STATE OF

IDAHO

2023 Hazard Mitigation Plan

October 2023

TETRA TECH

State of Idaho Hazard Mitigation Plan

October 2023

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TERMS USED IN THIS PLAN

BLM—Bureau of Land Management

BRIC—Building Resilient Infrastructure and Communities

CAIC—Colorado Avalanche Information Center

CCO—Consultation Coordination Officers

CDC—Centers for Disease Control and Prevention

cfs—cubic feet per second

Community Lifelines—the most fundamental services in a community. When functioning, they enable all other aspects of society to function.

CRS—Community Rating System

DEQ—Department of Environmental Quality

DHS —Department of Homeland Security

DOPL— Division of Occupational and Professional Licenses

DR—major disaster declaration (federal)

EAP—emergency action plan

EM—emergency management declaration (federal)

EMAP—Emergency Management Accreditation Program

EOP—emergency operations plan

FEMA—Federal Emergency Management Agency

FLO—fusion liaison officer

FM—Fire Management Assistance Declaration (Federal)

FMA—Flood Mitigation Assistance

FMAG—Fire Management Assistance Grants

FSA—Farm Service Agency

fusion center—a collaborative effort of two or more agencies that provide resources, expertise, and information with the goal of maximizing their ability to detect, prevent, investigate, and respond to criminal and terrorist activity

GIS—geographic information system

hazmat—hazardous material

Hazus—a GIS-based software tool that applies engineering and scientific risk calculations to estimate damage and loss due to hazard events

HF—high frequency

HHPD—high hazard potential dam or Rehabilitation of High Hazard Potential Dams Grant Program

HMA—Hazard Mitigation Assistance

HMGP—Hazard Mitigation Grant Program

Hwy—highway

IBC—International Building Code

ICLUS—Integrated Climate and Land-Use Scenarios

ICP— INL Cleanup Project

IDAPA—Idaho Administrative Procedures Act

IDHW—Idaho Department of Health and Welfare

IDL—Idaho Department of Lands

IDWR—Idaho Department of Water Resources

IGS—Idaho Geological Survey

ILRCC— Idaho Lands Research Coordinating Council

infrastructure—as used in this plan, infrastructure refers to the structures, facilities and equipment for roads, highways, and bridges; public transportation; dams (including high hazard potential dams), ports, harbors; railroads; freight and intermodal facilities; airports; water systems, including drinking water and wastewater systems; electrical transmission facilities and systems; utilities; broadband infrastructure; and buildings and real property.

INL—Idaho National Laboratory

IOEM—Idaho Office of Emergency Management

IRC—International Residential Code

IRDTG—Idaho Rangeland Drought Task Group

ITD—Idaho Transportation Department

IWRB—Idaho Water Resource Board

KBDI— Keetch-Byram Drought Index

kPa—kilopascal

MITM—man in the middle

ML—Richter magnitude scale

MM—Modified Mercalli

MMS—moment magnitude scale

mph—miles per hour

N/A—not available or not applicable

NASA—National Aeronautics and Space Administration

NCEI—National Centers for Environmental Information

NDMC—National Drought Mitigation Center

NEHRP—National Earthquake Hazard Reduction Program

NFIP—National Flood Insurance Program

NFPA—National Fire Protection Association

NID— National Inventory of Dams

NOAA—National Oceanic and Atmospheric Administration

NRC—Nuclear Regulatory Commission

NRCS—National Resource Conservation Service

NRI—National Risk Index

NWS—National Weather Service

OSHA—Occupational Safety and Health Administration

PCB—poly chlorinated biphenyl

PDM—Pre-disaster Mitigation

PGA—peak ground acceleration

PIER—Public Information Emergency Response

PIO—public information officer

PNNL—Pacific Northwest National Laboratory

RCV—replacement cost value

RMA—Risk Management Agency

SA—spectral acceleration

SARA—Superfund Amendments and Reauthorization Act

SARS—severe acute respiratory syndrome

SARS-CoV—SARS-associated coronavirus

SCADA—supervisory control and data acquisition

SFHA—Special Flood Hazard Area

SHMP—state hazard mitigation plan

SLE—Saint Louis encephalitis

SPI—Standardized Precipitation Index

Social Vulnerability Index (SVI)—a dataset developed by the U.S. Centers for Disease Control and Prevention. The SVI dataset helps to identify communities that will likely need support during and after a hazardous event. It uses 15 social factors from U.S. Census data to identify vulnerable communities.

