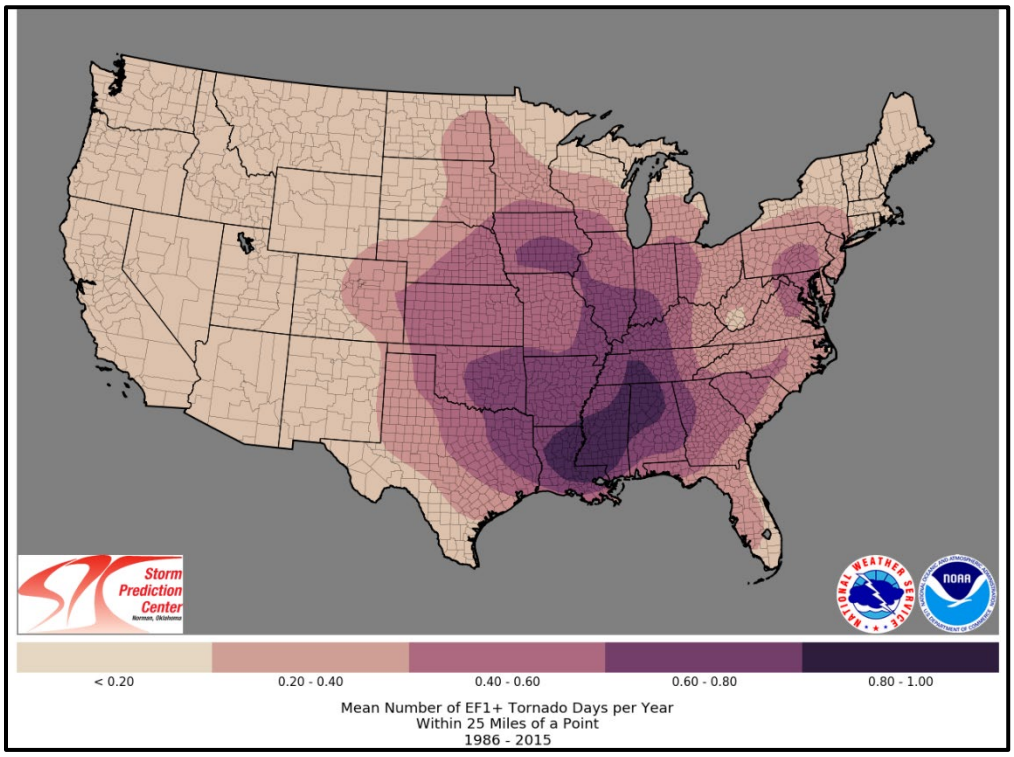


*Figure 13 Average Annual Tornadoes per State*

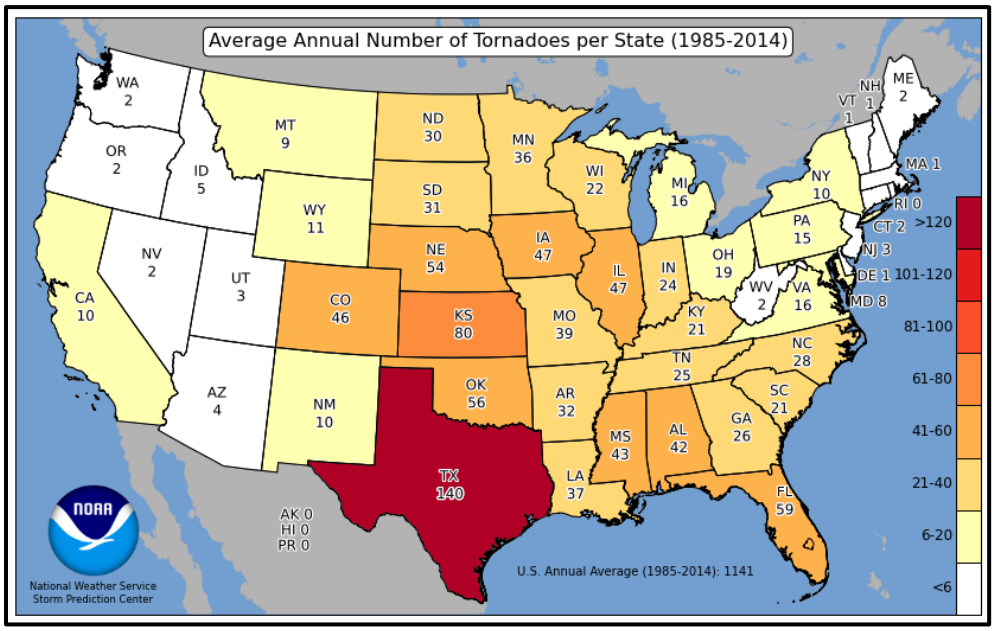
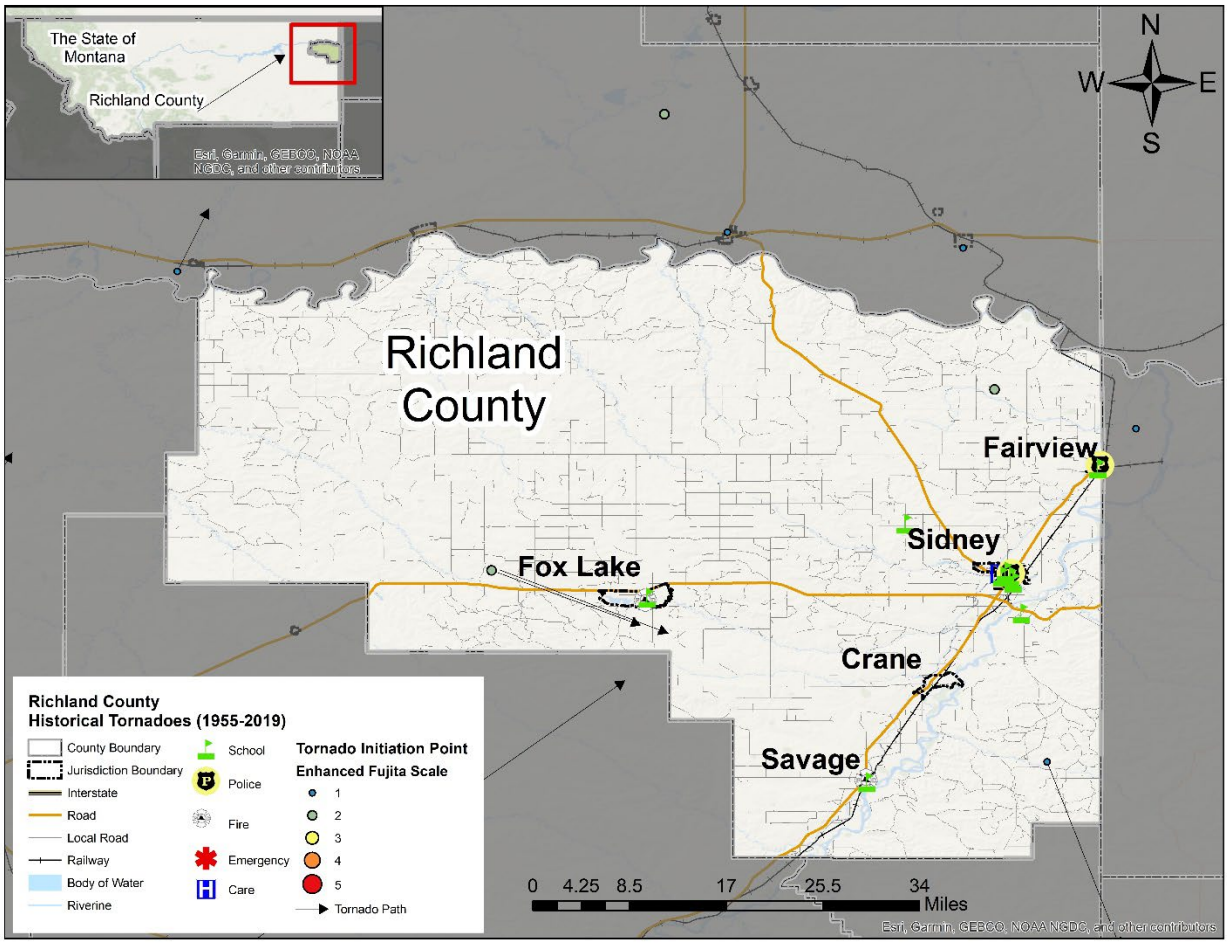



*Figure 14 Richland County Tornado History*



Even though hail and wind events are somewhat common in Richland County, the county has relatively few of these events when compared to other parts of the country. A severe hail event is defined as a storm producing hailstones at least 0.75 inches in diameter. The northern Great Plains, including Richland County, has generally fewer hail events than states in the southern half of the region. According to the National Weather Service Storm Prediction Center, the largest hailstone recorded in Richland County is 2.0 inches in diameter, which has occurred multiple times.

Common impacts from hail in the county include broken windows, damaged shingles, dented or broken gutters and damaged vehicles. Heavy hail events can also injure livestock and destroy crops.

*Figure 15 Historical Probability of a Severe Hail Event in the United States*

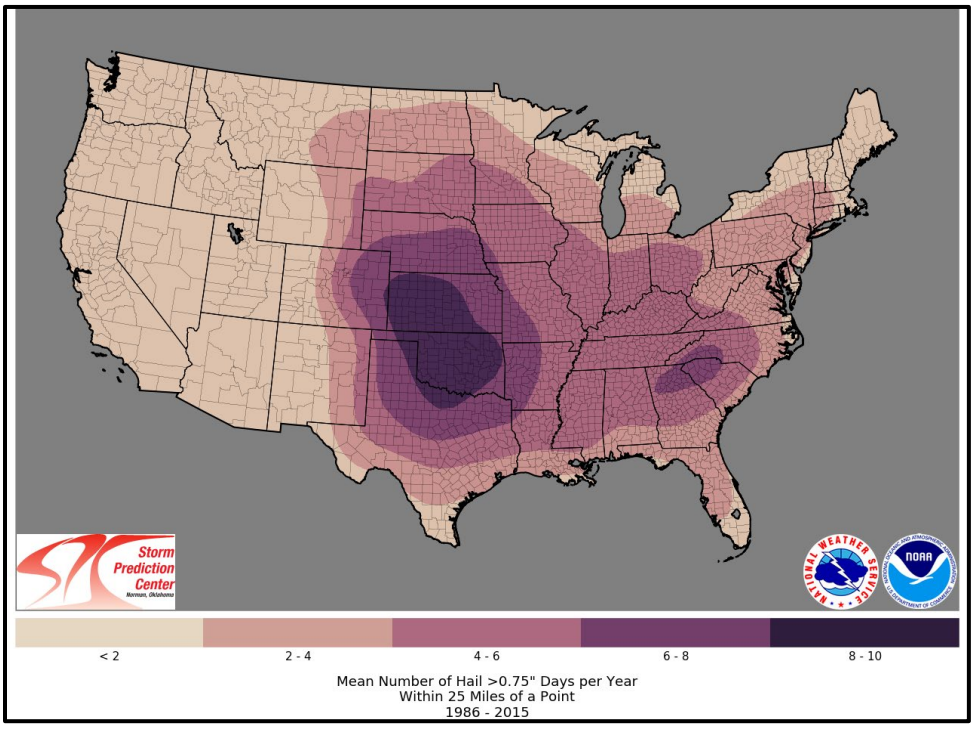


*Figure 16 Historical Probability of a Severe Wind Event in the United States*

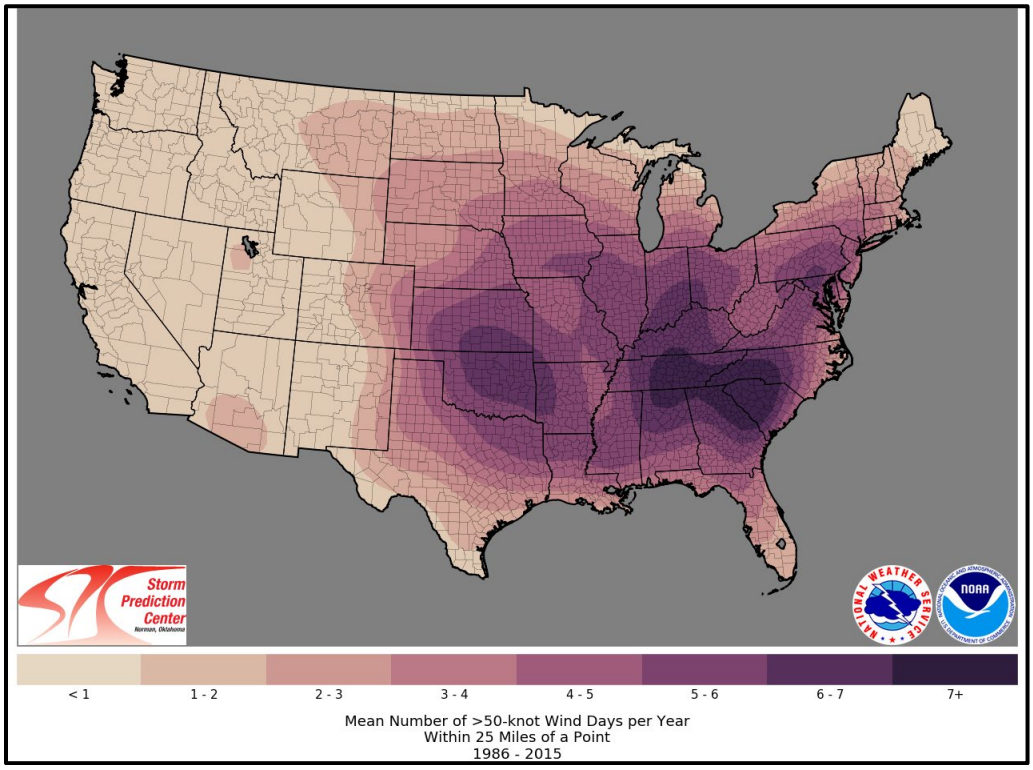
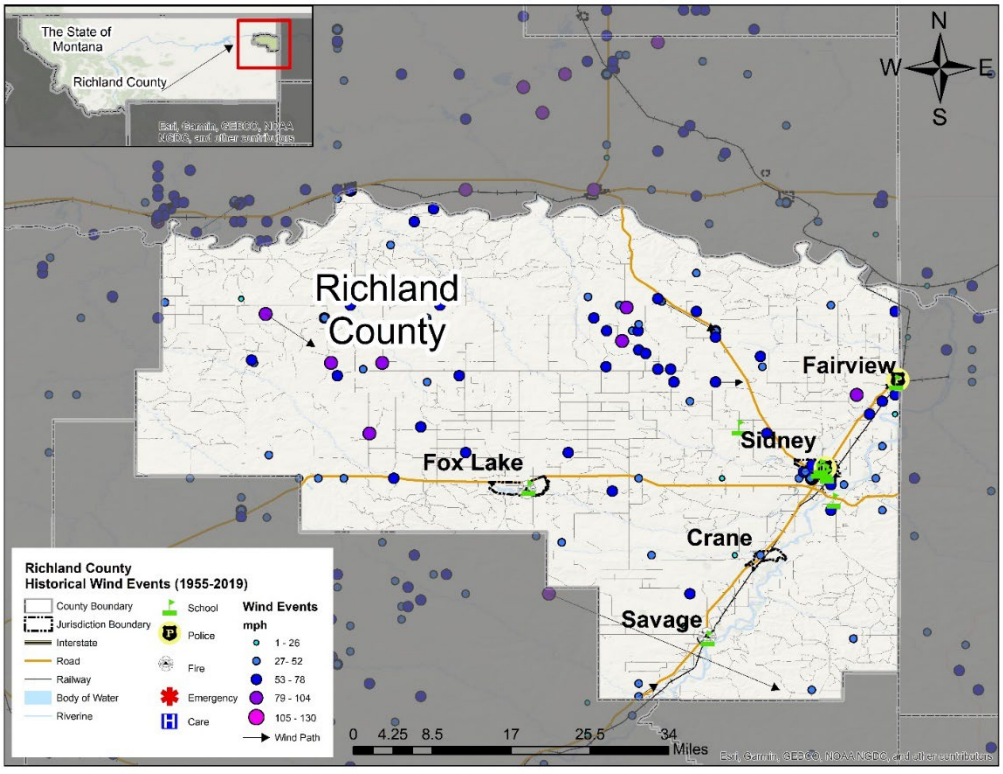



*Figure 17 Richland County Historical Wind Events*



A severe wind event is defined as gusts of at least 50 kts or 58 mph. Historical probability of a severe wind event in the United States is shown in Figure 16. While the northern Great Plains is generally considered a windy region, severe wind events are most common in the eastern half of the United States. It is important to remember when looking at hail and wind events that areas with higher population densities or more complex spotter networks may produce more event reports. This is especially true when looking at older data (pre-1995).

Common impacts from heavy winds in the county include broken trees and limbs, damaged agricultural structures and damaged power poles. In June 2012 a wind event near Fairview snapped 21 power poles off at the base and damaged two additional poles that required replacement. In June of 2015, a microburst blew through Richland County at 83 kts. (96 mph). Reported impacts included the destruction of a 4-year-old roping barn. According the NCDC Storm Events Database, the reported property damages were approximately $165,000.

A summary of Richland County's severe summer storm events in the SHELDUS database is shown in Table 23. There is generally more than one severe summer storm event per year that causes reported injuries/fatalities or property/crop damage. Fifty-five of the summer storm events reported wind as a contributing factor, 44 reported hail, four reported lightning and one reported tornado. This information does not include every summer storm event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy at the county level. SHELDUS statistics are most useful for comparing relative occurrences of storm events.

*Figure 18 Evergreen knocked down by severe thunderstorm in June 2009. Photo courtesy Richland County DES.*

The NOAA National Climatic Data Center's Storm Data and Unusual Weather Phenomena database provides more detailed information about storm events in the county. There were 56 summer storm events reported in the county between May 2013 and May 2020 (excluding duplicate same-day reports).

*Table 23 Severe Summer Storms Events in Richland County, 1960-2020*

| | |
|---|---|
| Events* | 87 |
| Annual Probability | 145% |
| Injuries** | 0.23 |
| Fatalities** | 1.67 |
| Damages**^ | $2,693,653 |
| Source: SHELDUS | |
| *Events causing recorded injuries/fatalities or damages | |
| **Total taken from entire disaster area and divided by number of affected counties | |

Hail, wind and heavy rain are all very common in the county, occurring multiple times per year.

## Vulnerabilities

### Population

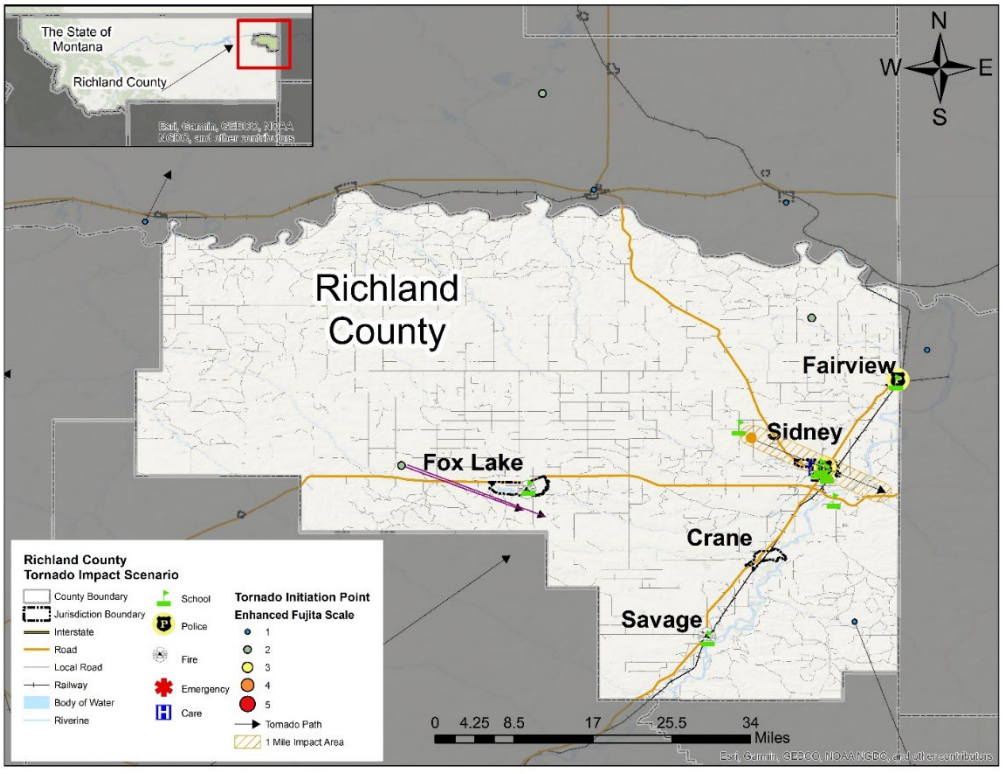
The entire population is vulnerable to a severe summer storm event. Residents living in homes without a basement are particularly vulnerable to tornado and wind events. Examples include residents living in mobile homes, recreational vehicles, or traditional homes without basements. Mobile home/RV parks in the county are currently at capacity due to the energy-related growth in the region. Some temporary residents also attempt to live out of vehicles in parks and recreation areas, although local ordinances prohibit long-term occupation.