SWPC—NOAA Space Weather Prediction Center

SWSI— Surface Water Supply Index

TB—tuberculosis

TENORM—technologically enhanced naturally occurring radioactivity

TRI—Toxic Release Inventory

TWG—technical working group

USACE—U.S. Army Corps of Engineers

USBR—U.S. Bureau of Reclamation

USDA— U.S. Department of Agriculture

USDM— U.S. Drought Monitor

USEPA—U.S. Environmental Protection Agency

USGS—U.S. Geological Survey

UV—ultraviolet

VEI—Volcanic Explosivity Index

VOAD—Voluntary Organization Active in Disaster

WIIN—Water Infrastructure Improvements for the Nation

WNV—West Nile virus

WSSPC—Western States Seismic Policy Council

WTO—World Trade Organization

WUI—wildland urban interface

EXECUTIVE SUMMARY

In the face of growing challenges and fiscal constraint, the State of Idaho must advance hazard mitigation planning that saves lives, reduces injuries, and decreases financial losses. The *2023 State of Idaho Hazard Mitigation Plan* (SHMP) identifies hazards that affect Idaho, analyzes risks and vulnerabilities, estimates potential losses, and develops strategies to reduce impacts. With the support of federal agencies, local officials, the State of Idaho, and the Federal Emergency Management Agency (FEMA), the SHMP is a resource to guide the State toward greater disaster resilience.

ASSESSING HAZARDS AND RISK

The SHMP evaluates potential losses and prioritizes mitigation actions based on assessments of risk and vulnerability. It analyzes risk by determining each hazard's frequency and severity in Idaho, its potential impacts, and the State's vulnerability to those impacts. The 2023 SHMP uses updated techniques to understand potential damage, loss, and impacts on assets and State capabilities. It profiles 13 hazards and threats, listed alphabetically as follows:

- Avalanche
- Civil disorder
- Cyber threats
- Drought
- Earthquake
- Flood (including dam, levee, and canal failure)
- Hazardous materials release
- Landslide
- Pandemic
- Radiological accidents
- Severe weather (including lightning, hail, and wind/tornado)
- Volcanic eruption
- Wildfire

While human-caused threats as described in the *Idaho Threat and Hazard Identification and Risk Assessment* (THIRA) are not required by FEMA to be included in state hazard mitigation plans, it is suggested and considered prudent to include all hazards. The SHMP and Idaho county local hazard mitigation plans contribute to the assessment of these risks.

MAPPING A MITIGATION STRATEGY

The SHMP serves as a strategy document for Idaho's Hazard Mitigation Program. It provides strategic direction to mitigate hazards, identifies potential funding resources, and guides decision makers in prioritizing assistance to local entities. Identified mitigation measures range from public education and land use planning to construction of projects to reduce hazard losses. The mitigation strategy is built upon the State of Idaho's hazard mitigation goals:

1. Save lives and reduce public exposure to risk from natural, technological, and human-caused hazard events.
2. Reduce or prevent damage to public and private property and infrastructure from natural, technological, and human-caused hazard events, including failure of high hazard potential dams.
3. Enhance coordination between federal, state, tribal, regional, local, and non-governmental agencies and organizations and consistency of hazard impact reduction policy.
4. Reduce the adverse economic and environmental impacts of natural, technological, and human-caused hazard events.
5. Enhance vulnerability and risk assessments through the development and collection and analysis of data.

DEVELOPMENTS SINCE PREVIOUS PLAN

The SHMP is revised every five years in compliance with federal requirements. The 2023 revision to the 2018 SHMP improves scientific information on natural hazards and human-caused threats, updates lists of disaster events, and summarizes vulnerability assessment information by county. Data sources include a State-facility (owned and leased) spatial inventory for an in-depth review of State asset vulnerability to identified hazards, an updated and expanded critical facility and community lifeline spatial dataset, and U.S. Census block level aggregate building inventory and demographic data for loss estimation. Hazard information from 44 county hazard mitigation plans is integrated into the SHMP.

In the past five years, three federal disasters declarations were issued for floods, severe weather, and pandemic and four Fire Mitigation Assistance Grants were issued for wildfires. Recent disasters have damaged property, caused injuries and death, and interrupted business and government services. The toll on individuals, families, and businesses can be immense. The time, money, and effort to respond to and recover from these disasters divert shrinking public resources and attention from other important programs and issues.

Since 2018 significant mitigation actions have been completed in Idaho. More than $18 million in combined federal funding has been awarded for projects such as upgrading infrastructure to make it more resilient from flooding (bridge and culvert upsizing, stormwater management systems), wildfire mitigation projects (fuels reduction, outreach, etc.), volunteer fire assistance, hazard warning systems, and seismic research and mapping. National studies indicate that investments in hazard mitigation will pay dividends in the future—for every dollar spent on a hazard mitigation activity, six dollars in losses are avoided.

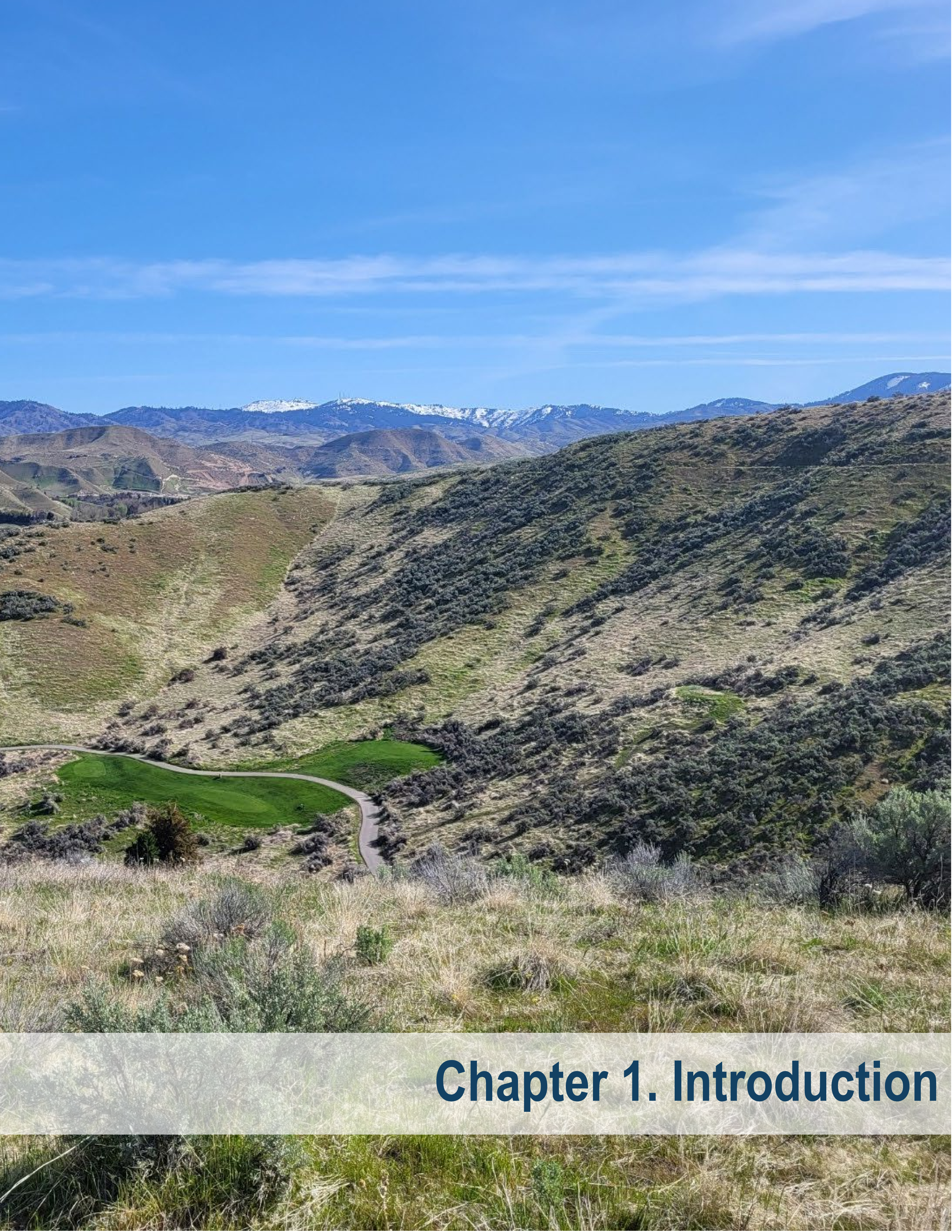
A FOCUS ON RESILIENCE

The Idaho Office of Emergency Management is dedicated to fostering a culture of preparedness centered on risk and resilience through the following:

- Understanding the risks that the people of Idaho face
- Collaborating to recognize the interdependent nature of the economy, health and social services, housing infrastructure, and natural and cultural resources
- Empowering communities to take actions that put them in the best position to bounce back quickly and effectively when disasters occur

Resilience covers the capabilities necessary to reduce the loss of life and property by lessening the impact of disasters. The 2023 mitigation strategy to achieve resilience includes the valuable role of local leadership, collaboration among various parts of the whole community, and education to ensure the capabilities continually develop.

Part 1. Background Information



Chapter 1. Introduction

1. INTRODUCTION

1.1 HAZARDS IN IDAHO

Idaho is hazard prone. Billion-dollar disasters have occurred in Idaho and will happen again. Consider the following major disasters:

- Idaho experienced one of the most significant wildfire events in U.S. history. The 1910 fire burned 3 million acres (an area the size of the State of Connecticut) and destroyed two entire Idaho towns. In all, 86 people died and 7.5 billion board-feet of timber was consumed. Combinations of drought, continuous fuels over landscapes, multiple large fires burning at the same time, and severe late-season wind events could cause such an event to occur again. Using conservative cost estimation methodologies, the total cost of such a fire today would approach $3.5 billion.
- Idaho experienced one of the most significant dam failures in U.S. history. The Teton Dam failure in 1976 drained an impoundment 270 feet deep in less than 6 hours. Damage was swift and complete as 2 million cubic feet per second poured from the breach. Six communities were devastated, and thousands of homes and businesses were destroyed. The dam failure triggered significant landslides and had serious impacts on the lower portion of the Teton River's ecology and on habitats in the Snake River as far down as Fort Hall. Damage, in today's costs, exceeded $2 billion.
- The 1983 Borah Peak earthquake registered a 6.9 magnitude and resulted in $26 million in damage. State-of–the-art loss estimation tools have determined that an earthquake of similar magnitude in Idaho Falls today would destroy over 1,500 structures and damage an additional 31,000 structures. Total estimated losses would be $1.5 billion.

Given the relatively small size of the State and its gross domestic product, disasters that result in billion-dollar disaster losses would represent significant economic and environmental impacts for Idaho. Implementing hazard mitigation practices before disasters strike can reduce the losses of future hazard events.

1.2 STATE HAZARD MITIGATION PLANNING

1.2.1 Hazard Mitigation Defined

Hazard mitigation is defined as any sustained action taken to reduce or eliminate the long-term risk to human life and property from hazards. Hazard mitigation is considered one of the five phases of emergency management (see Figure 1-1).

Figure 1-1. Five Phases of Emergency Management

The other four phases are:

- **Prevention**—Measures that provide permanent protection from disasters or emergencies
- **Preparedness**—Actions, programs and systems that people or organizations take before a disaster or emergency to make sure they are safe before, during and after the event occurs
- **Response**—Actions that people or organizations take once a disaster or emergency occurs to address its immediate and short-term effects
- **Recovery**—Actions and programs taken to return conditions to an acceptable level

Mitigation actions can occur before or after a disaster event, so mitigation can be built into both preparedness actions and recovery actions to improve conditions and make them more resilient after future disaster events.

1.2.2 Purpose of Planning

Hazard mitigation plans are documents prepared by states, local jurisdictions, and tribal nations to define their hazard mitigation goals, objectives, and actions. Mitigation plans are created to protect the health, safety, and economic interests of residents by reducing the impacts of natural hazards. Such plans must achieve several essential goals:

- Increase public awareness and understanding of vulnerabilities and support specific actions to reduce losses from future natural disasters.
- Expand understanding of potential risk reduction measures.
- Create safer communities by reducing loss of life, injury, and property damage.
- Reduce financial impacts on individuals, communities, and society as a whole.
- Provide eligibility for post-disaster and pre-disaster mitigation funding from the Federal Emergency Management Agency (FEMA).