### Key Facilities

All key facilities are vulnerable to a severe summer storm event. Facilities that have an increased vulnerability include:

- Schools in the county. A tornado or strong wind event could cause extensive damage to the facilities and lead to multiple fatalities.
- County Courthouse and City/Town Halls. The facilities are required for basic functions of government and replacements would be expensive.
- Power/Transmission Lines. A severe storm event could disrupt power delivery in the county, especially in urbanized areas where power lines could be downed by branches.
- Fire Halls. Damage to the facilities and the equipment within would severely limit the county's emergency response capabilities.

*Figure 19 Tornado Impact Scenario*



### Property

It is difficult to predict potential damages due to the highly variable nature of tornado, wind, hail and lightning events. A severe wind or hail event spanning a large portion of the county would have the potential to cause significant damage.

Exposed assets to severe summer weather are presented in Table 24.

*Table 24 Richland County Severe Weather Damage Exposed Assets*

| | Richland County | | Sidney | | Fairview | |
|---|---|---|---|---|---|---|
| Land Use | Structure | Land | Structure | Land | Structure | Land |
| Residential & Other Property Types | $640,824,299 | $225,243,380 | $334,762,264 | $124,010,766 | $14,343,328 | $4,958,449 |
| Exempt* | $78,719,824 | $46,202,266 | $21,230,179 | $13,497,360 | $78,719,824 | $46,202,266 |
| Farmstead | $104,062,990 | $51,241,979 | $3,727,250 | $528,185 | $1,513,180 | $228,601 |
| Agricultural | $111,900 | $36,638 | $0 | $0 | $0 | $0 |
| Commercial | $59,066,844 | $6,763,629 | $26,509,032 | $2,833,203 | $46,571 | $46,571 |
| Vacant | $635,039 | $17,393,986 | $329,309 | $8,810,786 | $0 | $30,022 |
| Total | $883,420,896 | $346,881,878 | $386,558,034 | $149,680,300 | $94,622,903 | $51,465,909 |

**All Property Types**: Apartment Urban, Agricultural - Rural, Centrally Assessed, Centrally Assessed Non-Value Property, Commercial Urban , Exempt Property, Partial Exempt, Farmstead - Rural, Farmstead - Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Industrial - Rural , Industrial - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, RV Park, Vacant Land - Rural, Vacant Land - Urban, and Blanks

**Residential & Others includes**: Apartment Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, and Blanks

**Commercial**: Industrial - Rural, Industrial - Urban, Centrally Assessed, Centrally Assessed Non-Value Property, and Commercial Urban

**Source**: Montana 2021 Tax Assessor Reports

Less disastrous hail and wind events are much more likely in the county. The SHELDUS database records 12 major storm events since 1960 where the damages were primarily due to hail. The average property damage for these hail events was $37,109. The most common impacts from a hail event include property damage (roof, siding, windows), crop damage and livestock fatalities or injuries.

*Table 25 Premium Subsidies by Cause of Loss (Severe Weather) 1995-2020 for Richland County*

| Cause of Loss | Premium subsidies 1995-2020 | Percent Cause of Loss (Heat, Excess Moisture, Hail, Drought, Flood, Cold Winter, Freeze, Other, etc.) |
|---|---|---|
| Hail | $1,918,918 | 20.64% |
| Heat | $386,169 | 4.15% |
| Excess Moisture | $1,523,327 | 16.38% |
| Wind/Excess Wind | $117,663 | 1.3% |

*Note: The premium subsidies by cause of loss in the table are lower than total premium subsidies because the USDA Risk Management Agency only reports premium subsidies by cause of loss for policies that paid an indemnity. Non-indemnified policies and their associated premium subsidies are not reported by cause of loss.*

The SHELDUS database records 28 major storm events since 1960 where the damages were primarily due to wind. The average property damage for these wind events was $53,590 and the average crop damage was $10,697. The most common impacts from a wind event include property and tree damage.

### Existing Capabilities

There are warning sirens in Sidney, Fairview, Savage and Lambert. Weather warnings are also broadcast on the local radio and television station out of Glendive.

The Emergency Manager and county staff conduct seasonal weather safety workshops.

### Future Development/Trends and Impact on Hazard

The State of Montana has adopted the 2012 International Building Code (IBC). The IBC includes a provision that buildings must be constructed to withstand a wind load of 75 mph constant velocity and three second gusts of 90 mph.

Local building codes could be developed in highly vulnerable areas to require shatter-proof glass on critical facilities and/or facilities housing vulnerable populations, higher standards for tying down roofs, and/or other methods to mitigate impacts from severe summer storms.

### Key Issues and Potential Action Items

**Key Issue**: Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.

- *Potential Action Item*: Expand the use of NOAA weather radios by the general public.
- *Potential Action Item*: Continue to provide education about seasonal weather safety.
- *Potential Action Item*: Offer information about weather-resistant building materials and best practices.
- *Potential Action Item*: Install and maintain surge protection on critical equipment.

**Key Issue**: The county experienced temporary residents living in mobile homes/RVs due to energy-related growth in the nearby Bakken region. While this has subsided, they are a possibility in the future. Residents in temporary housing often have satellite dishes (no local television) and out-of-state cell phones, which makes them difficult to reach through traditional notification channels.

- *Potential Action Item*: Require new mobile home/RV parks and workforce housing facilities of a certain size to have a safe room or sheltering plan as part of permitting process.
- *Potential Action Item*: Evaluate siren coverage in mobile home/RV park areas and acquire new sirens to address deficiencies.
- *Potential Action Item*: Develop a safe room at the airport for all temporary housing residents as well as travelers at the airport.

## Severe Winter Storm

| | |
|---|---|
| **Overall Risk:** | High (all jurisdictions) |
| **Probability:** | High (Significant hazard event is likely to occur annually) |
| **Magnitude:** | Medium |
| **Seasonal Pattern:** | October-April |
| **Duration:** | One to three days |
| **Speed of Onset:** | Quick, with a potential warning time of several days |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Blocked roads |
| | Economic loss |
| | Exposure risks to people, pets, livestock and wildlife |
| | Freezing pipes |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Power loss |
| | Property damage or loss |
| | School closure |
| | Vehicle accidents |

### Hazard Profile

Winter storms are a common occurrence in Montana, with the state experiencing three to four severe winter storms each year on average. Several hazard elements may be present during a winter storm: blizzards, heavy snow, ice storms and extreme cold. These elements can produce life-threatening situations and are a threat to people and property.

A blizzard is defined by the National Weather Service as a storm producing winds of 35 mph or more, with snow and/or blowing snow reducing visibility to less than 0.25 miles for at least three hours. A blizzard does not necessarily produce large amounts of snow, but heavy winds may result in large snow drifts. A closely related weather event known as a surface blizzard occurs when heavy winds blow snow that has already fallen. Both traditional and surface blizzards can reduce visibility, disrupting transportation and communication systems in the area.

Heavy snow is defined as six or more inches of snow in 12 hours, or eight or more inches of snow in 24 hours. Heavy snow can damage property and make roads impassable for extended periods. Broken branches may damage power lines and create road hazards if heavy snow occurs in autumn or late spring when leaves are on the trees.

An ice storm produces heavy and damaging accumulations of ice due to a combination of rain and below freezing surface temperatures. Accumulated ice can bring down trees and power lines and poses a threat to motorists, pedestrians and livestock.

Extreme cold is a common occurrence in Montana during winter months. Cold temperatures are amplified when combined with wind, creating dangerous wind chills. Wind chill is how cold the

temperature feels on the skin, so it only affects living organisms such as humans and livestock. Exposure to extreme cold temperatures and wind chill can damage tissue (frostbite) and lower the body's core temperature (hypothermia).

### Location

The entire county is exposed to the risk of blizzards, heavy snow, ice storms and extreme cold.

### Extent

- **Extreme Cold**: Extreme cold events typically occur in the winter months. The extent of extreme cold varies in terms of the Wind Chill Temperature and duration of the event.
- **Severe Winter Storms**: The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the county.

### Local Risk and Probability

Severe winter storms are common in Richland County. The NWS Cooperative Network weather station in Sidney records snowfall data. A general summary of aggregated snowfall information from 1910 to December 2020 in Richland County is shown below. Data is from the High Plains Regional Climate Center.

- The highest daily snowfall was 20.0 inches in March 2011.
- December has the highest average monthly snowfall, at 6.7 inches. January has the second highest average monthly snowfall, at 6.1 inches.
- The highest monthly snowfall was 22.9 inches in March 1975.
- The average annual snowfall is 32.8 inches.
- The highest annual snowfall was 75.5 inches between June 1978 and June 1979.
- The latest single day snowfall above 8 inches was 13 inches on May 12, 1983. The earliest single day snowfall above 8 inches was 9 inches on September 24, 1984.

Extreme cold temperatures are common in Montana, and Richland County is no exception. The coldest temperature recorded in the county since 1963 was -46 degrees F in January 1989. The lowest average high temperature for a month was 8.3 degrees F in January 1969. The common combination of cold temperatures and wind produces deadly wind chills that are present throughout much of the winter season.

Power loss is not common in the county, but a large storm can cause outages. A major winter storm event could cause extended power outages if damage is extensive or crews are unable to access the damaged areas.

A summary of severe winter storm events in Richland County from the SHELDUS database is shown in Table 26. A major winter storm that causes reported injuries/fatalities or property/crop damage occurs less than once a year. This information does not include every winter storm event that has occurred in the county during the time period; many storm damages are not reported, and the national scope of this database limits the detailed accuracy on the county level. SHELDUS statistics are most useful for comparing relative occurrences of storm events.

The NOAA National Climatic Data Center's Storm Data and Unusual Weather Phenomena database provides more detailed information about storm events in the county. There were 65 winter storm events reported in the county between November 2006 and December 2020

(excluding duplicate same-day reports). Extreme wind chills, strong winds, freezing rain and heavy snow are all common in the county.

*Table 26 Winter Storm Events in Richland County, 1960-2020*

| | |
|---|---|
| Events* | 23 |
| Annual Probability | 38.3% |
| Injuries** | 0.72 |
| Fatalities** | 2.32 |
| Damages**^ | $2,785,111 |
| Source: SHELDUS | |
| *Events causing recorded injuries/fatalities or damages | |
| **Total taken from entire disaster area and divided by number of affected counties | |

## Vulnerabilities

### Population

A severe winter storm creates potential hazards for nearly all residents. Hazards include:

- Residents living in mobile homes, recreational vehicles or poorly insulated homes may find it difficult to adequately heat their homes during cold temperature events. Western Richland County has large number of rural housing, which are susceptible and vulnerable to winter storms due to their isolation.
- Wind, ice, heavy snow and cold temperatures can combine to create hazardous conditions and trap residents in their homes without heat or electricity. Elderly residents may be especially vulnerable to this hazard as they are more likely to have limited mobility, especially in the event of hazardous road conditions. Approximately 1,648 persons in the county are 65 years of age or older; 870 of those elderly residents live in Sidney, and 165 live in Fairview.
- Those who are required to travel on a daily basis face increased road hazards.
- Increased use of furnaces, personal heaters and fireplaces during a cold weather event elevates the risk of fire or carbon monoxide poisoning.
- There is an increased risk of a medical incident due to slips/falls on ice, overexertion or hypothermia.

### Key Facilities

The following key facilities have increased vulnerability to a severe winter storm event:

- Fire Halls/Ambulance Centers. A winter storm event that traps fire and ambulance responders within the facility would severely limit the emergency response capability of the county and local jurisdictions.
- Schools. A severe winter storm event would most likely require closure of schools. A winter storm event that begins mid-day could present issues for students leaving school.
- Communications and electrical infrastructure are vulnerable to ice, snow and wind.
- Senior/assisted living facilities and hospital. Power outages and loss of heating could impact elderly and populations that require assistance for daily living.

### Property

It is difficult to estimate the impact of winter storms on property in the county. The most likely damages involve roof collapse due to heavy snow loads. A winter storm can also result in an increased risk of structure fires due to use of portable heaters and fireplaces during events that involve extremely cold temperatures.

A severe winter storm can also cause significant livestock fatalities. Losses vary based on storm severity and duration, but losses to unprotected livestock can be significant following a major storm event.

The SHELDUS database records 23 major winter storm events since 1960. The average property damage for these events was $85,482.

*Table 27 Premium Subsidies by Cause of Loss (Severe Winter Weather) 1995-2020 for Richland County*

| Cause of Loss | Premium subsidies 1995-2020 | Percent Cause of Loss (Heat, Excess Moisture, Hail, Drought, Flood, Cold Winter, Freeze, Other, etc.) |
|---|---|---|
| Freeze | $106,968 | 1.2% |
| Cold Winter | $165,563 | 1.7% |

*Note: The premium subsidies by cause of loss in the table are lower than total premium subsidies because the USDA Risk Management Agency only reports premium subsidies by cause of loss for policies that paid an indemnity. Non-indemnified policies and their associated premium subsidies are not reported by cause of loss.*

### Existing Capabilities

Red Cross volunteers in the county have the skills and knowledge to assist with establishing and operating a winter shelter.

The Emergency Manager and county staff conduct seasonal weather safety workshops.

Many businesses in Sidney have portable generators and would make them available to the city during a prolonged power outage.

### Future Development/Trends and Impact on Hazard Risk

The State of Montana has adopted the 2012 International Building Code (IBC). The IBC includes a provision that buildings must be designed to withstand a snow load of 30 pounds per square foot minimum. Montana snow is generally dry and snow loads do not threaten roof collapse in most areas.

### Key Issues and Potential Action Items

**Key Issue**: Residents and travelers do not always follow travel restrictions, which presents a hazard to themselves and first responders.

- *Potential Action Item*: Identify, mark and publicize snow routes.
- *Potential Action Item*: Determine parking/shelter area for semi-truck drivers during winter storms.
- *Potential Action Item*: Continue educating residents about winter storm safety.
- *Potential Action Item*: Work with MDT to determine additional strategic locations for variable message boards.

**Key Issue**: A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. Many facilities throughout the county (churches, schools, civic buildings) are available to serve as winter shelters. Several local businesses have large portable generators that would be available for the county to use in the event of a major power outage.

- *Potential Action Item*: Assess need and establish emergency winter shelters in strategic locations.
- *Potential Action Item*: Install portable generator hook-ups on designated shelters.
- *Potential Action Item*: Identify residents in the county who need electricity for medical equipment and develop plan to transport them to the winter shelter in the event of a power outage.
- *Potential Action Item*: Promote winter shelters so residents are aware of their availability during a winter storm event that is accompanied by power outage.
- *Potential Action Item*: Ensure adequate back-up power for key facilities in Sidney and Fairview.
- *Potential Action Item*: Encourage utilities to install underground power lines when undergoing service upgrades.

## Wildfire

| | |
|---|---|
| **Overall Risk:** | Medium (all jurisdictions) |
| **Probability:** | Medium (Significant hazard event is likely to occur within 25 years) |
| **Magnitude:** | Medium |
| **Seasonal Pattern:** | April - October |
| **Duration:** | Hours - weeks |
| **Speed of Onset:** | Quick |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Blocked roads |
| | Economic loss |
| | Explosion |
| | Hazardous materials release |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Localized evacuation |
| | Property damage or loss |
| | Reduced air quality |

### Hazard Profile

A wildfire is an unplanned fire in a rural area. The term includes grass fires, forest fires and scrub fires, which can be caused by humans or be natural in origin. Wildfires are a natural part of the ecosystem and are necessary for replenishing nutrients in the soil and clearing dead brush. Fire suppression activities have disrupted this natural cycle, resulting in an excess of organic fuel in many rural areas.

The most common natural cause of wildfires is lightning. Human causes include unattended debris burning, equipment fires, discarded cigarettes and railroad sparks.

Three primary factors affect the occurrence and severity of wildfires: fuel, weather and topography. Grasslands, shrubs and forests are considered prime fuels for wildfires. Land used for crop-based agriculture is not considered to be a significant fuel source due to the generally

high moisture content of cultivated crops. Weather conditions of low humidity, wind and dryness also contribute to wildfires. Steep topography can increase the speed at which wildfires spread.

Wildfires are a threat to livestock, agricultural crops, wildlife, habitat, property, shelter belts and scenic and recreational areas. In addition to the direct threat of flames and heat, wildfires may also produce large amounts of smoke, which can affect the air quality in the surrounding area and increase risk of transportation accidents.

The wildland-urban interface is another concern when discussing wildfire hazard. A wildland-urban interface occurs when structures are located close to natural vegetation. Fire can spread from the vegetation to the structures or vice-versa. The wildland-urban interface generally presents a significant threat along the edges of cities in areas with an abundance of natural vegetation. These areas often have special zoning regulations to mitigate the impact of wildfires in the wildland-urban interface.

### Location

Wildfires occur every year in Montana because they are part of the normal vegetative cycle for forest and grasslands in the state. The entire county is susceptible to wildfires.

### Extent

Wildfire losses are measured in terms of deaths, acres burned, and structures lost. The 2020 fire season in Montana resulted in a $50 million lost and 380,000 acres burned. There are approximately 45 wildfires in the county per year. Most are small grass fires that cause minimal damage.

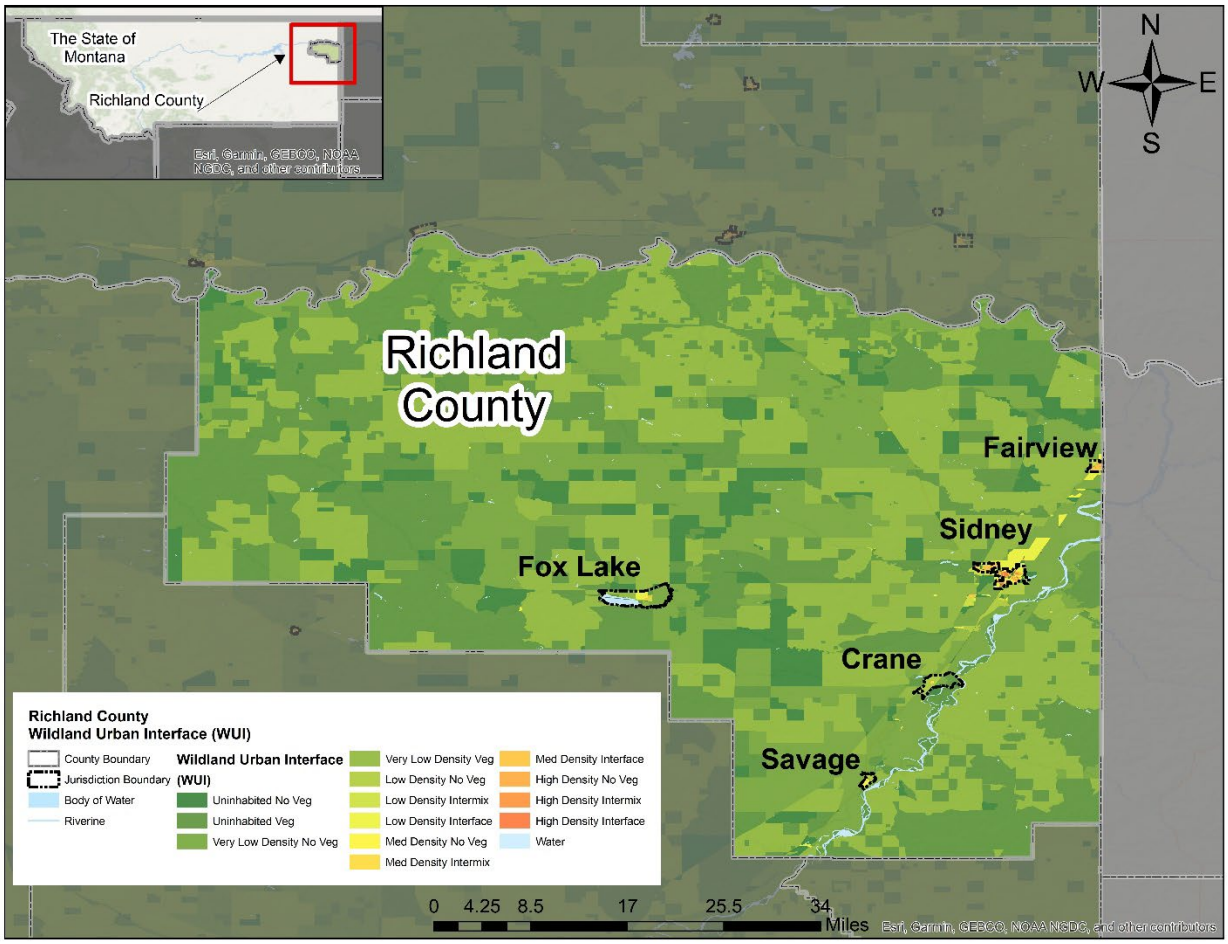
### Local Risk and Probability

Wildfires are a common occurrence in Montana. The western half of the state generally experiences the most intense wildfires, but eastern Montana also has ideal fuel, weather and topography for wildfire generation. One major wildfire in Richland County occurred on June 23, 2005, and burned 200 acres along the Richland/Roosevelt county border, and was caused by lightning.