Federal Requirements for State Hazard Mitigation Planning

In addition to meeting the needs of Idaho for hazard-related risk reduction, this Plan was developed to meet all federal requirements that state hazard mitigation plans must meet to be eligible for certain funding. States must have an approved state hazard mitigation plan meeting the requirements in Title 44 of the Code of Federal Regulations (44 CFR 201.4) as a condition of receiving FEMA mitigation grants through the following programs:

- Public Assistance Categories C-G (PA C-G)
- Fire Management Assistance Grants (FMAG)
- Building Resilient Infrastructure and Communities (BRIC)
- Hazard Mitigation Grant Program (HMGP)
- HMGP Post Fire
- Flood Mitigation Assistance (FMA)
- Rehabilitation of High Hazard Potential Dams (HHPD)

Notation is provided throughout this Plan to indicate where the content provided addresses a specific FEMA requirement. Key among the requirements in FEMA's most recent guidance for state hazard mitigation plans are contents to address the importance of equity and climate change in hazard mitigation, as summarized below.

Planning for Equitable Outcomes

FEMA defines equity as the consistent and systematic fair, just and impartial treatment of all individuals. Centering equity in the mitigation plan helps ensure an inclusive planning process that benefits the whole community. Inclusive planning processes take time and thoughtful planning to set up so that everyone has the resources to meaningfully participate, make progress, and benefit from hazard mitigation. Equity is essential to reducing risk to the whole community, including those that face barriers to accessing assistance and to populations that are disproportionately affected by disasters.

Planning for Climate Change

Climate change increases the frequency, duration, and intensity of natural hazards, such as wildfires, extreme heat, drought, storms, heavy precipitation, and sea level rise. These variations exacerbate the impacts of disasters on underserved and socially vulnerable populations who already experience the greatest losses from natural hazards. Hazard mitigation and climate adaptation are complementary efforts that have the same goal: long-term risk reduction for people and increased safety for communities. Adapting to the expected impacts of climate change is a form of hazard mitigation. A hazard mitigation plan that addresses climate change in its risk assessment and includes adaptation actions in its mitigation strategy may reduce risk to current and future events.

The *State of Idaho Hazard Mitigation Plan* is Idaho's long-term mitigation investment strategy for reducing hazard-related risk. The plan outlines activities and projects to address hazard vulnerabilities that were identified through a comprehensive risk assessment. As required by FEMA, the State updates its mitigation plan every five years. The plan was last approved in 2018; the update for 2023 reflects changes in development, progress in statewide mitigation efforts, and changes in priorities.

Idaho's State Hazard Mitigation Plan (SHMP) also guides local governments engaged in mitigation planning. It provides critical information and guidance to local jurisdictions about the State's risks from natural hazards as well as state capabilities, priorities, and action plans. The plan focuses on hazards and risks that affect local jurisdictions, including impacts from risks on the built environment; community lifelines; future conditions; population; land use; and socially vulnerable communities. The SHMP also assesses the effects of climate change on hazards, their potential impacts, and strategies for addressing them.

Definition: Community Lifelines

Community lifelines are the most fundamental services in a community. When functioning, they enable all other aspects of society to function. FEMA categorizes community lifelines as follows:

- Safety and Security
- Food, Water, Shelter
- Health and Medical
- Energy
- Communications
- Transportation
- Hazardous Materials

Local jurisdictions should use the SHMP as a reference when developing their own plans that address mitigation, land use, economic development, housing, infrastructure, transportation, public health, historic and cultural resources, or environmental conservation. Local governments, including special districts, also can leverage the SHMP when developing climate adaptation, resilience, mitigation, land use, comprehensive and economic development plans.

1.3 HOW THIS PLAN WAS PREPARED

Development of the 2023 SHMP update involved coordination between the Idaho Office of Emergency Management (IOEM); local, state, and federal agencies; and private sector partners (see Figure 1-2).

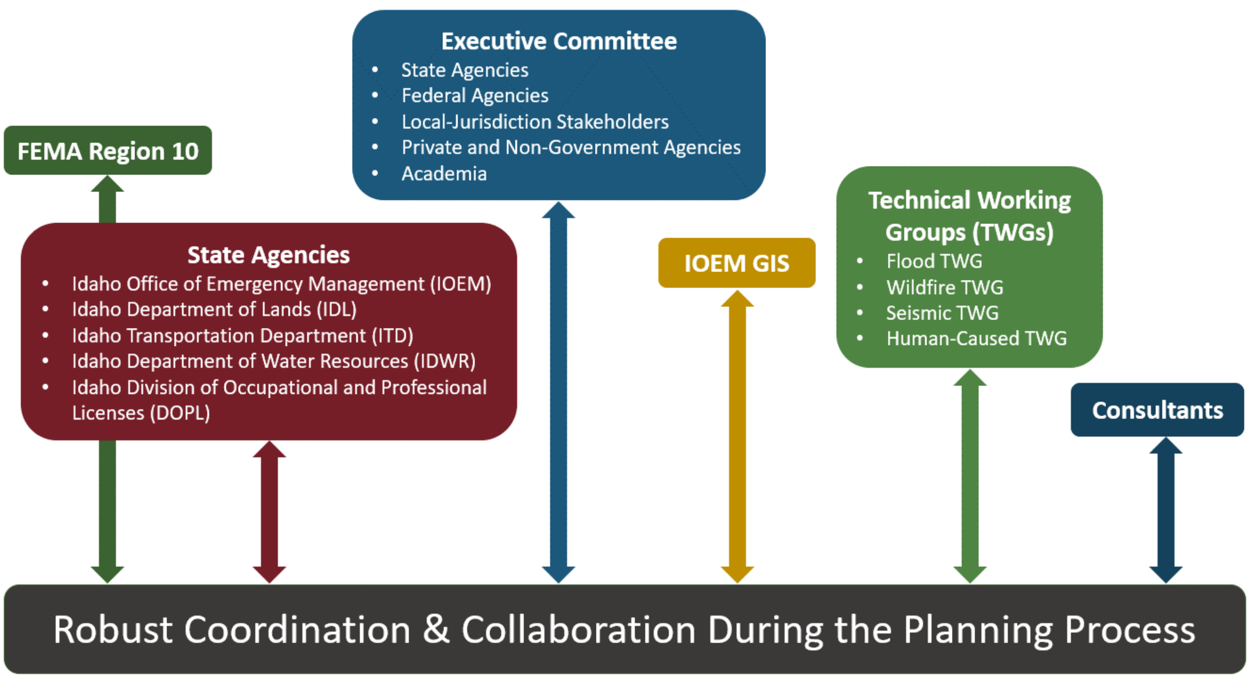


Figure 1-2. Planning Process Participants

The planning process focused on addressing and incorporating the following:

- Updated data on hazard events and mitigation efforts in Idaho
- Diverse and changing concerns reflected in the local plans of Idaho's counties and tribal nations

This update required a multilayered planning process that employed a variety of forums and techniques. The following sections provide highlights of the planning process. Appendix A provides detailed information about who was involved, key decisions and milestones, and timelines.

1.3.1 Participants

The primary state agencies implementing hazard mitigation in Idaho include IOEM, Idaho Department of Lands (IDL), Idaho Geological Survey (IGS), Idaho Transportation Department (ITD), Idaho Department of Water Resources (IDWR), and Idaho Division of Occupational and Professional Licenses. At the federal and local levels, many stakeholders and subject matter experts across sectors collaborated to develop a comprehensive update. The following section provides an overview of the stakeholders and their involvement. Meeting summaries and detailed participation information are located in Appendix A.

FEMA Region 10

The IOEM Mitigation Section and the State Hazard Mitigation Officer (SHMO) coordinated with FEMA throughout the planning process. This included consultations, asking questions to ensure the approach to analyzing and organizing natural hazards met FEMA requirements, and providing updates to the Region 10 office about the planning process.

Planning Executive Committee

IOEM used a Planning Executive Committee comprising IOEM and other agency representatives to assist in the SHMP update. This committee included individuals from state and federal agencies, as well as stakeholders from local jurisdictions, private and non-governmental agencies, and academia. These were all stakeholders responsible for the sectors of emergency management; economic development; land use and development; housing; health and social services; infrastructure; and natural and cultural resources. The Executive Committee participated in several exercises and provided overall guidance and direction on the 2023 SHMP update.