The CWPP estimates the probability of a large wildfire in the county is one or two occurrences per decade.

The 13 Anderson Fire Behavior Fuel Models provide a way to visually represent fire fuel potential. The models consider surface fuel components, size and type. Fuel model attributes are shown in Table 28 and fuel types in the county are shown in Figure 20. The most common fuels are Category 2 (Timber - grass and understory), Category 3 (Tall grass – 2.5 feet) and Category 8 (Closed timber litter). Category 2 and Category 3 fuels produce low intensity fires that spread quickly, and Category 8 fuels produce low intensity fires that spread slowly.

*Figure 20 Richland County Fuel Types*




The Yellowstone River corridor in the county is dominated by crop-based agriculture, which is not considered to be a significant source of wildfire fuel. It is important to note that crops may be a source of wildfire fuel once they dry out in late summer or fall.

Wildfires in the county have the potential to cause substantial damage if they encroach into the built environment. The wildland-urban interface, as defined in the Growth Policy, is shown for Sidney and Fairview in Figure 21 and 22. Both communities are located in the Yellowstone River corridor and are primarily surrounded by agricultural lands, and bordered by low intensity grass fuels to the west. The general lack of high intensity fuels does not suggest the county and communities within are free of risk, as even marginal fuels can produce uncontrollable wildfires when given the right mix of weather and topography.

*Figure 21 Wildfire Hazard Areas, Sidney*

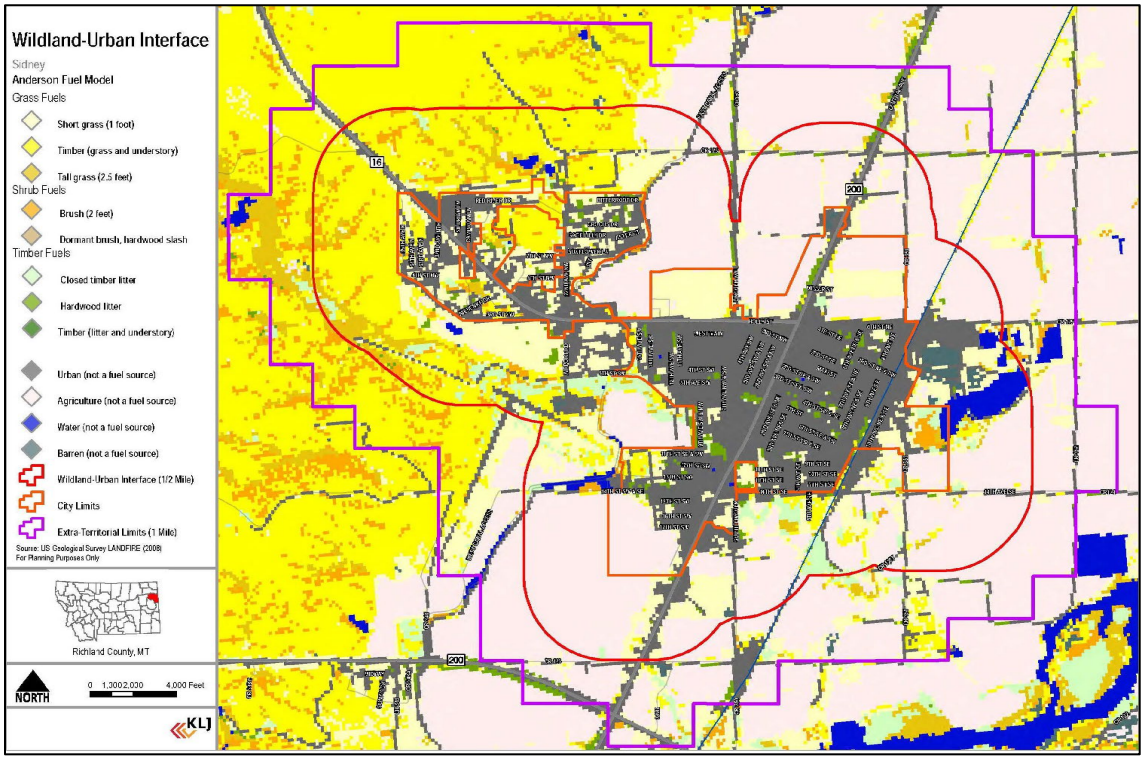



*Figure 22 Wildfire Hazard Areas, Fairview*

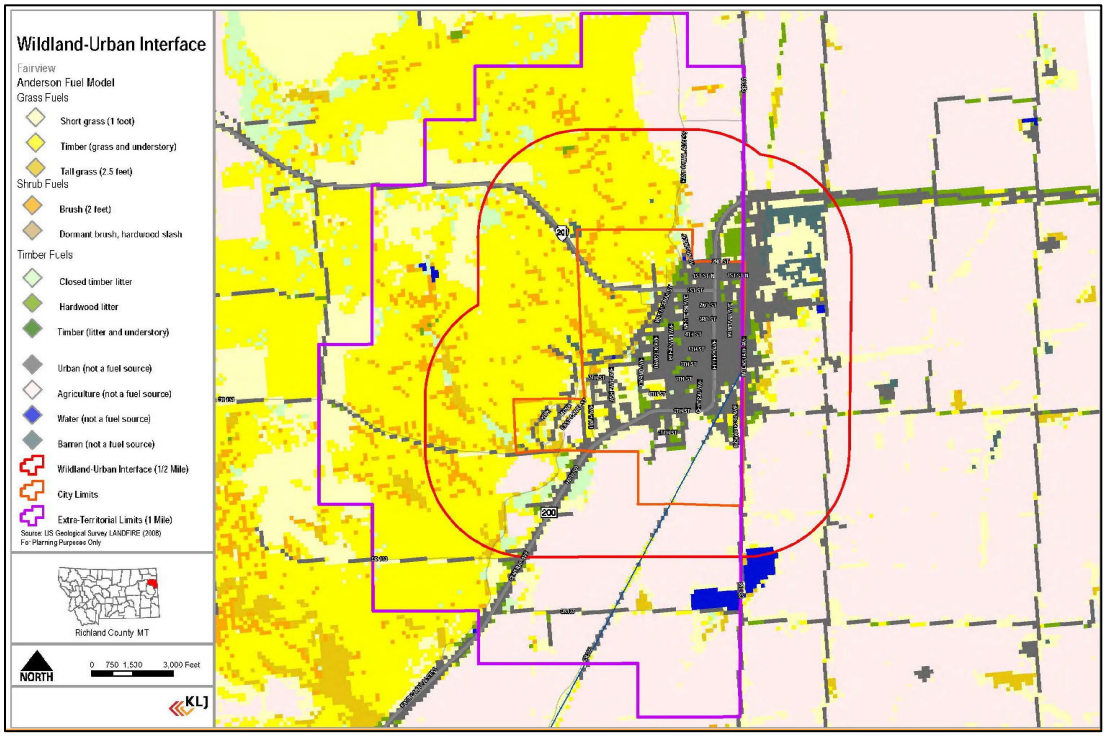


*Table 28 Fuel Model Attributes*

| Fuel Model | Description | Intensity | Speed |
|---|---|---|---|
| | Grass and grass-dominated | | |
| 1 | Short grass (1 foot) | Very Low | Very High |
| 2 | Timber (grass and understory) | Low | High |
| 3 | Tall grass (2.5 feet) | Low | Very High |
| | | | |
| | Chaparral and shrub fields | | |
| 4 | Chaparral (6 feet) | Moderate | Very High |
| 5 | Brush (2 feet) | Low | Moderate |
| 6 | Dormant brush, hardwood slash | Low | High |
| 7 | Southern rough | Low | Moderate |
| | | | |
| | Timber litter | | |
| 8 | Closed timber litter | Low | Low |
| 9 | Hardwood litter | Low | Low |
| 10 | Timber (litter and understory) | Moderate | Low |
| | | | |
| | Slash | | |
| 11 | Light logging slash | Moderate | Low |
| 12 | Medium logging slash | Very High | Low |
| 13 | Heavy logging slash | Very High | Low |

According to the CWPP the top ignition sources in the county are lightning, railroads, industrial activities, rural residents, power lines and highways/roads. Oilfield development in the eastern part of the county has significantly increased activity in rural areas and increased the fire risk.

## Vulnerabilities

### Population

Residents of non-urbanized areas are at a generally higher risk of wildfire. There are over 4,000 residents in Richland County that live outside of urbanized areas (Sidney, Fairview, Lambert, Savage) and are at risk for wildfire. Assuming that approximately 25 percent of residents in

Sidney, Fairview, Lambert and Savage live along or near the wildland-urban interface, over 1,000 additional residents are at risk for wildfire.

**Key facilities**

Many of the county's key facilities are within urbanized areas, which are considered defensible space for wildfire; however, several key facilities are located along the edges of urbanized areas near the wildland-urban interface or in rural areas. Facilities vulnerable to wildfire include:

- Airport
- County Shop
- USDA Agriculture Research Center
- MSU Extension Office
- Lambert Public School
- Law and Justice Center
- Fire Station
- Power/Transmission Lines
- Sidney Health Center
- Sidney High School
- Sugar Beet Plant

A large wildfire in the area of Sidney or Fairview has the potential to encroach into urban areas and damage additional facilities.

**Property**

According to the Fire and Aviation Management Bureau, the largest wildfire in eastern Montana since 2003 was a 121,600-acre fire in Bighorn County in 2006. This scenario considers a 120,000-acre wildfire that develops near Sidney. Two primary hazard areas are analyzed in this scenario: rural areas and the wildland-urban interface (the first ½ mile outside city limits, also including the first 100 yards within city limits). While a large wildfire would have the potential of damaging or destroying all structures in either Sidney or Fairview, only structures on the edges of town are considered to have an increased vulnerability. Note that this analysis does not include exempt structures such as churches and public facilities.

In the scenario it is also assumed that 100 percent of structures in the wildland-urban interface and first 100 yards within the city limits are damaged or destroyed. Richland County is 1,345,233 acres, so a 120,000-acre wildfire would affect approximately nine percent of rural areas. The scenario is presented in Table 29. Farmstead/residential structures experience the greatest damages in all areas.

*Table 29 Richland County Wildfire Scenario Damage Estimates*

| Richland County | | | |
|---|---|---|---|
| Land Use | Structure | Land | Total |
| Residential & Other Property Types | $19,124,357 | $5,899,666 | $25,024,023 |
| Exempt* | $49,310,709 | $18,502,973 | $67,813,682 |
| Farmstead | $2,197,220 | $944,823 | $3,142,043 |
| Agricultural | $0 | $0 | $0 |
| Commercial | $11,400,540 | $1,689,580 | $13,090,120 |
| Vacant | $382,569 | $15,608,473 | $15,991,042 |

| | | | |
|---|---|---|---|
| Total | $82,415,395 | $42,645,515 | $125,060,910 |

| Sidney | | | |
|---|---|---|---|
| Land Use | Structure | Land | Total |
| Residential & Other Property Types | $11,780,538 | $3,617,073 | $15,397,611 |
| Exempt* | $19,520,613 | $9,501,816 | $29,022,429 |
| Farmstead | $74,710 | $58,085 | $132,795 |
| Agricultural | $0 | $0 | $0 |
| Commercial | $1,033,270 | $835,650 | $1,868,920 |
| Vacant | $329,309 | $7,899,638 | $8,228,947 |
| Total | $32,738,440 | $21,912,262 | $54,650,702 |

| Fairview | | | |
|---|---|---|---|
| Land Use | Structure | Land | Total |
| Residential & Other Property Types | $250,402 | $136,237 | $386,639 |
| Exempt* | $549,974 | $899,840 | $1,449,814 |
| Farmstead | $115,730 | $18,625 | $134,355 |
| Agricultural | $0 | $0 | $0 |
| Commercial | $0 | $46,571 | $46,571 |
| Vacant | $0 | $30,022 | $30,022 |
| Total | $916,106 | $1,131,295 | $2,047,401 |

| |
|---|
| All Property Types: Apartment Urban, Centrally Assessed Non-Value Property, Exempt Property, Partial Exempt, Farmstead - Rural, Improved Property - Rural, Improved Property - Urban, Industrial - Urban, Non-valued Property, Manufactured Home, Tribal Property, Vacant Land - Rural, Vacant Land - Urban, and Blanks |
| Residential & Others includes: - Apartment Urban, Improved Property - Rural, Improved Property -Urban, Non-valued Property, Manufactured Home, Tribal Property, and Blanks<br><br>Commercial: Industrial - Urban, and Centrally Assessed Non-Value Property |
| Spatial Analysis, WUI, Montana 2021 Tax Assessor Data, https://svc.mt.gov/msl/mtcadastral |

## Existing Capabilities

The county has four volunteer fire districts: Sidney, Fairview, Savage and Lambert. The departments have the training and experience necessary to address wildfires, along with mutual aid agreements with neighboring fire protection districts.

The DNRC and BLM are also available for fire suppression equipment and personnel.

The county has a burn ban ordinance that is actively enforced.

The county currently participates in Fire Prevention Week.

Richland County/Sidney/Fairview subdivision regulations contain special standards for development within high fire hazard areas. Standards include a minimum number of entrance/exit routes, clear right-of-ways, density limits, required defensible space and minimum water supply available for suppression.

### Future Development/Trends and Impact on Hazard Risk

The WUI is a popular place to live. Regulating growth in these areas is a delicate balance between protecting private property rights and promoting public safety. The 2007 Montana Legislative session passed a bill specific to wildfire and the WUI that reduces the impact of wildfire and rangeland fire on future development. Senate Bill 51, which took effect on October 1, 2009, revised growth policy and subdivision law requiring the consideration of wildland fire. The law requires that growth policies include an evaluation of the potential for wildland fire, including whether or not there is need to delineate the WUI or adopt regulations that require defensible space around structures, adequate ingress and egress to and from structures to facilitate fire suppression activities, and/or adequate water supply for fire protection.

The Richland County Growth Policy recommends defensible space guidelines in subdivision regulations to protect against future wildfires.

### Key Issues and Potential Action Items

**Key Issue**: Wildfires are common in the county. Although local fire departments have excellent response capabilities, the potential remains for a large-scale wildfire in times of drought or windy conditions.

- *Potential Action Item*: Continue to maintain wildfire preparedness.
- *Potential Action Item*: Update the county's Community Wildfire Protection Plan (CWPP) to provide a detailed assessment about the county's wildfire risk and response capabilities.
- *Potential Action Item*: Create defensible space guidelines in the county's subdivision regulations to address structures building near oil/gas wells or forested areas.

**Key Issue**: Water supply issues exist. Specifically, the western and northwestern portions of the county do not have an adequate water source for firefighting.

## Landslide

| | |
|---|---|
| **Overall Risk:** | Low (all jurisdictions) |
| **Probability:** | Low (Significant hazard event is likely to occur within 100 years) |
| **Magnitude:** | Low |
| **Seasonal Pattern:** | None |
| **Duration:** | A few minutes to six hours |
| **Speed of Onset:** | Varies |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Economic loss |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Infrastructure loss |
| | Property damage or loss |

### Hazard Profile

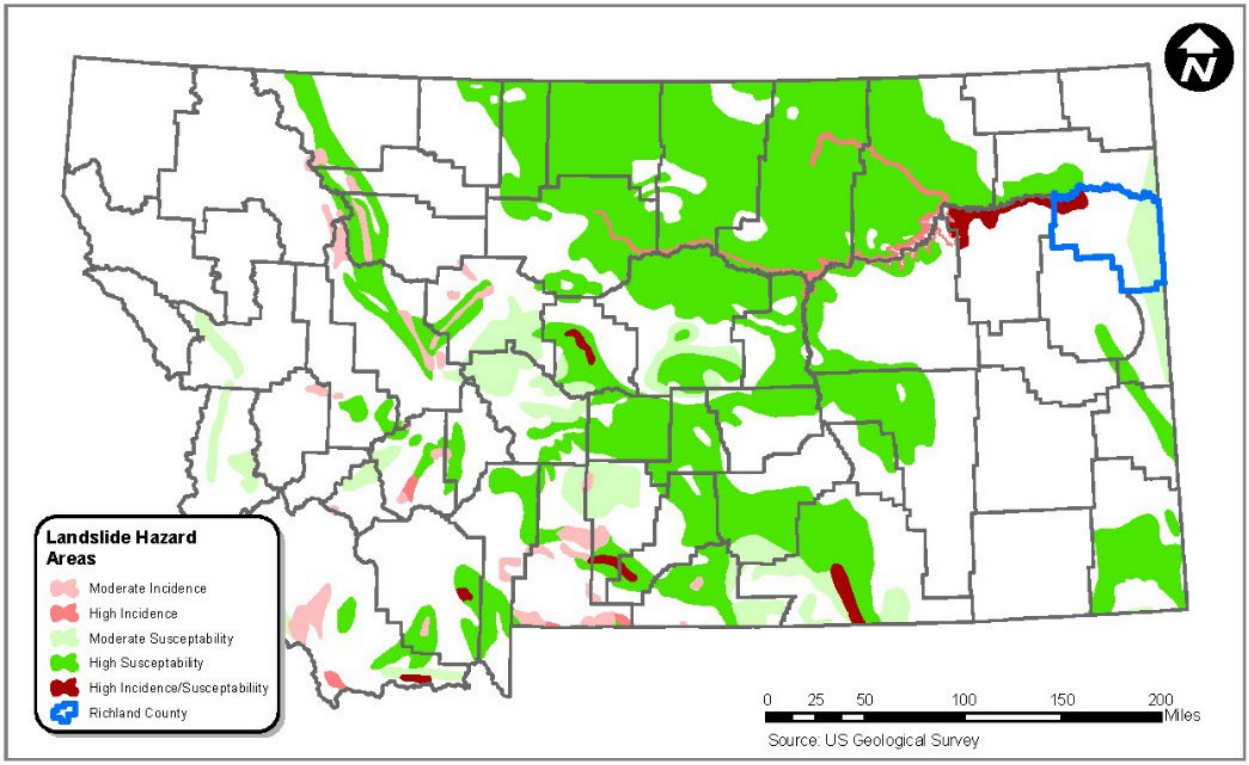
Landslides include all types of gravity-caused mass movements of earth material, ranging from rock falls, slumps, rock slides, mud slides and debris flows. Precipitation, topography, geology and human activities can all trigger landslides. Landslides can be a slow, creeping phenomenon, or they can occur quickly when triggered by a secondary event such as an earthquake.

Landslides have a history of causing damage in Montana. The Hebgen Lake Earthquake in 1959 triggered the largest landslide in Montana history; nearly 1.25 miles of the Madison River and Highway 287 were buried to depths as great as 394 feet. Slow, creeping landslides can also cause significant impacts, most commonly in the form of damaged roads and other critical infrastructure.

## Location

Richland County has a low risk for landslides. The county is not in a landslide hazard area; however, the eastern portion of the county has an area that is considered a moderate susceptibility zone for landslides. The northwest corner of Richland County along the Missouri River is a high susceptibility-high incidence area. Some steep slopes are located directly adjacent to the river, but most of the area contains gently rolling hills. Susceptibility is defined as the probable degree of response of the areal rocks and soils to natural or artificial cutting or loading of slopes, or to anomalously high precipitation. Incidence is a history of previous events.

*Figure 23 Landslide Hazard Area*




## Extent

Landslides can be slow and moving or fast and moving. Disastrous landslides often occur after heavy rainfall along steep slopes. The magnitude of a landslide is the steepness of the slope, the bedrock, soil, and initiating factor such as an earthquake or rainfall.

## Local Risk and Probability

There is no history of a landslide causing significant damage in Richland County. Nearly all of the hazard area is sparsely populated (less than 2.0 persons per square mile) and generally utilized

for agriculture. The eastern border of the county is designated as a moderate susceptibility area, and is primarily characterized by gently rolling hills and badland formations. Rocky buttes, generally isolated in agricultural fields, may be the primary source of the area's moderate susceptibility designation. The northwest corner of Richland County along the Missouri River is a high susceptibility-high incidence area and has some steep slopes located directly adjacent to the river

## Vulnerabilities

### Population

Vulnerable population can be determined by analyzing 2010 US Census blocks that intersect the hazard area (2020 Census data was not available at the time of the update). Proportional estimates are used to determine population for census blocks that only partially bisect the hazard area. Utilizing this method of analysis, there are approximately 110 residents who live within the high susceptibility-high incidence landslide area in the county.

### Key Facilities

There are no key facilities located within the high susceptibility-high incidence landslide hazard area.

### Property

Farmsteads, which include rural homes and associated outbuildings, are the majority of structures in the hazard area. It is very unlikely that property will be severely impacted.