Technical Working Groups

With so many agencies having a stake in hazard mitigation, technical working groups (TWGs) were formed around all of Idaho's assessed hazards. The TWGs provided expertise and detail beyond the scope of the Planning Executive Committee. Four main groups across all sectors were utilized as part of the 2023 Plan update (see Table 1-1). Appendix A includes additional details and meeting summaries.

Consultants

In the spring of 2023, IOEM hired consulting firm Tetra Tech, Inc., to assist with updating the SHMP, including the risk and vulnerability assessments. Tetra Tech provided data for IOEM to develop updated mapping.

IOEM Geographic Information System Section

A geographic information system (GIS) is a system designed to capture, store, manipulate, analyze, manage, and present spatial or geographic data. IOEM's GIS Section performs data-related functions such as data creation, conversion, management, and mapping, including interactive maps to support IOEM mitigation plans and processes. Current and authoritative data sources are used for all mapping projects and to display vulnerability and identify critical infrastructures and populations at risk. IOEM GIS assisted with the SHMP update by developing updated hazard and population maps.

Table 1-1. Technical Working Group Members

Agency	Representative's Sector/Area of Expertise
Flood Technical Working Group	
Boise Project Board of Control	Infrastructure
Boise State University	Natural and Cultural Resources
Cascadia Region Earthquake Workgroup (CREW)	Infrastructure, Natural and Cultural Resources
Idaho Department of Lands	Land Use and Development
Idaho Transportation Department	Infrastructure
Idaho Department of Water Resources	Infrastructure, Dam Safety
Idaho Geological Survey	Natural and Cultural Resources
Idaho Office of Emergency Management	Emergency Management
National Weather Service	Natural and Cultural Resources
U.S. Army Corps of Engineers	Infrastructure
Wildfire Technical Working Group	
Idaho Department of Insurance, State Fire Marshal's Office	Land Use and Development, Infrastructure
Idaho Department of Lands	Natural and Cultural Resources
Idaho Department of Water Resources	Infrastructure, Natural and Cultural Resources
Idaho Office of Emergency Management	Emergency Management
Water Users Association	Infrastructure, Natural and Cultural Resources
Seismic Technical Working Group	
Boise State University	Natural and Cultural Resources
Cascadia Region Earthquake Workgroup (CREW)	Infrastructure, Natural and Cultural Resources
Idaho Department of Parks and Recreation	Natural and Cultural Resources
Idaho Geological Survey	Natural and Cultural Resources
Idaho Office of Emergency Management	Emergency Management
Water Users Association	Infrastructure, Natural and Cultural Resources
Human-Caused Technical Working Group	
Boise State University	Academia
City of Boise	Infrastructure
Idaho Department of Environmental Quality	Infrastructure
Idaho Department of Health and Welfare	Health and Social Services
Idaho Department of Homeland Security	Emergency Management
Idaho Department of Information Technology Services	Emergency Management
Idaho National Guard	Emergency Management
Idaho National Laboratory	Infrastructure, Emergency Management
Idaho Office of Emergency Management	Emergency Management
Idaho State Police and Idaho Criminal Intelligence Center	Emergency Management
Micron	Infrastructure

IOEM GIS made a significant contribution to the SHMP update by collaborating with multiple sectors as part of the State Hazard Data Group to develop statewide recommended datasets for the hazard analysis. This group's efforts are fulfilling ongoing mitigation action 2023-002 included in Chapter 24 of this SHMP. The datasets recommended by this group will be the standard for all planning efforts in the state. Appendix A provides additional details about the State Hazard Data Group.

1.3.2 Agency and Stakeholder Involvement

Outreach to Other Agencies and Stakeholders

In order to integrate stakeholders into the planning process, the IOEM Mitigation Section held planning meetings and attended other committee, working group, and technical meetings with state and multi-jurisdiction stakeholders to ensure the widest participation and input possible during the expedited planning process of the 2023 SHMP update. Through the Executive Committee and the TWGs, IOEM engaged with sectors throughout the planning process. Members' participation in these groups provided opportunities for plan involvement for all the sectors they represent. Available meeting summaries and presentations are included in Appendix A.