## Existing Capabilities

Existing development in the county's identified high susceptibility-high incidence hazard area is sparsely populated (less than 2.0 persons per square mile) and generally utilized for agriculture. It is unlikely these areas will be developed.

## Future Development/Trends and Impact on Hazard Risk

The Growth Policy recommends developing a GIS system to collect natural resource and development information and coordinate with the Montana State Library and a county representative to update local data to include steep slopes. This data will further support regulatory changes, if needed.

## Key Issues and Potential Action Items

**Key Issue**: The northwest corner of the county is defined as a high susceptibility-high incidence landslide hazard area, and the eastern half of the county is defined as a moderate susceptibility area.

- *Potential Action Item*: Define steep slope/landslide areas in next Growth Policy update and create development restrictions in those areas.
- *Potential Action Item*: Compile a detailed inventory of critical facilities and infrastructure that are vulnerable to landslides as development continues to encroach on steep slopes.

# Communicable Disease

| | |
|---|---|
| **Overall Risk:** | Medium (all jurisdictions) |
| **Probability:** | Medium (Significant hazard event is likely to occur within 25 years) |
| **Magnitude:** | Medium |
| **Seasonal Pattern:** | None |
| **Duration:** | Varies |
| **Speed of Onset:** | Quick |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Economic loss |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Localized evacuation |
| | School closure |

## Hazard Profile

A communicable disease is an illness caused by an infectious agent, such as bacteria, virus, fungi, parasites or toxin. Diseases are a threat to human, animal and plant populations. The causes and severity of diseases vary. Communicable diseases of particular concern are those that can lead to the loss of human life or widespread loss of crops and livestock. A severe disease outbreak has potential for catastrophic effects on human populations and the economy.

There are numerous ways for communicable disease to spread among humans: physical contact with an infected person, contact with contaminated object, bites from animals or insects carrying the disease or air travel. A widespread occurrence of disease in a community is called an epidemic. Epidemics may lead to quarantines, school and business closures and stress on medical facilities. A widespread epidemic (often countrywide or worldwide in scope) is referred to as a pandemic.

Elderly and young persons are generally the most susceptible to disease. Human communicable diseases include influenza, meningitis, pertussis (whooping cough), measles, rubella and tuberculosis. The most deadly pandemic in modern history was the 1918 influenza outbreak, which killed an estimated 50 to 100 million people (three to five percent of the world's population). The 1918 pandemic was caused by the H1N1 influenza virus, which resurfaced in 2009 (referred to as the swine flu) and killed an estimated 300,000 to 600,000 people worldwide. Most recently the United States has been hit with SARS-CoV-2 (COVID-19). It was discovered in December 2019 in Wuhan, China. It is very contagious and has quickly spread around the world.

Animal and plant diseases can harm the economy through loss of livestock and crops. Widespread plant and animal diseases can lead to food shortages. Livestock and animal diseases of concern in Montana include brucellosis, African horse sickness, foot and mouth disease, highly pathogenic avian influenza and H1N1 swine flu. Some animal diseases may cause sickness in humans if proper precautions are not taken with infected animals.

## Location

The entire county is potentially vulnerable to a communicable disease incident.

## Extent

The magnitude of diseases is determined by its transmission rates and virulence in the affected population. As evidenced by COVID-19, a global pandemic can have direct and indirect impacts that are far-reaching and disruptive. Animal and plant diseases are an economic threat to the county given its dependency on agriculture.

## Local Risk and Probability

Populations throughout the world are susceptible to epidemics and pandemics, and Richland County residents are no exception. The most recent and poignant example of a significant communicable disease incident is the COVID-19 pandemic.

### COVID-19

The global public health emergency caused by the coronavirus unfolded rapidly and dramatically. The virus, which causes the COVID-19 disease, emerged in Wuhan, China, in late 2019. Since then, it spread to more than 200 countries and territories, including Montana in the spring of 2020. COVID-19 is a new virus in humans causing respiratory illness which can be spread from person-to-person and people can be asymptomatic. Genetic variants of SARS-CoV-2 have been emerging and circulating around the world throughout the COVID-19 pandemic and have been associated with changes to receptor binding, reduced neutralization by antibodies generated against previous infection or vaccination, reduced efficacy of treatments, potential diagnostic impact, or predicted increase in transmissibility or disease severity.

COVID-19 impacted the entire county, and the first case in Montana was identified in March of 2020. In an effort to limit the spread of the virus, public health and some local governments issued stay-at-home orders requiring residents to halt many nonessential activities. Since early spring of 2020, limited PPE was available for health care and emergency services agencies. Public health capabilities were challenged to keep pace with the community transmission as restrictions were relaxed. Every public health and medical organization, long-term care facility, business, and residents in the county have been impacted. A few considerations specific to the region include, but are not limited to: the ability of the virus to transfer, especially in rural areas, due to less restrictive policies; delay of medical care due to the pandemic overwhelming hospital systems and people being fearful of seeking care; increased reporting and evidence of the negative impacts on residents' mental health and well-being; the need for increased public information and education to garner greater confidence in the COVID-19 vaccine; and mass vaccination efforts, especially ensuring priority and at-risk groups receive the vaccine and ensuring an equitable process.

The global pandemic required many communities to address the need for extensive situational awareness and coordinated planning; increased coordination across all disciplines, including the philanthropic, business and schools community at an unprecedented scale; public information and warning; reopening strategies; public health orders; resource support; addressing essential staff limitations/shortages across key health and medical sectors during various phases of the pandemic; limited public health laboratory testing early in the pandemic; contact tracing and investigation; fatality management; medical countermeasure dispensing and administration, specifically vaccine planning and distribution; medical surge; ongoing resupply of PPE; and community and economic recovery.

## Vulnerabilities

### Population

Elderly and young persons are most at risk for communicable disease. About 14.7 percent, or 1,648 of the county's residents, are 65 years of age or older. About 6.1 percent, or 686 of the county's residents, are five years of age or younger.

Potential concentrated areas of vulnerable residents are The Lodge at Lone Tree and the Sidney Health Center. There are also several schools located in the county:

- Brorson Elementary
- Fairview Public School
- Lambert Public School
- Liberty Christian
- Rau Elementary
- Savage Public School
- Sidney High School
- Sidney Middle School
- Sidney West Side School
- Sidney Central Elementary School

A pandemic influenza event similar to the 1918 outbreak could have a significant effect on the county as evidenced by the 2020 COVID-19 incident. The Center for Disease Control estimates the 1918 outbreak caused illness in 40 percent of the population; seven percent of those ill required hospitalization, and two percent of those ill died from the disease. In Richland County this means that approximately 4,324 residents would become ill, 303 would require hospitalization and 87 would die. There has been a total of 1,069 cases of COVID-19 in the county, of those cases 14 people have died. The Outbreak is ongoing. Executive Order 2-2021 declares that a state of emergency exists in Montana due to the global outbreak of COVID-19.

It is important to note, however, that modern influenza vaccines can prevent against the development of pandemics. Modern vaccines are effective against several types of influenza, including H1N1, but the biggest issue is educating residents about the importance of being vaccinated.

### Key Facilities

Schools in the county and the Law and Justice Center have an increased vulnerability due to the high density of occupants.

The Lodge at Lone Tree and extended care at the Sidney Health Center Campus have an increased vulnerability due to the density and susceptibility of occupants.

The Sidney Health Center Campus would be a local source for medical care in the event of a disease outbreak.

The sugar beet plant in Sidney and the Eastern Ag Research Center would potentially be directly affected by widespread crop disease depending on the types of crops affected.

**Property**

An outbreak of communicable disease has the potential to impact crops and livestock, but it would not cause other quantifiable property damage.

### Existing Capabilities

The Sidney Health Center is an acute care hospital, clinic, pharmacy and extended care facility. It provides a wide range of medical services including vaccinations and emergency treatment.

The USDA Farm Service Agency and MSU Extension offices in Sidney offer technical assistance to farmers and ranchers for the prevention and treatment of agricultural diseases.

### Future Development/Trends and Impact on Hazard Risk

Future development would not be directly impacted by disease, but any additional residents would be at risk for disease.

### Key Issues and Potential Action Items

**Key Issue**: Human and agricultural disease have the potential to greatly impact the health and economy of the county. There are several concentrations of vulnerable populations in the area.

- *Potential Action Item*: Continue monitoring potential outbreaks and keep quarantine/evacuation procedures up-to-date.
- *Potential Action Item*: Educate residents about disease prevention.

## Hazardous Materials Release

| | |
|---|---|
| **Overall Risk:** | Medium (all jurisdictions) |
| **Probability:** | Medium (Significant hazard event is likely to occur within 25 years) |
| **Magnitude:** | Medium (county); High (Sidney, Fairview) |
| **Seasonal Pattern:** | None |
| **Duration:** | 1-10 hours |
| **Speed of Onset:** | Quick |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Economic loss |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Localized evacuation |
| | Loss of income for displaced workers |
| | Loss of power |
| | Permanent loss of business |
| | Structure collapse |

### Hazard Profile

A hazardous material is any substance with potential to cause harm to humans, animals or the environment, either by itself or through interaction with other factors. Multiple federal agencies are responsible for regulating hazardous materials, including the US Environmental Protection Agency (EPA), US Occupational Safety and Health Administration (OSHA), US Department of Transportation (DOT) and US Nuclear Regulatory Commission (NRC).

Common hazardous materials are:

- Explosives
- Flammables and combustibles
- Oxidizers
- Organic peroxides
- Poisonous/infectious agents
- Radioactive substances/materials
- Corrosives

Hazardous materials incidents can occur at a fixed facility or while a material is transported. Common hazardous materials incidents at fixed sites include the improper storage, treatment and disposal of hazardous waste at manufacturing and processing facilities. Transportation-related hazardous materials incidents generally occur along major transportation routes such as highways, interstates, pipelines and railroads. Common hazardous materials found in Montana include natural gas, anhydrous ammonia and crude oil.

Natural gas is commonly used in Montana, often in its refined form, propane or butane. Propane and butane are generally transported as a liquid, but will vaporize in the event of an unintended release (butane only vaporizes at temperatures above 32 degrees Fahrenheit). In their gaseous form they are both heavier than air, and generally remain close to the ground. Propane and butane are both highly flammable and present the risk of explosion. Exposure to propane and butane can also be a health hazard. Acute exposure can cause asphyxiation, respiratory irritation and physiological damage; however, these effects are most likely to occur in enclosed spaces or areas with poor ventilation.

Anhydrous ammonia is used in manufacturing, refrigeration and fertilizer. It is often stored and transported as a pressurized liquid, but it will vaporize under normal pressure. Anhydrous ammonia has explosive potential, but it requires extremely high temperatures to ignite. It generally only produces a significant health hazard when released in poorly ventilated areas, but when exposed to moisture it can cause a low-lying ammonia fog. Effects of acute anhydrous ammonia exposure include severe irritation to the eyes, respiratory tract, gastrointestinal tract and skin; severe repetitive exposure can cause permanent damage to these tissues. Anhydrous ammonia is not known to be carcinogenic.

Crude oil poses a significant risk due to its high flammability. It may release flammable vapors that increase risk of explosion. Crude oil also poses several health risks. Exposure to crude oil can come from direct contact, inhalation or ingestion. Acute exposure to crude oil can cause direct effects such as skin irritation, breathing difficulty, headaches and nausea. Acute exposure may also lead to long-term complications such as lung, liver or kidney damage and increased cancer risk.

Railroads and interstates/highways are increasingly being relied upon to transport crude oil from the Bakken region to refineries in the south or along the coasts. While both transportation methods present a risk to people and property, the economics of crude oil transportation by rail creates an increased risk that is not present along interstates/highways. When crude oil is shipped by rail, it is often assembled into “unit trains” that contain more than 100 cars of the same substance. These unit trains contain an enormous concentration of crude oil, often nearly three million gallons per train.

Additionally, the safety of tank cars that commonly transport crude oil, called DOT-111 cars, has been called into question by the National Transportation Safety Board. The cars have been shown to have a high failure rate when trains derail. The Pipeline and Hazardous Materials Safety Administration has proposed new guidelines that phase out use of DOT-111 cars, but regulations have not yet been put into place.

The combination of high volume and inadequate cars means that railroads could present a significant risk in the event of a derailment. Most towns in Montana were historically developed around the railroad, meaning trains often travel in close proximity to large numbers of people and property.

Railroad hazardous materials incidents are rare; however, the results can be catastrophic when an incident occurs. On July 6, 2013 a train carrying 72 carloads of crude oil derailed in Lac-Magantic, Quebec and resulted in 50 fatalities. The potential exists for large-scale events like this in communities across North America, especially in areas near the Bakken formation where crude oil production and transport is high.

### Location

Hazardous material incidents usually occur on major highways and railways, but fixed-facilities containing hazardous materials can pose a threat to residents in the county.

### Extent

Hazardous materials incidents can cause death, serious injury, long-lasting health effects, and damage to buildings, homes, and the environment. The magnitude of the hazard is often expressed as a percentage of property damage caused by the incident. The extent of hazardous materials in the county to-date have been small incidents that have caused no injuries or fatalities.

### Local Risk and Probability

Transportation routes present the greatest risk to people and property in Richland County. There are multiple highways in the county that trucks utilize to transport hazardous materials. Highway 200 is a major east-west connection in the region and Highway 16 is a major north-south connection. Highways 200 and 23 converge at Sidney, and Highway 200 goes directly through downtown. It is common to see large trucks carrying hazardous materials through town.

Gas and oil transmission pipelines run throughout the county, often near populated areas. Additionally, the BNSF railroad travels along Highways 200 and 16, passing by the population centers of Sidney, Fairview, Crane and Savage.

The Montana Department of Environmental Quality (DEQ) maintains a statewide database of permitted hazardous waste handlers, which includes sites for hazardous materials treatment, storage or disposal. A summary of hazardous waste handlers and transportation corridors in

The National Response Center (NRC) and Pipeline and Hazardous Materials Safety Administration (PHMSA) track hazardous materials releases in the county. Since 1993 there have been 51 reported hazardous materials releases in the county.

- 18 releases involved truck transportation.
- 21 releases involved fixed facilities.
- 11 releases involved pipelines.

- One release involved the railroad.

Hazardous materials release was identified as the top human-caused hazard for the county in the community survey conducted as part of this plan.

*Figure 24 Hazardous Material Transportation Corridors in Richland County*

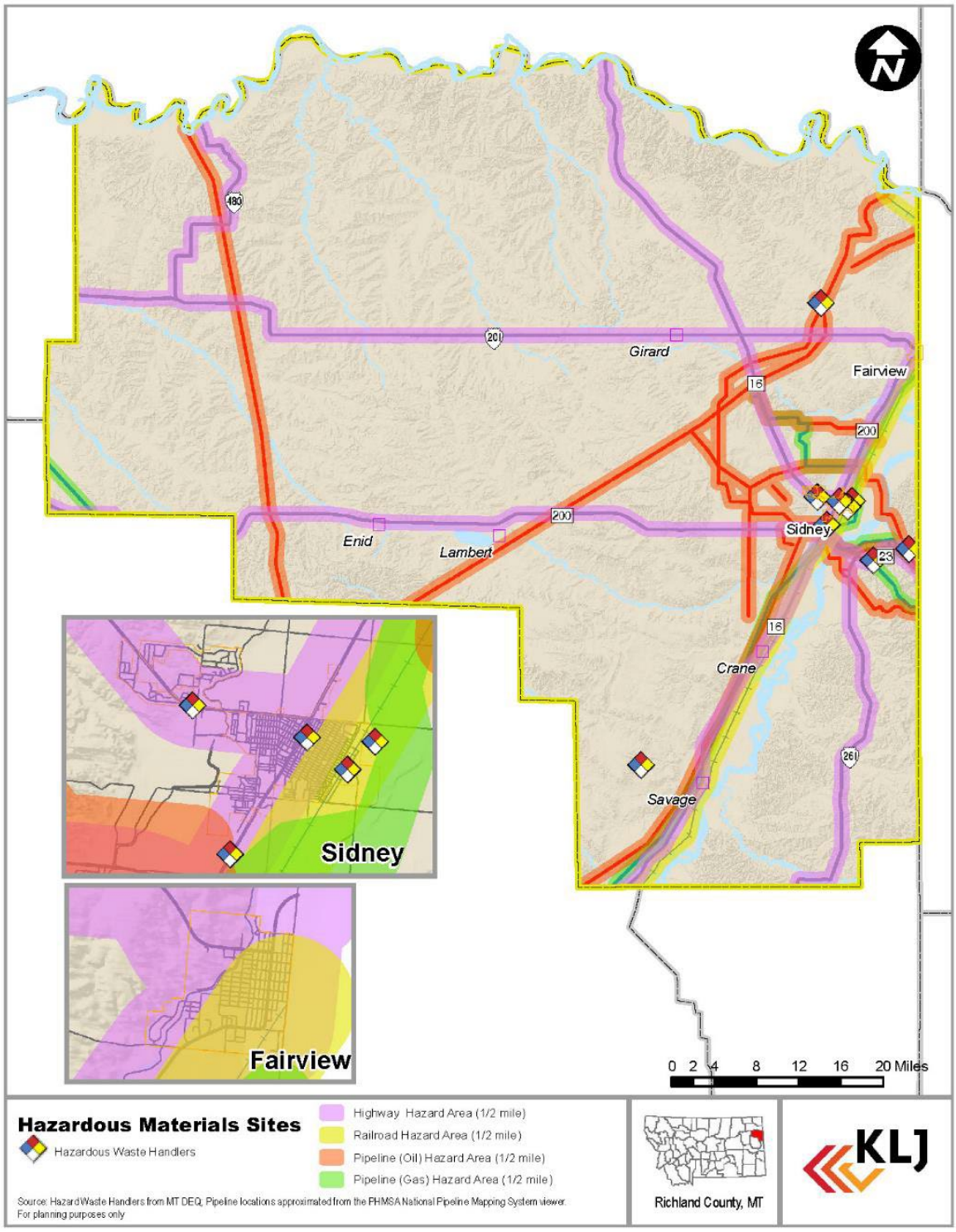
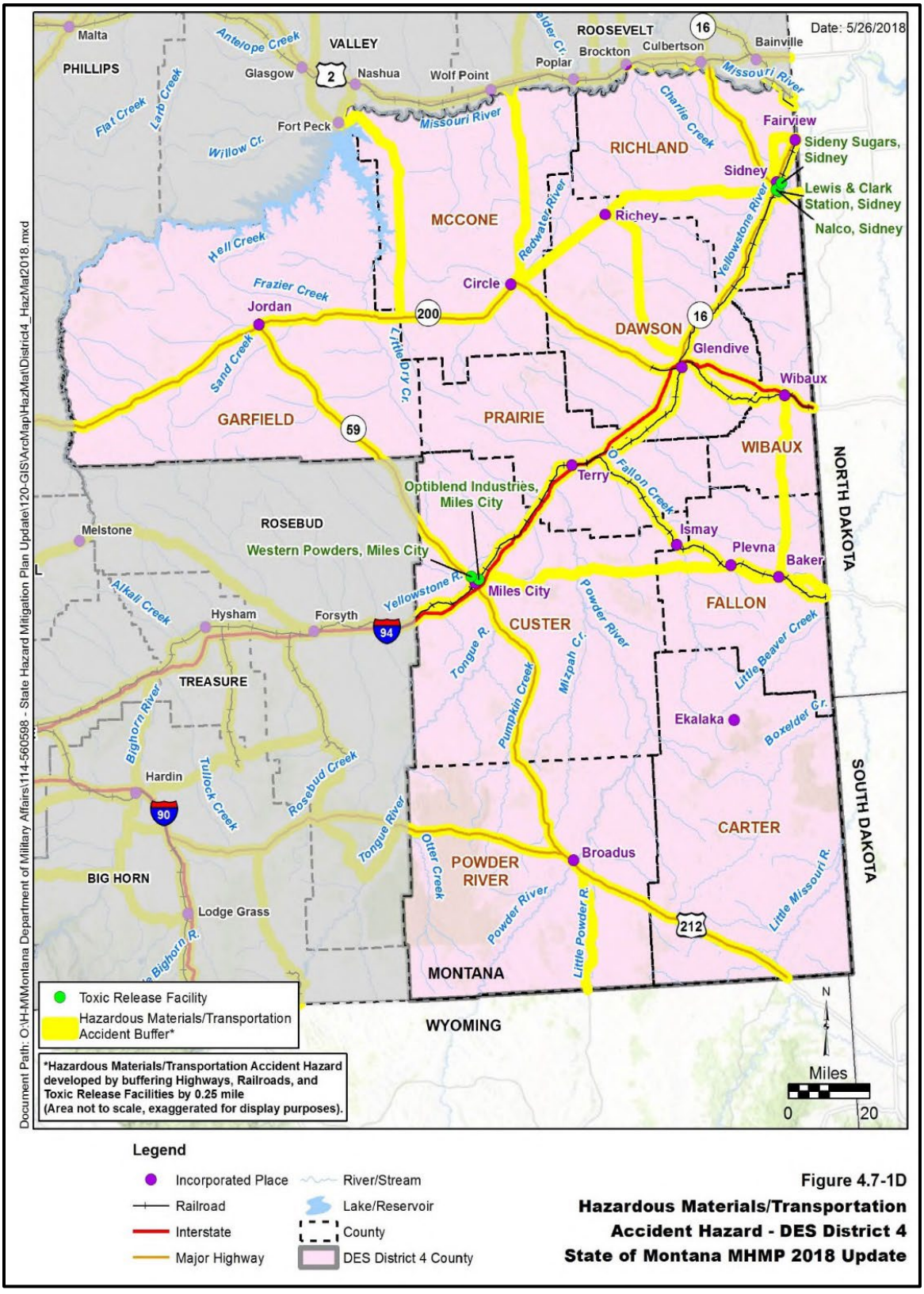


*Figure 25 Regional HAZMAT Transportation Hazard Areas*



## Vulnerabilities

### Population

For purposes of this analysis, a half-mile hazard area is established around each potential source of a hazardous materials release. This area is a general estimate and would vary in a real-world situation depending on the type of material released and the weather conditions. It is important to note that this analysis looks at the amount of people living within a potential hazard area – not the amount of people who would be affected by a single event. Population is taken from 2010 census block statistics (at the time of the update, the 2020 census data was not available). In many cases the hazard area only partially bisects a census block, so the population within the hazard area is a proportional estimate.

- Approximately 5,000 residents are within the hazard area for highway incidents.
- Approximately 2,200 residents are within the hazard area for railroad incidents.
- Approximately 1,800 residents are within the hazard area for pipeline incidents.

Sidney is affected by highway, rail and pipeline, and Fairview is affected by highway and railroad.

### Key Facilities

All key facilities would be affected in some way if a hazardous materials release required a mass evacuation. All key facilities are located within a half-mile of a major roadway or railroad. Key facilities located directly adjacent (within 1,000 feet) to a railroad, pipeline or major highway include:

- Savage High School (rail)
- Sugar Beet Plant (rail)
- Courthouse (highway)
- Crestwood Inn (highway)
- Eastern Ag Research Center (highway)
- Fairview Public School (highway)
- Library (highway)
- Sidney City Hall/Fire Hall (highway)
- Sidney Health Center (highway)
- Sidney Middle School (highway)
- The Lodge at Lone Tree Creek (highway)

### Property

The analysis in Table 30 looks at assessed property values for parcels that are primarily within a one-mile hazard area.

*Table 30 Properties Vulnerable to Hazardous Materials Incidents*

| Richland | | | |
|---|---|---|---|
| Land Use | Structure | Land | Total |
| Residential & Other Property Types | $399,483,016 | $156,644,029 | $556,127,945 |
| Exempt* | $42,031,393 | $19,303,746 | $61,335,139 |

| | | | |
|---|---|---|---|
| Farmstead | $22,094,740 | $8,712,931 | $30,807,671 |
| Commercial | $49,788,174 | $4,579,477 | $54,367,651 |
| Vacant | $364,329 | $30,554,939 | $30,919,268 |
| Total | $513,761,652 | $219,795,122 | $733,557,674 |

| Sidney | | | |
|---|---|---|---|
| Land Use | Structure | Land | Total |
| Residential & Other Property Types | $240,185,347 | $100,558,788 | $340,744,135 |
| Exempt* | $19,626,348 | $11,532,523 | $31,158,871 |
| Farmstead | $1,452,920 | $113,276 | $1,566,196 |
| Commercial | $25,286,812 | $2,499,660 | $27,786,472 |
| Vacant | $329,309 | $4,015,258 | $4,344,567 |
| Total | $286,880,736 | $118,719,505 | $405,600,241 |

| Fairview | | | |
|---|---|---|---|
| Land Use | Structure | Land | Total |
| Residential & Other Property Types | $375,340 | $180,031 | $555,371 |
| Exempt* | $0 | $0 | $0 |
| Farmstead | $115,730 | $18,625 | $134,355 |
| Commercial | $0 | $0 | $0 |
| Vacant | $0 | $46,169 | $46,169 |
| Total | $491,070 | $244,825 | $735,895 |

**All Property Types**: Apartment Urban, Agricultural - Rural, Centrally Assessed, Centrally Assessed Non-Value Property, Commercial Urban , Exempt Property, Partial Exempt, Farmstead - Rural, Farmstead - Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Industrial - Rural , Industrial - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, RV Park, Vacant Land - Rural, Vacant Land - Urban, and Blanks

**Residential & Others includes**: Apartment Urban, Golf Course, Improved Property - Rural, Improved Property - Urban, Non-valued Property, Residential Urban, Townhouse Urban, Manufactured Home Park - Urban, Manufactured Home Park - Rural, Residential - Urban, Residential - Rural, and Blanks

**Commercial**: Industrial - Rural, Industrial - Urban, Centrally Assessed, Centrally Assessed Non-Value Property, and Commercial Urban

Spatial Analysis, HAZMAT Buffer 1 mile, Montana 2021 Tax Assessor Data, https://svc.mt.gov/msl/mtcadastral

## Existing Capabilities

All first responder vehicles have binoculars to help assess a situation from a safe distance.

All schools have an evacuation plan and practice evacuation on a regular basis (fire drills).

Local fire departments have staff who are trained to respond at the operations level. The fire departments are primarily responsible for protecting nearby persons, property and environment from effects of the release. Private operators such as BNSF and assorted chemicals distributors have their own hazmat crews who are responsible for clean-up and reclamation of incident sites. Assistance is also available from the hazardous materials response team in Billings, and a few private contractors in Sidney can provide clean-up activities for simple spills.

### Future Development/Trends and Impact on Hazard Risk

Much of the future development currently occurring in the county is off major roads and rail networks. The potential does exist for development of agricultural lands bordering the highways and railroad. Very few restrictions are in place to prevent development in these areas.

### Key Issues and Potential Action Items

**Key Issue**: The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent years. Several major highways and railroads are located near populated areas. There are also numerous fixed facilities that contain hazardous materials.

- *Potential Action Item*: Educate residents about hazardous materials.
- *Potential Action Item*: Designate evacuation shelter facility located a safe distance from potential sources of a hazardous materials incident.
- *Potential Action Item*: Update subdivision regulations to require oil well setbacks from residential structures.

**Key Issue**: The fire departments receive Tier II reports, but their text-based report format makes them impractical for regular reference.

- *Potential Action Item*: Map all hazardous materials locations in the county using GIS mapping software and distribute maps to all first responders. Hazardous materials locations can also be integrated into GIS-based dispatch system.

**Key Issue**: The closest state hazardous materials response team is in Billings, which is approximately 270 miles from Sidney and 280 miles from Fairview. Private contractors in Sidney can provide simple clean-up services.

- *Potential Action Item*: Work with DEQ to establish a hazardous materials response team in eastern Montana.

# Terrorism and Violence

| | |
|---|---|
| **Overall Risk:** | Low (all jurisdictions) |
| **Probability:** | Low (Significant hazard event is likely to occur within 100 years) |
| **Magnitude:** | Medium |
| **Seasonal Pattern:** | None |
| **Duration:** | Varies |
| **Speed of Onset:** | Quick |
| **Identified Impacts:** | Agricultural loss (crops, livestock) |
| | Economic loss |
| | Human loss and injuries |
| | Increased stress on medical services |
| | Localized evacuation |
| | Property damage or loss |
| | Release of hazardous materials |
| | Structure collapse |

## Hazard Profile

Terrorism is defined by the Code of Federal Regulations as "the unlawful use of force and violence against persons or property to intimidate or coerce a government, the civilian population or any segment thereof, in furtherance of political or social objectives." Terrorist attacks are generally premeditated and motivated by a political and social methodology. The 2018 statewide plan identifies four primary types of terrorism.

- Cyber-terrorism: attack on computers, networks and the information they contain.
- Biological and chemical weapons: biological and chemical agents used to produce illness or death in people, animals or plants. These agents could be used to contaminate food or water supplies, or could be deployed into the air in a gaseous form. They are often odorless and tasteless, and are difficult to detect.
- Radiological dispersion devices: a combination of conventional explosives and radioactive material designed to scatter dangerous and sub-lethal amounts of radioactive material over a general area.
- Eco-terrorism: use or threatened use of violence of a criminal nature against innocent victims or property by an environmentally-oriented, subnational group for environmental-political reasons. Eco-terrorism attacks are often symbolic in nature and aimed at an audience beyond the target.

Civil unrest also poses the threat of widespread violence. Civil unrest can occur when a person or group disrupts public order by blocking sidewalks, roadways or buildings. Escalated forms of civil unrest include rioting and looting. Civil unrest is most likely to occur when there is a shortage of critical materials such as food or fuel.

## Location

Terrorism and violence are unpredictable and can occur anywhere in the county. Key government facilities or critical assets are likely to be most vulnerable.

## Extent

The severity of terrorism, violence, civil unrest, or a cyber breach are difficult to determine but can be measured by the number of people affected and by economic loss. As of 2021, no major incidents have occurred in the county.

## Local Risk and Probability

There is no history of terrorism or civil unrest in Richland County. The 2018 statewide plan identifies one major terrorist event that has happened in eastern Montana. The “Freemen Crisis” in 1996 was an 81-day FBI siege of the Ralph Clark ranch complex in Jordan (140 miles west of Sidney). The Montana Freemen, as the group called itself, rejected the authority of all outside governments and declared their ranch to be a sovereign township. The government alleged that the nearly 30 people inside the ranch compound were a radical and racist religious sect who had written bad checks and threatened judges. The standoff ended without violence.

There is no specific threat of terrorism to Richland County, although the multiple energy storage and distribution facilities located throughout the county may be a potential target. A terrorist event in the county is considered to be very unlikely.

There is no history of significant school violence in the county and lockdown procedures are in place.

## Vulnerabilities

### Population

Schools in the county are potential locations of school violence, as noted below.

- Brorson Elementary
- Fairview Public School
- Lambert Public School
- Liberty Christian
- Rau Elementary
- Savage Public School
- Sidney High School
- Sidney Middle School
- Sidney West Side School
- Sidney Central Elementary School

The number of residents vulnerable to a terrorist attack is highly variable based on time of day and extent of the attack.

### Key Facilities

The following key facilities are vulnerable to an incident involving terrorism and violence:

- City/Town Halls
- County Courthouse
- Energy Production and Oilfield Services Companies
- Law and Justice Center
- Power/Transmission Lines

- Schools
- Sidney Health Center
- Sugar Beet Plant
- USDA Agriculture Research Center and MSU Extension Office

**Property**

Due to the variability of an incident involving terrorism and violence, it is difficult to quantify the potential effect on property in the county.

### Existing Capabilities

The county's Emergency Operations Plan includes procedures that could be utilized in the event of a terrorist attack.

The 83rd Civil Support Team of the Montana National Guard provides assistance with the identification and response to chemical, biological, radiological, nuclear or explosive (CBRNE) incidents.

### Key Issues and Potential Action Items

**Key Issue**: The multiple energy storage and distribution facilities located throughout the county may be a potential target for terrorism, although a specific threat has not been identified. Terrorism and violence are an ongoing concern, but it is very unlikely an event will occur in the county.

- *Potential Action Item*: Continue general surveillance of suspicious persons or activities within the county.
- *Potential Action Item*: Review evacuation plans that could be utilized in the event of a terrorist attack.
- *Potential Action Item*: Evaluate energy storage and distribution facilities that may require additional fencing or surveillance.

## Risk Assessment Summary

#### *Risk Assessment Factors*

*Probability of Occurrence*

The probability of occurrence of a hazard is indicated by a probability factor based on the likelihood of annual occurrence:

- **High**—Significant hazard event is likely to occur annually (Probability Factor = 3)
- **Medium**—Significant hazard event is likely to occur within 25 years (Probability Factor = 2)
- **Low**—Significant hazard event is likely to occur within 100 years (Probability Factor = 1)
- **Unlikely**—There is little to no probability of significant occurrence or the recurrence interval is greater than every 100 years (Probability Factor = 0)

The assessment of hazard frequency is generally based on past hazard events in the area. The table below summarizes the probability assessment for each hazard of concern for this plan.

*Impact*

Hazard impacts were assessed in five categories: impacts on people, impacts on property, impacts on the local economy, and the catastrophic potential of the hazard. Numerical impact factors were assigned as follows:

- **Population Exposed**—Values were assigned based on the percentage of the total population exposed to the hazard event. The degree of actual impact on individuals from any hazard event can vary widely, so the calculation assumes for simplicity and consistency that all people exposed to a hazard because they live in a hazard zone will be equally impacted when a hazard event occurs.

    - **High**—30% or more of the population is exposed to a hazard (Impact Factor = 3)
    - **Medium**—15% to 29% of the population is exposed to a hazard (Impact Factor = 2)
    - **Low**—14% or less of the population is exposed to the hazard (Impact Factor = 1)
    - **No impact**—None of the population is exposed to a hazard (Impact Factor = 0)

- **Property Exposed**—Values were assigned based on the percentage of the total property value exposed to the hazard event:

    - **High**—25% or more of the total assessed property value is exposed to a hazard (Impact Factor = 3)
    - **Medium**—10% to 24% of the total assessed property value is exposed to a hazard (Impact Factor = 2)
    - **Low**—9% or less of the total assessed property value is exposed to the hazard (Impact Factor = 1)
    - **No impact**—None of the total assessed property value is exposed to a hazard (Impact Factor = 0)

- **Property Damages**—Values were assigned based on the expected total property damages incurred from the hazard event. It is important to note that values represent estimates of the loss from a major event of each hazard based on historical data for each event or probabilistic models/studies.

    - **High**—More than $5,000,000 in property damages is expected from a single major hazard event, or damages are expected to occur to 15% or more of the property value within the jurisdiction (Impact Factor = 3)
    - **Medium**—More than $500,000, but less than $5,000,000 in property damages is expected from a single major hazard event, or expected damages are expected to more than 5%, but less than 15% of the property value within the jurisdiction (Impact Factor = 2)
    - **Low**—Less than $500,000 in property damages is expected from a single major hazard event, or less than 5% of the property value within the jurisdiction (Impact Factor = 1)
    - **No impact**—Little to no property damage is expected from a single major hazard event (Impact Factor = 0)

- **Economic Factor**—An estimation of the impact, expressed in terms of dollars, on the local economy is based on a loss of business revenue, worker wages and local tax revenues or on the impact on the local gross domestic product (GDP).

    - **High**—Where the total economic impact is likely to be greater than $10 million (Impact Factor = 3)
    - **Medium**—Total economic impact is likely to be greater than $100,000, but less than or equal to $10 million (Impact Factor = 2)
    - **Low**—Total economic impact is not likely to be greater than $100,000 (Impact Factor = 1)
    - **No Impact**—Virtually no significant economic impact (Impact Factor = 0)

- **Catastrophic Factor**—The potential that an occurrence of this hazard could be catastrophic.

    - **High**—High potential that this hazard event could be catastrophic (Impact Factor = 3)
    - **Medium**—Medium potential that this hazard event could be catastrophic (Impact Factor = 2)
    - **Low**—Low potential that this hazard event could be catastrophic (Impact Factor = 1)
    - **Unlikely**—Virtually no potential that this hazard event could be catastrophic (Impact Factor = 0)

Each category was assigned a weighting factor to reflect its significance, consistent with those typically used for measuring the benefits of hazard mitigation actions: a weighting factor of 3 for both population exposed to the hazard and its potential for catastrophe; a weighting factor of 2 for property damages probable due to a major hazard event; and a weighting factor of 1 for both property exposed to the hazard and its impact on the economy. The following tables below summarize the impacts ratings for each hazard.

## Risk Assessment Results

Priority hazards in Richland County are determined to be:

**Richland County**

| Hazard Event | Probability Factor | Sum of Weighted Impact Factors | Total (Probability x Impact) |
|---|---|---|---|
| Severe Summer Storm | 3 | 20 | 60 |
| Severe Winter Storm | 3 | 19 | 57 |
| Flood | 2 | 22 | 44 |
| Wildfire | 2 | 20 | 40 |
| Drought | 2 | 20 | 40 |
| Hazardous Materials Release | 2 | 19 | 38 |
| Communicable Disease | 2 | 18 | 36 |
| Terrorism & Violence | 1 | 18 | 18 |
| Dam Failure | 1 | 10 | 10 |
| Landslide | 1 | 10 | 10 |

**Sidney**

| Hazard Event | Probability Factor | Sum of Weighted Impact Factors | Total (Probability x Impact) |
|---|---|---|---|
| Severe Summer Storm | 3 | 20 | 60 |
| Severe Winter Storm | 3 | 19 | 57 |
| Flood | 2 | 23 | 46 |
| Hazardous Materials Release | 2 | 21 | 42 |
| Drought | 2 | 20 | 40 |
| Communicable Disease | 2 | 18 | 36 |
| Wildfire | 2 | 17 | 34 |
| Terrorism & Violence | 1 | 18 | 18 |
| Dam Failure | 1 | 10 | 10 |
| Landslide | 1 | 9 | 9 |

**Fairview**

| Hazard Event | Probability Factor | Sum of Weighted Impact Factors | Total (Probability x Impact) |
|---|---|---|---|
| Severe Summer Storm | 3 | 20 | 60 |
| Severe Winter Storm | 3 | 19 | 57 |
| Flood | 2 | 22 | 44 |
| Hazardous Materials Release | 2 | 21 | 42 |
| Drought | 2 | 20 | 40 |
| Communicable Disease | 2 | 18 | 36 |
| Wildfire | 2 | 17 | 34 |
| Terrorism & Violence | 1 | 18 | 18 |
| Dam Failure | 1 | 17 | 17 |
| Landslide | 1 | 9 | 9 |

# Chapter 4: Mitigation Strategy

The mitigation strategy includes specific action items to reduce the impact of the priority hazards identified in Chapter 3. The process for identifying action items included a public meeting, online community survey and significant input from the planning team. Goals were identified to guide development of action items.

## Capability Assessment

Before identifying goals and action items, it is important to know the county, town and city's capability to undertake different types of hazard mitigation projects. Specific capabilities are listed as part of each hazard profile in Chapter 3. Additional capabilities for the county are summarized below.

### Legal and Regulatory Capabilities

- Building Code (County and Sidney)
- Zoning Ordinance (Sidney and Potentially Portions of County)
- Subdivision Ordinance (County, Sidney and Fairview)
- Floodplain Ordinance (County, Sidney and Fairview)
- Wildfire Protection Plan (County)
- Growth Policy (updated in 2015)
- Emergency Operations Plan (County)

### Administrative and Technical Capabilities

- Engineer with knowledge of land development and land management (County, Sidney and Fairview – Contracted Engineering Firms)
- Engineer trained in construction practices related to buildings or infrastructure (County, Sidney and Fairview – Contracted Engineering Firms)
- City and county officials with education or expertise to assess the community's vulnerability to hazards (All Jurisdictions)
- Floodplain manager (County)
- Personnel skilled in GIS (County and Sidney)
- Emergency manager/DES Coordinator (County)

### Fiscal Capabilities

- Eligible for Community Development Block Grants (All Jurisdictions)
- Authority to levy taxes (All Jurisdictions)
- Fees for water, sewer, gas and electric (County, Sidney, Fairview)
- Ability to incur debt through bonds (All Jurisdictions)

The county and incorporated communities have the ability to implement a wide variety of mitigation projects, including those found in this plan. The county Local Emergency Planning Committee has a large and wide-ranging membership; the committee was actively involved with the creation with the plan and will oversee the implementation of recommended mitigation projects for the county, Sidney and Fairview.

Funding/financing mechanisms for large projects is the greatest element that limits the capability of all jurisdictions. The county has a relatively small tax base, and any financing mechanism that

increases the public tax burden is not desired by residents, many of which are elderly and on fixed incomes. As a result, a majority of projects identified in this plan have a minimal cost and can be completed by local staff. Outside funding sources and technical assistance would need to be acquired to help fund the few large projects identified in this plan.

## Goals

The goals defined below provide the general guiding principles that were used when developing mitigation activities. The goals may be used to guide the development of additional action items as the plan is evaluated in future years. The county's 2014 Hazard Mitigation Plan was used to guide goal creation. The goals below are all priorities and presented in no particular order.

1. Expand capabilities to prepare for and respond to natural disasters.
2. Mitigate the potential loss of life, property and infrastructure from flooding.
3. Reduce the impacts of severe winter storms.
4. Reduce the potential for impacts of transportation-related hazardous materials spills.
5. Minimize the economic impacts of drought and water shortages.

## Mitigation Action Plan

The action plan helps to prioritize mitigation initiatives according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The action plan also provides the framework for how the proposed projects and initiatives will be implemented and administered over the next 5 years.

### Mitigation Strategy/Action Timeline Parameters

While the preference is to provide definitive project completion dates, this is not possible for every mitigation strategy/action. Therefore, the parameters for the timeline (**Projected Completion Date**) are as follows:

- **Short Term**—To be completed in 1 to 5 years
- **Long Term**—To be completed in greater than 5 years
- **Ongoing**—Currently being implemented under existing programs, but without a definite completion date.

### Mitigation Strategy/Action Benefit Parameters

Benefit ratings were defined as follows:

- **High**—Project will provide an immediate reduction of risk exposure for life and property.
- **Medium**—Project will have a long-term impact on the reduction of risk exposure for life and property, or project will provide an immediate reduction in the risk exposure for property.
- **Low**—Long-term benefits of the project are difficult to quantify in the short term

### Mitigation Strategy/Action Estimated Cost Parameters

While the preference is to provide definitive costs (dollar figures) for each mitigation strategy/action, this is not possible for every mitigation strategy/action. Therefore, the estimated

costs for the mitigation initiatives identified in this Plan were identified as high, medium, or low, using the following ranges:

- **High**—Existing funding will not cover the cost of the project; implementation would require new revenue through an alternative source (for example, bonds, grants, and fee increases).
- **Medium**—The project could be implemented with existing funding but would require a re-apportionment of the budget or a budget amendment, or the cost of the project would have to be spread over multiple years.
- **Low**—The project could be funded under the existing budget. The project is part of or can be part of an ongoing existing program.

### Mitigation Strategy/Action Prioritization Process

The action plan must be prioritized according to a benefit/cost analysis of the proposed projects and their associated costs (44 CFR, Section 201.6(c)(3)(iii)). The benefits of proposed projects were weighed against estimated costs as part of the project prioritization process. The benefit/cost analysis was not of the detailed variety required by FEMA for project grant eligibility under the Hazard Mitigation Grant Program (HMGP) and Building Resilient Infrastructure and Communities (BRIC) grant program. A less formal approach was used because some projects may not be implemented for up to 10 years, and associated costs and benefits could change dramatically in that time. Therefore, a review of the apparent benefits versus the apparent cost of each project was performed. Parameters were established for assigning subjective ratings (high, medium, and low) to the costs and benefits of these projects.

The priorities are defined as follows:

- **High Priority**—A project that addressed numerous goals or hazards, has benefits that exceed cost, has funding secured or is an ongoing project, and meets eligibility requirements for the HMGP or BRIC grant program. High priority projects can be completed in the short term (1 to 5 years).
- **Medium Priority**—A project that addressed multiple goals and hazards, that has benefits that exceed costs, and for which funding has not been secured but that is grant eligible under HMGP, BRIC, or other grant programs. The project can be completed in the short term, once funding is secured. Medium priority projects will become high priority projects once funding is secured.
- **Low Priority**—A project that will address few or no goals, mitigate the risk of one or few hazards, has benefits that do not exceed the costs or are difficult to quantify, for which funding has not been secured, that is not eligible for HMGP or BRIC grant funding, and for which the timeline for completion is long term (1 to 10 years). Low priority projects may be eligible for other sources of grant funding from other programs.

For many of the strategies identified in this action plan, the partners may seek financial assistance under the HMGP or HMA programs, both of which require detailed benefit/cost analyses. These analyses will be performed on projects at the time of application using the FEMA benefit-cost model. For projects not seeking financial assistance from grant programs that require detailed analysis, the partners reserve the right to define “benefits” according to parameters that meet the goals and objectives of this plan.

# New Mitigation Actions

New mitigation actions identified during this update are included in this section.

### Mitigation Table - New Actions

**NEW MITIGATION ACTION 1**

| **Mitigation Project:** Implement storm water drainage mitigation for SE Sidney residential area. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| New | 2021 | Sidney | City of Sidney Public Works | High | 2026, Short | $1.2 Million | High |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** | |
| Goals 1, 2 | | Flood (Riverine), Flood (Urban/Flash Flooding), Severe Thunderstorm, Severe Winter Weather/Heavy Snowfall | Flood Control | | High | BRIC, HMGP, Budget | |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | | | | |
| | | | | | | | |

**NEW MITIGATION ACTION 2**

| **Mitigation Project:** Reduce fire hazard within BNSF right-of-way due to dead overgrowth of trees. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/** | **Priority** | **Timeline/ Projected** | **Estimated Cost** | **Cost Analysis** |

| | | | **Organization** | (Low, Medium, High) | **Completion Date** (Short, Long-term, or Ongoing) | | (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Sidney | City of Sidney Public Works<br><br>BNSF | High | 2026, Short | TBD | Medium |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goals 1, 4 | Severe Thunderstorm, Severe Winter Weather/Heavy Snowfall, Wildfire, Hazardous Materials Release/Pipeline | Reduce wildfire risk | High | BNSF Railroad |

| **Action/Implementation Plan, Project Description, and Project Status:** |
|---|
| |

## NEW MITIGATION ACTION 3

**Mitigation Project:** Implement storm water drainage mitigation for 9th Ave SW and the intersection at 11th Street SW

| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Sidney | City of Sidney Public Works | High | 2024, Short | $700K | High |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goals 1, 2 | Flood (Riverine), Flood (Urban/Flash Flooding), Severe Thunderstorm, Utility Failure (Power Failure) | Flooding near 9th Ave SW Lone Tree Creek Bridge | High | FEMA/SRF/DNRC |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| | | | | |

## NEW MITIGATION ACTION 4

**Mitigation Project:** Implement storm water drainage mitigation measures at Anderson

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland | Sidney | High | 2024, Short | $500,000 | High |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goals 1 and 2 | Flood (Urban/Flash Flooding), Severe Thunderstorm | Property damage | High | BRIC/ARPA |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| | | | | |

## NEW MITIGATION ACTION 5

**Mitigation Project:** Implement storm water drainage mitigation at Meadows

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland | Sidney | High | 2024, Short | $1,000,000 | High |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goals 1 and 2 | Flood (Urban/Flash Flooding), Severe Thunderstorm | Property damage | High | BRIC/ARPA |

**Action/Implementation Plan, Project Description, and Project Status:**

## NEW MITIGATION ACTION 6

| **Mitigation Project:** Implement storm water drainage mitigation at Wagon Wheel | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| New | 2021 | Richland | Sidney | High | 2025, Short | $2,500,000 | High |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goals 1 and 2 | Flood (Urban/Flash Flooding), Severe Thunderstorm | Property damage | High | BRIC |

| **Action/Implementation Plan, Project Description, and Project Status:** |
|---|
| |

## NEW MITIGATION ACTION 7

| **Mitigation Project:** Implement storm water drainage mitigation at 5th Ave | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| New | 2021 | Richland | Sidney | High | 2026, Short | $600,000 | High |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 1 and 2 | Flood (Urban/Flash Flooding), Severe Thunderstorm | Property damage | High | ARPA/BRIC |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| | | | | |

## NEW MITIGATION ACTION 8

**Mitigation Project:** Gain understanding of and plan for large-scale, rail-based, HAZ-MAT incident in Sidney

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Sidney, MT | BNSF Railroad | High | Short-term | TBD | Medium |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 4 | Hazardous Materials Release/Pipeline | Life safety | Medium | SHGP |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| | | | | |

## NEW MITIGATION ACTION 9

**Mitigation Project:** Increase interagency training/planning for mass casualty incidents

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Sidney, MT | | Medium | Ongoing | | Medium |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 1 | Active Shooter, Civil Disorder/Riot, Terrorism | | High | SHGP |

**Action/Implementation Plan, Project Description, and Project Status:**

## NEW MITIGATION ACTION 10

**Mitigation Project:** Drought mitigation/resiliency. Develop water conservation plans so when drought occurs cities/towns do not create additional stress to water supply

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Countywide | Municipalities | Medium-High | Short-term | TBD | Low |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 1 and 5 | Drought | Drought mitigation | High | Local Funds |

**Action/Implementation Plan, Project Description, and Project Status:**

## NEW MITIGATION ACTION 11

**Mitigation Project:** Improve mapping and GIS database for all hazardous materials within the County.

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland County | DES | Medium | Ongoing | TBD | Low |

| Goal | Hazard(s) Mitigated | Benefits | Benefit Analysis | Potential Funding Source |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| | | (Description of Loss Avoided) | (Low, Medium, High) | |
| Goals 1, 4 | Hazardous materials | Improved response | Medium | Local Funds |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| Key Issues:<br>The fire departments receive Tier II reports but their text-based report format of Tier II reports make them impractical for regular reference.<br>Notes: Locations can also be incorporated into the county's GIS-based dispatch system. | | | | |

## NEW MITIGATION ACTION 12

**Mitigation Project:** Develop water conservation and an emergency back-up plan for small community water supplies (approved by DEQ) that don't have availability to connect to a public water supply, the means to develop a new water supply, or are drawing from a diminishing aquifer

| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Environmental Health | Montana DEQ | High | Long-term | Varies | High |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 5 | Drought | Drought mitigation | High | BRIC, Federal Grants |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| Study and implementation of wells or other measures to determine long-term sustainable water supply | | | | |

## NEW MITIGATION ACTION 13

**Mitigation Project:** Develop real estate disclosure laws/policy to help advise potential buyers about pre-existing flood conditions, current flood plain status of property, and potential hazards (i.e. septic) that could negatively impact their property in a flooding event.

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland County | Fairview, Sidney | Medium | Short-term | TBD | Low |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 2 | Flooding | Flood mitigation | Medium | Local Funds |

| Action/Implementation Plan, Project Description, and Project Status: |
|---|
| |

## NEW MITIGATION ACTION 14

**Mitigation Project:** Study and install redundant/sustainable power supply, such as 1). generators and hookups and/or 2). sustainable/flexible microgrid solutions at key facilities to ensure continuous and resilient power. These locations include, but are not limited to: Public Works, designated EOC, law enforcement, fire, and designated shelters (Fairgrounds).

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland County, Sidney, Fairview | DES | High | Long-term | Varies | High |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 1, 2, 3, 4 | Severe Thunderstorm, Severe Winter Weather/Heavy Snowfall, Tornado and High Winds, Terrorism, Utility Failure (Power Failure) | Redundant, sustainable power | High | FEMA BRIC, HMGP |

**Action/Implementation Plan, Project Description, and Project Status:**

Microgrids are localized grids that can disconnect from the traditional grid to operate autonomously. Because they are able to operate while the main grid is down, microgrids can strengthen grid resilience and help mitigate grid disturbances as well as function as a grid resource for faster system response and recovery.

Microgrids support a flexible and efficient electric grid by enabling the integration of growing deployments of distributed energy resources such as renewables like solar.

## NEW MITIGATION ACTION 15

**Mitigation Project:** Drill high-capacity wells or install water storage on west end of Richland County.

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland County | Fire Department | Medium-High | 2024, Short | TBD | High |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Goal 1, 5 | Wildfire | Wildfire land protection | Medium | FEMA and County |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| | | | | |

## NEW MITIGATION ACTION 16

**Mitigation Project:** Implement Public Health Mass Notification System

| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland County | Richland County Health Department | Medium | Short | Purchased and paid 1 ½ years | Medium |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 1 | Communicable Disease | Emergency public information | High | RCHD |

**Action/Implementation Plan, Project Description, and Project Status:**

## NEW MITIGATION ACTION 17

**Mitigation Project:** Mitigate surface and shoulder erosion caused by water on key roads and address issues with culverts, such as, but not limited to:

- Increasing culvert size
- Increasing efficiency of the entrance
- Raising the culvert
- Adding slurry

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | County and all participating jurisdictions | County and Cities | Medium | Long-term | TBD | High |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 1, 2 | Flooding, Severe Summer and Winter Weather | Protect roads | High | Hazard Mitigation Grant Program (HMGP), BRIC |

**Action/Implementation Plan, Project Description, and Project Status:**

**Key Issues: County roads are susceptible to washout.** Damage to culverts is caused primarily by floodwaters eroding culvert entrances or outlets and road embankments, and usually results in a full or partial washout or misalignment of the culvert. These damages may be due to insufficient design capacity or end treatments, inadequate slope protection, or inadequate protection from floating debris.

- Wildfire – clear debris around homes, defensible space, fuel reduction, training and equipment, water sources/storage
- Bridges - replacement
- Cybersecurity protection

## NEW MITIGATION ACTION 18

**Mitigation Project:** Study and assess integrity of bridges in the county, and implement appropriate mitigation alternatives to ensure safety and functionality

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| New | 2021 | County and all participating jurisdictions | County and Cities | Medium | Long-term | TBD | High |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 1, 2 | Flooding | Protect roads and bridges | High | Hazard Mitigation Grant Program (HMGP), BRIC |

**Action/Implementation Plan, Project Description, and Project Status:**

## NEW MITIGATION ACTION 19

**Mitigation Project:** Implement CodeRED system, and encourage residents to sign-up

| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland County | DES | Medium | Short | TBD | Medium |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 1 | All Hazards | Emergency public information and warning | High | HSGP, County |

**Action/Implementation Plan, Project Description, and Project Status:**

Richland County now utilizes CodeRED as a system to alert residents and businesses during an emergency. This Mass-Notification system allows us to almost instantly alert large and specific areas of an emergency disaster, such as a HAZMAT emergency, town evacuation, Wildfire threat, contaminated water, etc.

## NEW MITIGATION ACTION 20

**Mitigation Project:** Implement wildfire fuel reduction and defensible space program

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| New | 2021 | Richland County | Fire Departments | Medium | Ongoing | TBD | Medium |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 1 | Wildfire | Life safety and property protection | High | Local funds |

**Action/Implementation Plan, Project Description, and Project Status:**

Create defensible space around structures and promote fire mitigation programs for communities and private homes.

# Previous Mitigation Actions

Mitigation actions from the previous Richland County Multi-Hazard Mitigation Plan that are still relevant during this update are included in this section.

## Mitigation Table - Ongoing Actions

### ONGOING MITIGATION ACTION 1

| **Mitigation Project:** Assess need to enlarge storm drains in targeted areas of Sidney. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | Sidney | Public Works Director | High | Short | Varies by project | High (varies based on project details) |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | | **Potential Funding Source** | |
| Goal 2 | | Flood | Mitigate flooding | High | | Local Funds | |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
Heavy rain events occasionally overburden storm sewers in parts of Sidney and cause localized flash flooding.

Notes: Upgrading storm sewer infrastructure was identified as one of the top action item for floods in the community survey conducted as part of this plan.

**2021 Status:** East Holly St has been improved. Storm Water Master Plan has been updated. Six key projects were identified. Headwall at NW 22nd has been implemented.

### ONGOING MITIGATION ACTION 2

| **Mitigation Project:** Assess need and establish emergency winter shelters in strategic locations. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |

| | | | | | (Short, Long-term, or Ongoing) | | |
|---|---|---|---|---|---|---|---|
| Ongoing | 2013 | County, Sidney, Fairview | Emergency Manager | High | Short | TBD | Low, Staff time |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 3 | Severe Winter Storm | Life safety | Medium | Staff Time |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. Many facilities throughout the county (churches, schools, civic buildings) are available to serve as winter shelters. Several local businesses have large portable generators that would be available for the county to use in the event of a major power outage.

Notes: Additional items to consider when designating a new winter shelter include:

- Identifying residents in the community who need electricity for medical equipment and developing a plan to transport them to the winter shelter in the event of a power outage.
- Promotion of winter shelter so residents are aware of its availability during a winter storm event.
- Organization of volunteers to operate and prepare the shelter. Red Cross volunteers are available in the county, although the Red Cross does not officially sponsor winter shelters during non-disaster winter storm events.
- The designated shelter facility must be willing to eventually install a permanent generator or portable generator hook-ups.

**2021 Status**: Shelter established in Fairview. Generator was purchased in 2018. Designated shelter is identified as the school. Plans are underway to ensure sheltering accommodations are met.

## ONGOING MITIGATION ACTION 3

**Mitigation Project:** Require new mobile home/RV parks and workforce housing facilities of a certain size to have a safe room or sheltering plan.

| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| Ongoing | 2013 | County, Sidney, Fairview | County Planner | Low | Short | TBD | Low, Staff time |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 1, 3 | Severe Summer Storm, Severe Winter Storm | Life safety | Medium | Staff Time |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.

The county is seeing many new temporary residents living in mobile homes/RVs due to energy-related growth in the nearby Bakken region. The county does not have any temporary workforce housing facilities, but they are a possibility in the future. Residents in temporary housing often have satellite dishes (no local television) and out-of-state cell phones, which makes them difficult to reach through traditional notification channels.

Notes: Identification of an adequate safe room or sheltering plan would be required as part of the permitting process. New facilities that are located near an existing shelter area may only require a sheltering plan, but facilities that are in rural areas and not near an existing shelter should be required to have an adequately-sized safe room.

**2021 Status**: This currently is not a major concern for the County; however, this project will remain in case the need arises in the future.

## ONGOING MITIGATION ACTION 4

**Mitigation Project**: Determine parking/shelter area for semi-truck drivers during winter storms.

| Status | Year Initiated | Applicable Jurisdiction | Lead Agency/ Organization | Priority (Low, Medium, High) | Timeline/ Projected Completion Date (Short, Long-term, or Ongoing) | Estimated Cost | Cost Analysis (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| Ongoing | 2013 | County, Sidney, Fairview | Emergency Manager | Medium | Short | TBD | Low, Staff time |

| Goal | Hazard(s) Mitigated | Benefits (Description of Loss Avoided) | Benefit Analysis (Low, Medium, High) | Potential Funding Source |
|---|---|---|---|---|
| Goal 3 | Severe Winter Storm | Life Safety | Medium | Staff Time |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
Residents and travelers do not always follow travel restrictions, which presents a hazard to themselves and first responders.

**2021 Status**: This project is ongoing.

## ONGOING MITIGATION ACTION 5

| **Mitigation Project:** Update subdivision regulations to require oil well setbacks from residential structures. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | County, Sidney, Fairview | County Planner | Low | Short | TBD | Low, Staff time |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 4 | Hazardous Materials Release | Protect people and property | High | Staff Time |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
The amount of chemicals and other hazardous materials being transported through the county by highway and rail has increased in recent years. Several major highways and railroads are located near populated areas. There are also numerous fixed facilities that contain hazardous materials.

**2021 Status**: ongoing

## ONGOING MITIGATION ACTION 6

| **Mitigation Project:** Define steep slope/landslide areas in Growth Policy and implement development restrictions in those areas. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | County | Emergency Manager | Low | Short | TBD | Low, Staff time |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|

| | | (Description of Loss Avoided) | | |
|---|---|---|---|---|
| Goal 1 | Landslide | Protect people and property | Low | Staff Time |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
The northwest corner of the county is defined as a high susceptibility-high incidence landslide hazard area, and the eastern half of the county is defined as a moderate susceptibility area.

**2021 Status**: The county's Growth Policy update is complete and this has been identified as a continuing need.

## ONGOING MITIGATION ACTION 7

**Mitigation Project:** Install portable generator hook-ups on designated winter shelters.

| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| Ongoing | 2013 | County, Sidney, Fairview | DES | High | Short | $1,500 - $3,000 per hook-up | Low |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 3 | Severe Winter Storms | Life safety | Medium | Staff Time |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
A winter storm event that causes a power outage may make it difficult for residents to heat their homes. Elderly persons and residents in mobile homes are the most vulnerable to extreme cold temperatures. Many facilities throughout the county (churches, schools, civic buildings) are available to serve as winter shelters. Several local businesses have large portable generators that would be available for the county to use in the event of a major power outage.

Notes: It will need to be determined if portable generators are available near designated winter shelters. Portable generators can be put in place prior to a forecast storm event, but long distance travel may not be possible if the generator needs to be installed during the storm. If no portable generators are located nearby, it may be more effective to install a permanent generator on the facility.

Back-up power was identified as the top action item for winter storms in the community survey conducted as part of this plan.

**2021 Status**: Generators and hookups are needed in Lambert, Charlie Creek, and Savage.

## ONGOING MITIGATION ACTION 8

| **Mitigation Project:** Work with the railroad to develop necessary drainage improvements along the right-of-way in Sidney. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | Sidney | Public Works Director | Medium | Short | TBD | Low, Staff time |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | | **Potential Funding Source** | |
| Goal 2 | | Flood | Flood mitigation | Medium | | Staff Time | |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | | | | |
| Key Issues:<br>Heavy rain events occasionally overburden storm sewers in parts of Sidney and cause localized flash flooding.<br><br>**2021 Status**: This was assessed and included in the Storm Water Master Plan, and for Fairview. | | | | | | | |

## ONGOING MITIGATION ACTION 9

| Mitigation Project: Identify, mark and publicize snow routes. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | County, Sidney, Fairview | DES | Medium | Short | TBD | Low (varies based on specific activities) |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** | **Benefit Analysis** (Low, Medium, High) | | **Potential Funding Source** | |

| | | | | |
|---|---|---|---|---|
| | | (Description of Loss Avoided) | | |
| Goal 3 | Severe Winter Storm | Life safety and improved response time | Medium | Staff Time |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| Key Issues:<br>Residents and travelers do not always follow travel restrictions, which presents a hazard to themselves and first responders.<br><br>**2021 Status**: Ongoing | | | | |

## ONGOING MITIGATION ACTION 10

| Mitigation Project: Study and implement potential flood control projects and protocols to ensure Lone Tree Creek can flow freely. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | Sidney | Public Works Director | High | Short | TBD | Moderate to High (varies based on specific project) |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | | **Potential Funding Source** | |
| Goal 2 | | Flood | Mitigate flooding | High | | Emergency Watershed Protection (EWP) program administered by the Natural Resources Conservation Service (NRCS), Hazard Mitigation Grant Program (HMGP), Flood Mitigation Assistance Program (FMA), BRIC | |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | | | | |
| Key Issues:<br>Lone Tree Creek in Sidney contains vegetation and debris that impedes the drainage capacity of the creek.<br><br>Notes: Projects range from simple weed spraying to re-channelization of the creek. If EWP funds are pursued it must be proven that the reduced capacity of the creek presents a risk to human life. | | | | | | | |

**2021 Status**: A plan is currently being developed, and coordination with canal maintenance is ongoing. Canal company would like to dig out and clean it out from vegetation.

## ONGOING MITIGATION ACTION 11

**Mitigation Project:** Install surge protection on critical infrastructure equipment.

| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
|---|---|---|---|---|---|---|---|
| Ongoing | 2013 | County, Sidney, Fairview | Emergency Manager | Medium | Short | TBD | Varies greatly based on selected equipment |

| **Goal** | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | **Potential Funding Source** |
|---|---|---|---|---|
| Goal 1 | Severe Summer Storm | Continuity of services | Medium | Hazard Mitigation Grant Program (HMGP), BRIC |

**Action/Implementation Plan, Project Description, and Project Status:**

Key Issues:
Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.

Notes: Surge protection opportunities range from office computers to pump houses and lift stations.

**2021 Status**: This has been completed on select CIKR, however, additional facilities/infrastructure may need surge and lightning protection.

## ONGOING MITIGATION ACTION 12

| **Mitigation Project:** Conduct NFIP community workshops to provide information and incentives for property owners to acquire flood insurance. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | County, Sidney, Fairview | Emergency Manager | Medium | Ongoing | $5,000 | Low, Staff time |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | | **Potential Funding Source** | |
| Goal 2 | | Flood | NFIP participation | Medium | | Staff time | |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | | | | |
| Key Issues:<br>Several properties within the county are located within the regulatory floodplain.<br><br>Notes: Sidney, Fairview and the county overall are all participants in the NFIP and have the opportunity to further educate residents about benefits of the program. Workshops would be targeted at educating residents currently located in a floodplain (and required to buy flood insurance) and residents living outside of a floodplain but still at risk for flooding. Technical assistance for a workshop is available from the Montana DNRC Water Resources Division (http://dnrc.mt.gov/wrd/water_op/floodplain/) and the Association of Montana Floodplain Managers (http://www.mtfloods.org/).<br><br>**2021 Status:** This project is ongoing | | | | | | | |

## ONGOING MITIGATION ACTION 13

| **Mitigation Project:** Expand the use of NOAA weather radios by the general public. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | County, Sidney, Fairview | Emergency Manager | Low | Ongoing | $50 per radio | Medium |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** | **Benefit Analysis** (Low, Medium, High) | | **Potential Funding Source** | |

| | | | | |
|---|---|---|---|---|
| | | (Description of Loss Avoided) | | |
| Goal 1,3 | Severe Summer Storm | Life safety | Low | MTDES, Hazard Mitigation Grant Program (HMGP) |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | |
| Key Issues:<br>Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region.<br><br>Notes: Options include publicizing the benefits of weather radios and/or participating in a purchasing program to provide radios to residents in need.<br><br>**2021 Status**: Ongoing | | | | |

## ONGOING MITIGATION ACTION 14

| **Mitigation Project:** Continue educating residents about seasonal weather safety. | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Status** | **Year Initiated** | **Applicable Jurisdiction** | **Lead Agency/ Organization** | **Priority** (Low, Medium, High) | **Timeline/ Projected Completion Date** (Short, Long-term, or Ongoing) | **Estimated Cost** | **Cost Analysis** (Low, Medium, High) |
| Ongoing | 2013 | County, Sidney, Fairview | DES | Medium | Ongoing | TBD | Low, Staff time |
| **Goal** | | **Hazard(s) Mitigated** | **Benefits** (Description of Loss Avoided) | **Benefit Analysis** (Low, Medium, High) | | **Potential Funding Source** | |
| Goal 1 | | Severe Summer Storm, Severe Winter Storm | Life safety | Medium | | Staff time, NWS | |
| **Action/Implementation Plan, Project Description, and Project Status:** | | | | | | | |
| Key Issues:<br>Summer storm events including severe wind, hail and rain are common in the county. Tornadoes are also a possibility in the region. Residents and travelers do not always follow travel restrictions, which presents a hazard to themselves and first responders.<br><br>Notes: County staff already conducts weather safety workshops and other outreach activities such as public service announcements. Potential education topics include:<br>• Locations of community safe rooms/shelters.<br>• Understanding of warning methods.<br>• Travel safety.<br>• Safe use of personal heating devices. | | | | | | | |

- Emergency power outage kit.

**2021 Status:** This project is ongoing. DES will host annual Storm Watch class.

## Completed Mitigation Actions and Progress

Mitigation actions from the previous Richland County Multi-Hazard Mitigation Plan were reviewed, and the progress for each action has been noted for all "Ongoing Mitigation Actions" under 2021 Status. Although all projects are currently ongoing, the following items have been accomplished, and are noted as accomplishments.

- **CodeRed**
  - Implementation is under way. The next phase of the project is to increase sign-ups and participation from residents.
- **Stormwater Mitigation and Improvements:**
  - East Holly St has been improved.
  - Stormwater Master Plan has been updated.
  - Headwall at NW 22nd has been implemented.
- **Establish emergency winter shelters in strategic locations**
  - Shelter established in Fairview.
  - Generator was purchased in 2018.
- **The county's Growth Policy update is complete**
- **Work with the railroad to develop necessary drainage improvements along the right-of-way in Sidney.**
  - This was assessed and included in the Stormwater Master Plan. Future efforts will focus on implementation.

## Priority Mitigation Actions

The following mitigation actions have been identified as High Priority projects and have been prioritized and chosen for implementation.

- **NEW MITIGATION ACTION 1:** Implement storm water drainage mitigation for SE Sidney residential area.
- **NEW MITIGATION ACTION 2:** Reduce fire hazard within BNSF right-of-way due to dead overgrowth of trees.
- **NEW MITIGATION ACTION 3:** Implement storm water drainage mitigation for 9$^{th}$ Ave SW and the intersection at 11$^{th}$ Street SW
- **NEW MITIGATION ACTION 4:** Implement storm water drainage mitigation measures at Anderson
- **NEW MITIGATION ACTION 5:** Implement storm water drainage mitigation at Meadows

- **NEW MITIGATION ACTION 6:** Implement storm water drainage mitigation at Wagon Wheel
- **NEW MITIGATION ACTION 7:** Implement storm water drainage mitigation at 5th Ave
- **NEW MITIGATION ACTION 8:** Gain understanding of and plan for large-scale, rail-based, HAZ-MAT incident in Sidney
- **ONGOING MITIGATION ACTION 7:** Assess need and establish emergency winter shelters in strategic locations.
- **ONGOING MITIGATION ACTION 10:** Study and implement potential flood control projects and protocols to ensure Lone Tree Creek can flow freely.

## Funding

Richland County will need to utilize local, state and federal funding to implement the action items identified in this plan.

Richland County has access to multiple state and federal funding opportunities. US Department of Housing and Urban Development (HUD) Community Development Block Grants (CDBG) and US Department of Agriculture (USDA) Community Facility Grants are available for a wide variety of uses. There are also other viable funding streams that are tailored specifically for hazard mitigation and disaster response. FEMA's Hazard Mitigation Grant Program (HMGP) could provide funding for a wide variety of mitigation projects and is only available following a Montana disaster declaration. Additional FEMA grant programs that provide funds for mitigation include the Building Resilient Infrastructure and Communities (BRIC) program and Flood Mitigation Assistance (FMA) program.

It is difficult to project grant funding levels over future years. Local funding in the form of taxes, loans and bonds should be analyzed to cover the cost of projects in case the state department and FEMA programs are not funded through the federal government. A grant writing consultant could be contacted to help with grant research and completing grant applications.

## Plan Integration

The county's 2015 Growth Policy was recently updated, which was identified as a key action item during the last update in 2014. Specific items included in the Growth Policy directly reference the 2014 Multi-Hazard Mitigation Plan. Hazard-specific items included in the 2016 Growth Policy are:

- Hazards
- Wildland-Urban Interface considerations
- Floodplain regulations
- Hazard impacts on future development
- Stormwater Drainage

# Chapter 5: Plan Maintenance

This chapter details the plan maintenance process to ensure the Richland County Multi-Hazard Mitigation Plan will remain an active and relevant document. The plan maintenance process includes monitoring the implementation of mitigation projects, evaluating the plan's effectiveness at achieving its goals and updating the plan. This chapter also includes information about how the plan will be integrated into existing planning mechanisms.

### Previous Efforts to Maintain the Plan

The Richland County Emergency Manager maintained the previous Multi-Hazard Mitigation Plan. There was no record or documentation of past Mitigation Action Progress Reports or meeting minutes. However, future updates will document the maintenance activities. A new emergency manager took the position during the update process, and has formalized the annual update process.

## Plan Monitoring and Evaluation

The Planning Team (LEPC), led by the Richland County Emergency Manager, will monitor and evaluate the plan once per year. A basic agenda for each meeting should include:

- Discussion of project progress for the current period (and uncompleted projects from previous periods)
- Local champion reports on project status
- Discussion of upcoming projects and grant/funding opportunities
- Develop action list for upcoming reporting period

The local champion (i.e. lead agency/organization) should provide the following basic information about projects in the reporting period:

- What was accomplished for the project since the last meeting
- What obstacles, problems or delays did the project encounter
- If the project needs to be changed or revised

Project progress should be recorded on the Mitigation Action Progress Report Form found in Appendix C. A form should be completed for each project during the reporting period (and projects from the previous reporting periods that have not been completed). If time constraints are an issue, the Planning Team may decide to only complete the form for high priority projects; non-priority projects may be generally discussed without completing the form.

The Richland County Emergency Manager should maintain a folder with all Mitigation Action Progress Report Forms and meeting notes.

The risk and vulnerability assessment should be evaluated during a Planning Team (LEPC) meeting approximately two years after project adoption. Any changes to risks since plan adoption, such as a major flood event that damaged areas thought to be safe from flooding, should be noted. The key facilities list should also be reviewed to see if any additions or deletions need to be made. A report should be made detailing these changes. If significant changes need to be made, the Emergency Manager should schedule a meeting to discuss amending the current plan. If no significant changes are required, the Emergency Manager should save the report of changes for reference during the next five-year plan update.

## Continuing Public Involvement

LEPC meetings that are reserved for discussion of the plan will be open to the public and advertised in the newspaper. Each planning partner should provide links to the County hazard mitigation plan website on their individual jurisdictional websites to increase avenues of public access to the plan. Richland County Disaster & Emergency Services has agreed to maintain the hazard mitigation plan on their website. This site will not only house the final plan, it will also become the one-stop shop for information regarding the plan, the partnership and plan implementation.

## Integrating the Plan into Existing Planning Mechanisms

### Richland County

The county's Growth Policy was updated in 2015. The current Growth Policy document acknowledges the following goals and objectives, which are in line with this plan:

Land Use Goal:

- Reduce potential for development to be impacted by natural, man-made or other hazards.

Objectives:

- Implement relevant actions in the county Multi-Hazard Mitigation Plan such as coordinating mitigation improvement projects with a CIP and adopting hazardous material transport guidelines.
- Develop setback guidelines for development near oil and gas well extraction points.

Local Services Goal:

- Continue providing emergency medical response and fire protection and suppression services throughout each community.

Objectives:

- Explore the potential of creating an Eastern Montana HAZMAT response team stationed in Richland, Dawson, or Fallon Counties with volunteers from surrounding counties.
- Implement actions identified in the county's Pre-Disaster Mitigation Plan and Community Wildfire Protection Plan.

The 2015 Growth Policy also acknowledges and addresses issues identified in the 2014 version of this plan regarding "Local Services", "Natural Resources", the "Wildland-Urban Interface" and "Floodplain regulations".

Specific items to include in future Growth Policy updates are included as Action Items in this plan. Additionally, hazard mitigation goals and strategies, as well as the risk and vulnerability assessment, will be considered when formulating goals and strategies for the Growth Policy in future updates.

The completion of mitigation projects will affect several of the county's response and emergency plans and other regulatory documents (Emergency Operations Plan, zoning ordinances, etc.). Completed projects will be integrated into these existing documents when applicable.

**City of Sidney**
The city's Growth Policy was updated in 2015. The current Growth Policy document acknowledges the following goal and objectives, which are in line with this plan:

Land Use Goal:

- Reduce potential for development to be impacted by natural, man-made or other hazards.

Objectives:

- Implement relevant actions in the county Multi-Hazard Mitigation Plan such as coordinating mitigation improvement projects with a CIP and adopting hazardous material transport guidelines.
- Develop setback guidelines for development near oil and gas well extraction points.

The 2015 Growth Policy also acknowledges and addresses issues identified in the 2014 version of this plan regarding “Local Services”, “Natural Resources”, the “Wildland-Urban Interface” and “Floodplain regulations”.

In future updates of the Growth Policy, the “Implementation Plan” section may consider including high-priority mitigation actions. Also, hazard mitigation goals and strategies, as well as the risk and vulnerability assessment, will be reevaluated when updating goals and objectives for the Growth Policy in future updates.

**Town of Fairview**

The town’s Growth Policy was updated in 2015. The 2015 Growth Policy acknowledges and addresses issues identified in the 2014 version of this plan regarding “Local Services”, “Natural Resources”, the “Wildland-Urban Interface” and “Floodplain regulations”.

In future updates of the Growth Policy, the “Implementation Plan” section may consider including high-priority mitigation actions. Also, hazard mitigation goals and strategies, as well as the risk and vulnerability assessment, will be reevaluated when updating goals and objectives for the Growth Policy in future updates.

## Updating the Plan

The Richland County Emergency Manager is responsible for overseeing the five-year update process. Nine months should be allowed for completion of the plan – six months to develop a draft and three months to collect DES and FEMA comments/revisions and formally adopt the plan. The Emergency Manager should begin the plan update process approximately two years prior to the expiration of the current plan. The first step is to develop the project scope by utilizing the Plan Update Evaluation Worksheet in Appendix C. Funding opportunities from DES/FEMA may also be evaluated when determining project scope. The Emergency Manager should also evaluate the possibility of contacting neighboring jurisdictions to join in the plan. Because the state is currently utilizing a regional approach to mitigation planning, the county should explore being part of the regional plan, as well.

The Emergency Manager should maintain any documentation gathered during the five-year period that will be useful when developing the update. Gathering documentation will help to greatly reduce the research collection phase of the plan update, which will reduce the time and cost of the plan update. It will also ensure that any priority items identified during Planning Team monitoring meetings will be included in the plan.

# Appendix A: Plan Process and Development

**Stakeholder Mitigation Meetings**

Stakeholder Hazard Mitigation meeting were held on the following dates, as noted below. All jurisdictional representatives and regional stakeholders were invited.

- March 9, 2021 – Stakeholder kickoff meeting and mitigation introduction
- July 13, 2021 – Mitigation Workshop
- December 14, 2021 – Reviewed finalized list of mitigation actions and addressed planning element gaps

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR: Brandon Roth

EVENT NAME: LEPC Meeting

LOCATION: Sidney Montana - Fire Station - 1105 3rd ST NW

DATE AND TIME: ~~9/14/2021~~ 12/14/2021 - 11:30-1:00 CONTACT HOURS: 1.5 Hours

**Montana DES Training / Event Roster**

LEAVE SHADED AREA BLANK

| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Brandan Roth | brandon.roth@richland.org | | | | | 23.07 | |
| **Organization:** DES | **Address:** | Yes / No | | | | | |
| **Name / Title:** Mike Smith | **E-mail or Phone #:** 701-609-7017 | **EMPG Funded?** | **Est R/T Miles** | **Est Total Hours** | **.55 Cost p/m** | **2013 Hourly $ for Volunteers** | **Total Soft Match** |
| | | | | | | 23.07 | |
| **Organization:** Williams Co DES | **Address:** ~~[illegible]~~ | Yes / No | | | | | |
| **Name /Title:** Jessica Gilbert | **E-mail or Phone #:** jessica.gilbert@richland.org | **EMPG Funded?** | **Est R/T Miles** | **Est Total Hours** | **.55 Cost p/m** | **2013 Hourly $ for Volunteers** | **Total Soft Match** |
| | | | | | | 23.07 | |
| **Organization:** RCHD | **Address:** | Yes / No | | | | | |
| **Name / Title:** Stephanie Reynolds | **E-mail or Phone #:** | **EMPG Funded?** | **Est R/T Miles** | **Est Total Hours** | **.55 Cost p/m** | **2013 Hourly $ for Volunteers** | **Total Soft Match** |
| | | | | | | 23.07 | |
| **Organization:** RCHD | **Address:** | Yes / No | | | | | |
| **Name /Title:** Julie Brodhead | **E-mail or Phone #:** | **EMPG Funded?** | **Est R/T Miles** | **Est Total Hours** | **.55 Cost p/m** | **2013 Hourly $ for Volunteers** | **Total Soft Match** |
| | | | | | | 23.07 | |
| **Organization:** RCHD | **Address:** | Yes / No | | | | | |
| **Name / Title:** | **E-mail or Phone #:** | **EMPG Funded?** | **Est R/T Miles** | **Est Total Hours** | **.55 Cost p/m** | **2013 Hourly $ for Volunteers** | **Total Soft Match** |
| | | | | | | 23.07 | |
| **Organization:** | **Address:** | Yes / No | | | | | |
| **Name /Title:** | **E-mail or Phone #:** | **EMPG Funded?** | **Est R/T Miles** | **Est Total Hours** | **.55 Cost p/m** | **2013 Hourly $ for Volunteers** | **Total Soft Match** |
| | | | | | | 23.07 | |
| **Organization:** | **Address:** | Yes / No | | | | | |

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR: Brandon Roth

EVENT NAME: LEPC Meeting

LOCATION: Sidney Montana - Fire Station - 1105 3rd ST NW

DATE AND TIME: ~~9/14/2021~~ 12/14/2021 - 11:30-1:00 CONTACT HOURS: 1.5 Hours

**Montana DES Training / Event Roster**

LEAVE SHADED AREA BLANK

| Name /Title: / Organization: | E-mail or Phone #: / Address: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Jerry Prete / Fire Services Training School | gerald.prete@montana.edu | Yes / No | | | | 23.07 | |
| Name / Title: RAY Trumpower / Organization: Friends | E-mail or Phone #: trumpaer@midrivers.com / Address: | EMPG Funded? Yes / No | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers 23.07 | Total Soft Match |
| Name /Title: ADAM SMITH / Organization: SVFD / RCPW | E-mail or Phone #: / Address: | EMPG Funded? Yes / No | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers 23.07 | Total Soft Match |
| Name / Title: Kale Rasmussen / Organization: Fire Marshal-Building off. | E-mail or Phone #: / Address: | EMPG Funded? Yes / No | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers 23.07 | Total Soft Match |
| Name /Title: Gail Staffanson / Organization: School Supt. | E-mail or Phone #: gail.staffanson@richland.org / Address: | EMPG Funded? Yes / No | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers 23.07 | Total Soft Match |
| Name / Title: Heather Luinstra / Organization: RCHD | E-mail or Phone #: hluinstra@richland.org / Address: | EMPG Funded? Yes / No | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers 23.07 | Total Soft Match |
| Name /Title: James DeHerrera / Organization: Sidney Sugars Inc. | E-mail or Phone #: jdeherre@crystalsugar.com / Address: | EMPG Funded? Yes / No | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers 23.07 | Total Soft Match |

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR: ~~Deb Gilbert~~ Brandon Roth

EVENT NAME: ~~83rd OST Capabilities Exercise~~ LEPC Meeting

LOCATION: ~~Sidney Montana – 314 7th Ave SW~~ MSU Extension - 1499 N. Central Ave

DATE AND TIME: ~~July 26th, 2017 @ 7:10 am~~ March 9, 2021 @ 11:30AM CONTACT HOURS:

**Montana DES Training / Event Roster**

MONTANA DISASTER + EMERGENCY SERVICES — DES

LEAVE SHADED AREA BLANK

| Name /Title: / Organization: | E-mail or Phone #: / Address: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Ray Thompson / Fairview | | Yes / No | | | | 23.07 | |
| Kale Rasmussen / City of Sidney — Fire marshal, Building official | | Yes / No | | | | 23.07 | |
| Jeff Hintz / City | | Yes / No | | | | 23.07 | |
| Jodi Berry / Richland Co. Trans/TCOA/PIO | | Yes / No | | | | 23.07 | |
| Heather Luinstra / RCHD | | Yes / No | | | | 23.07 | |
| Heidi Stortroen LPN CHN / SSI | | Yes / No | | | | 23.07 | |
| John R. Iverson / SHERIFF | | Yes / No | | | | 23.07 | |

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR: 1

EVENT NAME: [illegible]

LOCATION: Sidney Montana

DATE AND TIME: , CONTACT HOURS:

**Montana DES Training / Event Roster**

LEAVE SHADED AREA BLANK

| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Brandon Roth | | | | | | | |
| DES | | (Yes) / No | | | | | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Julie Bodheed | | | | | | | |
| Organization: | Address: | Yes (No) | | | | 23.07 | |
| RCHD | | | | | | | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Tim Fine | | | | | | | |
| Organization: | Address: | Yes (No) | | | | 23.07 | |
| MSU Extension | | | | | | | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Gail Staffanson | | | | | | | |
| Organization: | Address: | Yes (No) | | | | 23.07 | |
| Richland Cty. Supt. of Schools | | | | | | | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Patrick Gilchrist | | | | | | | |
| Organization: | Address: | Yes (No) | | | | 23.07 | |
| Glasgow NOAA | | | | | | | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Daiko Abe | Cell | | | | | | |
| Organization: | Address: | Yes (No) | | | | 23.07 | |
| Integrated Solutions Consulting | | | | | | | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Carly Andregg | | | | | | | |
| Organization: | Address: | Yes (No) | | | | 23.07 | |

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR:

EVENT NAME:

LOCATION:

DATE AND TIME: CONTACT HOURS:

## Montana DES Training / Event Roster

LEAVE SHADED AREA BLANK

| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Michael Kemp | | | | | | | |
| Organization: ISC | Address: | Yes (No) | | | | 23.07 | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |

**Hazard Mitigation Workshop**

- July 13, 2021 – Mitigation Workshop

*Mitigation Workshop*

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR: Brandon Roth/Daiko With ISC

EVENT NAME: LEPC Meeting July - HMP Update

LOCATION: Sidney Montana - Fire Station - 1105 3rd ST NW

DATE AND TIME: 7/13/2021 - 11:30-2:30 CONTACT HOURS: 3 Hours

**Montana DES Training / Event Roster**

LEAVE SHADED AREA BLANK

| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Patrick Gilchrist WCM | Patrick.gilchrist@noaa.gov | | | | | | |
| Organization: NOAA/NWS | Address: 92 Airport Rd Glasgow | Yes / No | | | | 23.07 | |
| Name / Title: RYAN BERNHART | E-mail or Phone #: ryan.bernhart@noaa.gov | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: NOAA / NWS | Address: 92 Airport Rd, Glasgow MT | Yes / No | | | | 23.07 | |
| Name /Title: James DeHerrera | E-mail or Phone #: jdeherre@crystalsugar.com | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: Sidney Sugars | Address: | Yes / No | | | | 23.07 | |
| Name / Title: Julie Bradhead | E-mail or Phone #: jbradhead@richland.org | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: Richland County Health Dep. | Address: | Yes / No | | | | 23.07 | |
| Name /Title: Tom Halvorson | E-mail or Phone #: thalvorson@richland.org | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: Richland County | Address: 201 W Main, Sidney | Yes / No | | | | 23.07 | |
| Name / Title: MARK E. KRAFT - CHIEF | E-mail or Phone #: mkraft@richland.org | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: SIDNEY POLICE DEPT. | Address: 300 12TH AVE, NW SIDNEY, MT 59270 | Yes / No | | | | 23.07 | |
| Name /Title: Gabe Zeiler LT. | E-mail or Phone #: gabe.zeiler@richland.org | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: Sidney Police Dept. | Address: 300 12th Ave NW Suite 5 Sidney, MT 59270 | Yes / No | | | | 23.07 | |

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR: Brandon Roth/Daiko With ISC

EVENT NAME: LEPC Meeting July - HMP Update

LOCATION: Sidney Montana - Fire Station - 1105 3rd ST NW

DATE AND TIME: 7/13/2021 - 11:30-2:30 CONTACT HOURS: 3 Hours

## Montana DES Training / Event Roster

LEAVE SHADED AREA BLANK

| Name /Title: / Organization: | E-mail or Phone #: / Address: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Molly Davidson<br>MorrisonMaierle | mdavidson@m-m.net<br>Address: 1055 Mount Ave Missoula MT 59802 | Yes / No | | | | 23.07 | |
| Heather Luinstra, RS<br>RCHD-LEPC | hluinstra@richland.org<br>Address: | Yes / No | | | | 23.07 | |
| Jeff Hirtz<br>City of Sidney | publicworks@cityofsidney.mt.com<br>Address: | Yes / No | | | | 23.07 | |
| Sam Dynneson<br>Sheriff | sdynneson@richland.org<br>Address: | Yes / No | | | | 23.07 | |
| Brandon Roth<br>DES | brandon.roth@richland.org<br>Address: | Yes / No | | | | 23.07 | |
| ADAM SMITH<br>RCPW/SVFD | ASMITH@RICHLAND.ORG<br>Address: | Yes / No | | | | 23.07 | |
| Kale Rasmussen<br>Fire marshal - Building Official | Fire Marshal @ City of Sidney<br>Address: | Yes / No | | | | 23.07 | |

JURISDICTION USING SOFT MATCH: Richland County

POINT OF CONTACT OR LEAD INSTRUCTOR: Brandon Roth/Daiko With ISC

EVENT NAME: LEPC Meeting July - HMP Update

LOCATION: Sidney Montana - Fire Station - 1105 3rd ST NW

DATE AND TIME: 7/13/2021 - 11:30-2:30 CONTACT HOURS: 3 Hours

## Montana DES Training / Event Roster

LEAVE SHADED AREA BLANK

| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
|---|---|---|---|---|---|---|---|
| Travis Rosacen / Captain | trosacen@richland.org | | | | | | |
| Organization: Sidney Police | Address: 300 12th Ave NW Suite 5 Sidney | Yes / No | | | | 23.07 | |
| Name /Title: Ray Trumpower | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: Farmer | Address: | Yes / No | | | | 23.07 | |
| Name /Title: Tim Fine | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: Extension | Address: | Yes / No | | | | 23.07 | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name / Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |
| Name /Title: | E-mail or Phone #: | EMPG Funded? | Est R/T Miles | Est Total Hours | .55 Cost p/m | 2013 Hourly $ for Volunteers | Total Soft Match |
| Organization: | Address: | Yes / No | | | | 23.07 | |

## Resources and Tools for Planning Partners

These handouts were used to determine jurisdiction-specific risks and the identification of new mitigation projects.

**Jurisdiction/Organization-Specific Hazard Concerns**

**Hazards**

**Name:_____; E-mail: _____;**

**Jurisdiction/Organization/Agency: _____**

| Natural Hazards | |
|---|---|
| **Hazards** | Please describe any specific and/or unique **concerns/risks** that this hazard poses to your jurisdiction and/or organization. For example, are there properties that are at risk of **repetitive damages** from this hazard? Are certain population groups in your jurisdictions more vulnerable to this hazard? Are there specific neighborhoods or areas in your community that are more at risk from one of these hazards? |
| **Severe Drought** | |
| **Extreme Cold/ Extreme Heat** | |
| **Severe Winter Storm** | |
| **Severe Thunderstorm** | |
| **Tornado and High Winds** | |
| **Flash Flood** | |
| **River/Stream Flood** | |

Page **1** of **2**

**Jurisdiction/Organization-Specific Hazard Concerns**

| | |
|---|---|
| **Dam/Levee Failure** | |
| **Landslide** | |
| **Wildfire** | |
| **Epidemic/Pandemic** | |
| **Infrastructure Failure** | |
| **Utility Failure/Power Failure** | |
| **Hazardous Materials Incident** | |
| **Riot/Civil Disorder** | |
| **Terrorism/Active Shooter** | |

Page 2 of 2

Handout: New Mitigation Actions (Richland County)

**Name:**

**Organization/Department:**

**E-mail:**

**Phone:**

**New Mitigation Action (Please Describe):**

| | |
|---|---|
| **Year Initiated** | **2021 (New Mitigation Action)** |
| **Applicable Jurisdiction** | |
| **Lead Agency/Organization** | |
| **Supporting Agencies/Organizations** | |
| **Potential Funding Source** | |
| **Estimated Cost** | |
| **Benefits (loss avoided)** | |
| **Projected Completion Date** | |
| **PRIORITY (High, Medium, Low)** | |

**Please indicate if the mitigation goals and objectives below are applicable to the new mitigation action/project). Check All That Apply.**

| X | Place an "X" by the applicable goals, if applicable |
|---|---|
| | Goal 1. Expand capabilities to prepare for and respond to natural disasters. |
| | Goal 2. Mitigate the potential loss of life, property and infrastructure from flooding. |
| | Goal 3. Reduce the impacts of severe winter storms. |
| | Goal 4. Reduce the potential for impacts of transportation-related hazardous materials spills. |
| | Goal 5. Minimize the economic impacts of drought and water shortages. |

Handout: New Mitigation Actions (Richland County)

**This mitigation action:**

*Instructions: Circle the best option*

| | Strongly Disagree (1) | Disagree (2) | Neither Agree or Disagree (3) | Agree (4) | Strongly Agree (5) |
|---|---|---|---|---|---|
| **Social: Do you agree or disagree that the mitigation action is more likely to: be acceptable to the community; does not adversely affect a particular segment of the population; does not cause relocation of lower income people, and is compatible with the community's social and cultural values.** | 1 | 2 | 3 | 4 | 5 |
| **Technical: Do you agree or disagree that the mitigation action is technically effective in providing a long-term reduction of losses and has minimal secondary adverse impacts.** | 1 | 2 | 3 | 4 | 5 |
| **Administrative: Do you agree or disagree that your jurisdiction/organization has the necessary staffing and funding to carry-out this mitigation action.** | 1 | 2 | 3 | 4 | 5 |
| **Political: Do you agree or disagree that the mitigation action has the support of the public and stakeholders who have been offered an opportunity to participate in the planning process.** | 1 | 2 | 3 | 4 | 5 |
| **Legal: Do you agree or disagree that the jurisdiction or implementing agency has the legal authority to implement and enforce the mitigation action.** | 1 | 2 | 3 | 4 | 5 |
| **Economic: Budget constraints can significantly deter the implementation of mitigation actions. Do you agree or disagree that the mitigation action is cost-effective, as determined by a cost benefit review, and is possible to fund.** | 1 | 2 | 3 | 4 | 5 |
| **Environmental: Do you agree or disagree that the mitigation action is sustainable and does not have an adverse effect on the environment, complies with federal, state, and local environmental regulations, and is consistent with the community's environmental goals.** | 1 | 2 | 3 | 4 | 5 |

**Place an "X" by the hazard(s) this action/project will mitigate:**

| Mitigated Hazards | | | |
|---|---|---|---|
| X | Place an "X" by the applicable hazard | | |
| | Dam/Levee Failure | | Tornado and High Winds |
| | Drought | | Wildfire |
| | Extreme Cold | | Active Shooter |
| | Extreme Heat | | Civil Disorder/Riot |
| | Flood (Riverine) | | Hazardous Materials Release/Pipeline |
| | Flood (Urban/Flash Flooding) | | Public Health Emergency (pandemic) |
| | Landslide | | Terrorism |
| | Severe Thunderstorm | | Utility Failure (Power Failure) |
| | Severe Winter Weather/Heavy Snowfall | | **All Hazards** |

Page **2** of **2**

## Public Outreach and Participation

**Survey Results**: Double-click the link below to access the full Survey Report in PDF format.

RichlandSurvey.2022.pdf

**FOR IMMEDIATE RELEASE**

**Contact:**

Brandon Roth, DES Coordinator/GIS Manager
Richland County
2140 West Holly Street
Sidney, MT 59270
406.433.2220

**RICHLAND COUNTY RESIDENTS**
**INVITED TO PARTICIPATE IN COMMUNITY PREPAREDNESS STUDY**

**SIDNEY, MONTANA** – Richland County residents and businesses can help the county update its emergency preparedness plans by participating in a voluntary online questionnaire. Feedback from the confidential 10-minute survey will enable Richland County Department of Disaster and Emergency Services to better serve residents and businesses before, during, and after an emergency or disaster.

Some sample questions are:

- Please indicate where you go to obtain emergency and disaster preparedness related information?
- Do you believe that your household and/or place of business might ever be threatened by the following hazards?
- In an evacuation, would you or anyone in your household require special assistance?

To fill out the questionnaire, go to: **http://richland.prepare2021.alchemer.com/s3/**

The survey will remain open until November 30, 2021.

-###-

## Richland County: Social Media for Promoting the Survey

**Facebook and NextDoor:**

- Are you prepared for the next disaster? Let the County know! Richland County residents and businesses can help the county update its emergency preparedness plans by participating in a voluntary online questionnaire. Feedback from the confidential 10-minute survey will enable the Department of Disaster & Emergency Services to better serve residents and businesses before, during and after an emergency or disaster. To fill out the questionnaire, go to: http://richland.prepare2021.alchemer.com/s3/

  The survey will remain open until November 30, 2021.

- Department of Disaster & Emergency Services wants to know how it can better prepare you for disasters. All responses are confidential, and will greatly help improve preparedness in the county. Join the conversation at http://richland.prepare2021.alchemer.com/s3/

- Department of Disaster & Emergency Services invites you to take our disaster preparedness survey! Don't miss out on your opportunity to join the conversation. http://richland.prepare2021.alchemer.com/s3/

- What have you done to prepare for the next disaster? How can Richland County help? Let us know by taking this survey! http://richland.prepare2021.alchemer.com/s3/

**Twitter:**

- Are you #prepared for the #nextdisaster? Let the County know! #Richland County needs your help by completing a preparedness survey. Go to http://richland.prepare2021.alchemer.com/s3/

- Are you #DisasterResilient? Let us know how you've prepared for #disasters! http://richland.prepare2021.alchemer.com/s3/ #RichlandDisasterSurvey

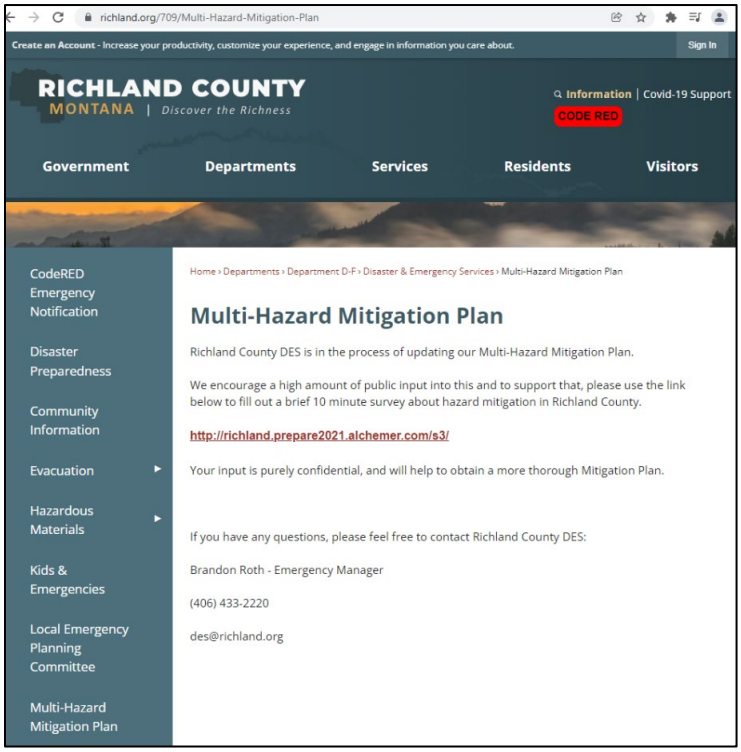
- How prepared is #RichlandCounty for #disasters? Join the conversation at http://richland.prepare2021.alchemer.com/s3/ #RichlandDisasterSurvey

- What will you do if a #disaster hits #RichlandCounty? Let us know at http://richland.prepare2021.alchemer.com/s3/ #RichlandDisasterSurvey

- What have you done to prepare for the #NextDisaster? How can #RichlandCounty help? Let us know by taking this survey! http://richland.prepare2021.alchemer.com/s3/

## Invitation to Stakeholder Meetings

- DES Coordinator was able to get on the radio on November 4, 2021 (Cherry Creek radio) to promote the mitigation planning process and encourage residents to take the survey.
- Roundup and Sidney Herald promoted the survey
- Public was invited to all LEPC/Stakeholder planning meetings

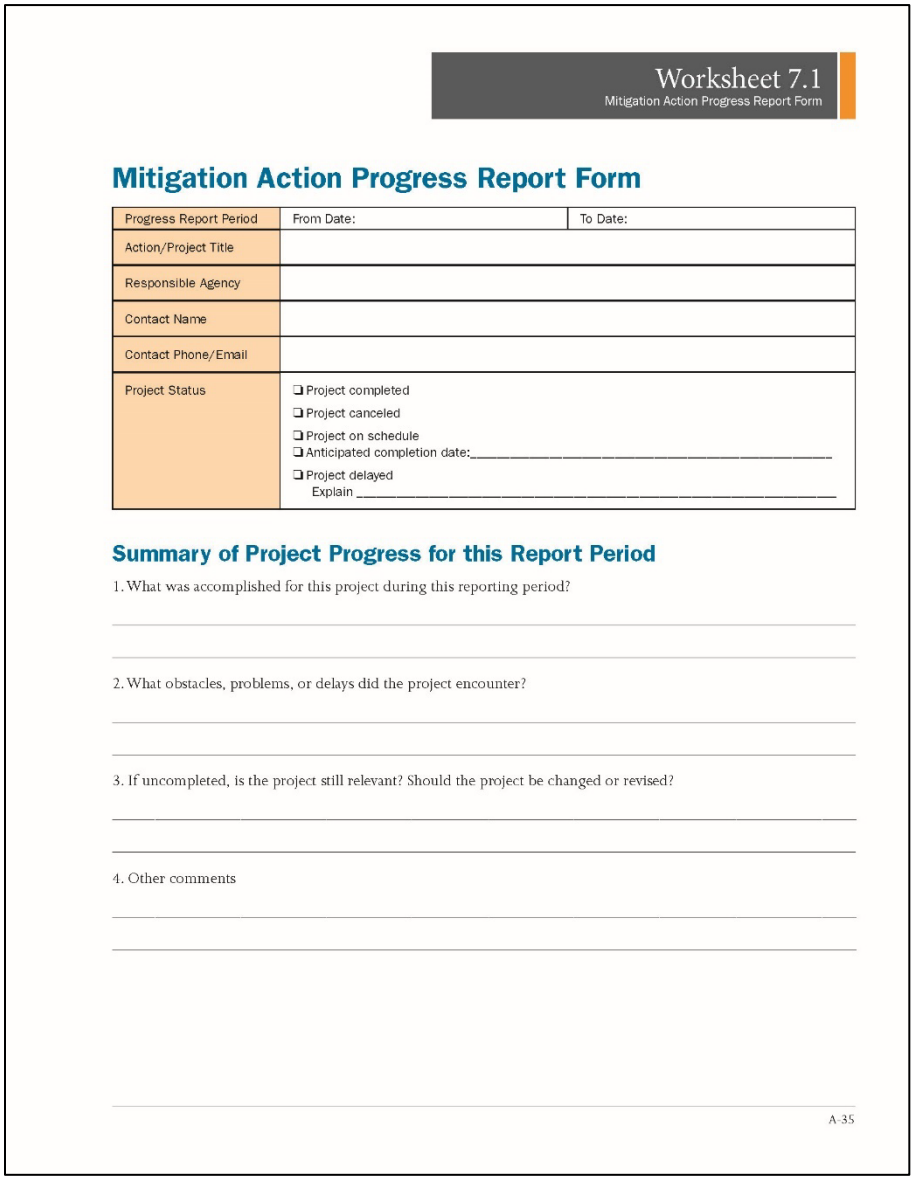
# Appendix B: Plan Adoption

[Insert Upon Plan Approval and Adoption]

# Appendix C: Mitigation Action Progress Report

Double-click the link below to access the Progress Report in PDF format.

Progress Report 2021.pdf



Worksheet 7.1
Mitigation Action Progress Report Form

## Mitigation Action Progress Report Form

| | | |
|---|---|---|
| Progress Report Period | From Date: | To Date: |
| Action/Project Title | | |
| Responsible Agency | | |
| Contact Name | | |
| Contact Phone/Email | | |
| Project Status | ❑ Project completed<br>❑ Project canceled<br>❑ Project on schedule<br>❑ Anticipated completion date:_____<br>❑ Project delayed<br>Explain _____ | |

## Summary of Project Progress for this Report Period

1. What was accomplished for this project during this reporting period?

2. What obstacles, problems, or delays did the project encounter?

3. If uncompleted, is the project still relevant? Should the project be changed or revised?

4. Other comments

A-35