How Agencies and Stakeholders Contributed

TWG meetings included subject-matter expert contributions from federal, state, and local agencies and from the private sector on the following subjects:

- Hazard-specific data, spatial analysis, studies, and research papers related to the natural hazards and hazards of interest assessed in the 2023 SHMP
- IDWR expertise on dam data, safety, and potential impacts
- Multi-agency input on vulnerable populations in Idaho including providing applicable datasets for the 2023 SHMP analysis
- IDL provided input on how climate change may amplify the wildfire hazard
- TWG members provided edits to the 2018 SHMP that were incorporated into a unified narrative for the 2023 SHMP update
- Idaho Technology Services (ITS), an intern from Idaho State University, and the Department of Administration provided updated state facilities data
- The State Hazard Data Group provided recommended datasets for the hazard analysis

Public/Private Partnerships

The Idaho Climate Data StoryMap was developed through a public/private partnership of Argonne National Laboratory, AT&T, and FEMA. Climate projections for Idaho are based on peer-reviewed climate datasets to inform community leaders and public safety officials how a changing climate will affect communities in the state. Climate modeling maps developed through the public/private partnership are included in the SHMP hazard sections on avalanche, drought, flood, and wildfire (Climate Risk and Resilience Portal 2023).

1.3.3 Public Outreach

Online Survey

Development and Distribution

IOEM, the Executive Committee, and the TWGs developed a 10-question survey to gather public perception of hazard risks and preparedness activities. The survey was made available as a hard copy, as well as an online link and QR code. The survey was distributed during an in-person public event and promoted on social media and on IOEM's website during the entire planning process. Results were compiled on July 21, 2023.

Results and Incorporation

Forty participants from across the state submitted responses to the survey. Highlights are included below. All survey results are in Appendix A.

- More than half of the respondents indicated that their community has experienced a disaster. About 60 percent were affected by flood, followed by wildfire (56 percent) and severe storm (52 percent).
- Respondents indicated that the highest level of threat comes from severe storms, wildfire, lightning, drought, hazardous materials, and wind/tornado hazards.
- About 54 percent of respondents indicated that they were unsure about or did not know of local hazard public awareness and education programs in their communities.
- Planning for natural hazard events is important to survey respondents. The following types of planning were indicated as most important:
  - Protecting critical facilities
  - Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses
  - Protecting and reducing damage to utilities
  - Strengthening emergency services.

The 2023 mitigation action plan reflects the input from survey responses by incorporating public information and outreach actions, with a greater emphasis on planning for hazard events.

Public Events

In-Person

The 2023 SHMP update was prepared under an expedited schedule, so the in-person public outreach effort was focused on Boise, the most populated city in the state. In collaboration with the SHMP planning team, IOEM participated in a "Disaster Days in the Park" public outreach event on June 27, 2023, at Julia Davis Park (Figure 1-3). Draft sections of the plan were available for public review, as well as other information on mitigation planning and resources. The public input survey was made available in paper copies and through a flyer detailing the survey link as well as the QR code for mobile device scanning. Large displays with an overview of the wildfire, flood, earthquake, and landslide hazards were available for public review.

Figure 1-3. "Disaster Days in the Park" Public Outreach

IOEM also did public outreach at the Gowen Field Air National Guard Base during the Gowen Thunder Airshow on August 25 - 27, 2023 (see Figure 1-4). IOEM manned an area for event attendees to share their input on the top hazards in the SHMP. The public outreach was a success, with thousands of people visiting the IOEM booth over the three-day event. Over 160,000 people attended the airshow.

Figure 1-4. Gowen Thunder Airshow Public Outreach

Virtual

On June 29, 2023, IOEM held a virtual meeting to release the public comment draft. The session included an overview of the draft plan and allowed the public to ask questions and provide input on the draft.

Social Media

Social media was used extensively for public outreach and input, as this has become the best method of reaching a broad spectrum of the public that may not be engaged in the process through traditional platforms. The use of social media in the planning process was an invaluable tool for providing access to the community all across Idaho that might not typically be engaged at an in-person emergency management event. IOEM made outreach efforts via its Facebook and Twitter accounts and the IOEM website throughout the plan update process to gain public involvement and input (Figure 1-5). WebEOC was used to distribute links to the survey and draft plan.

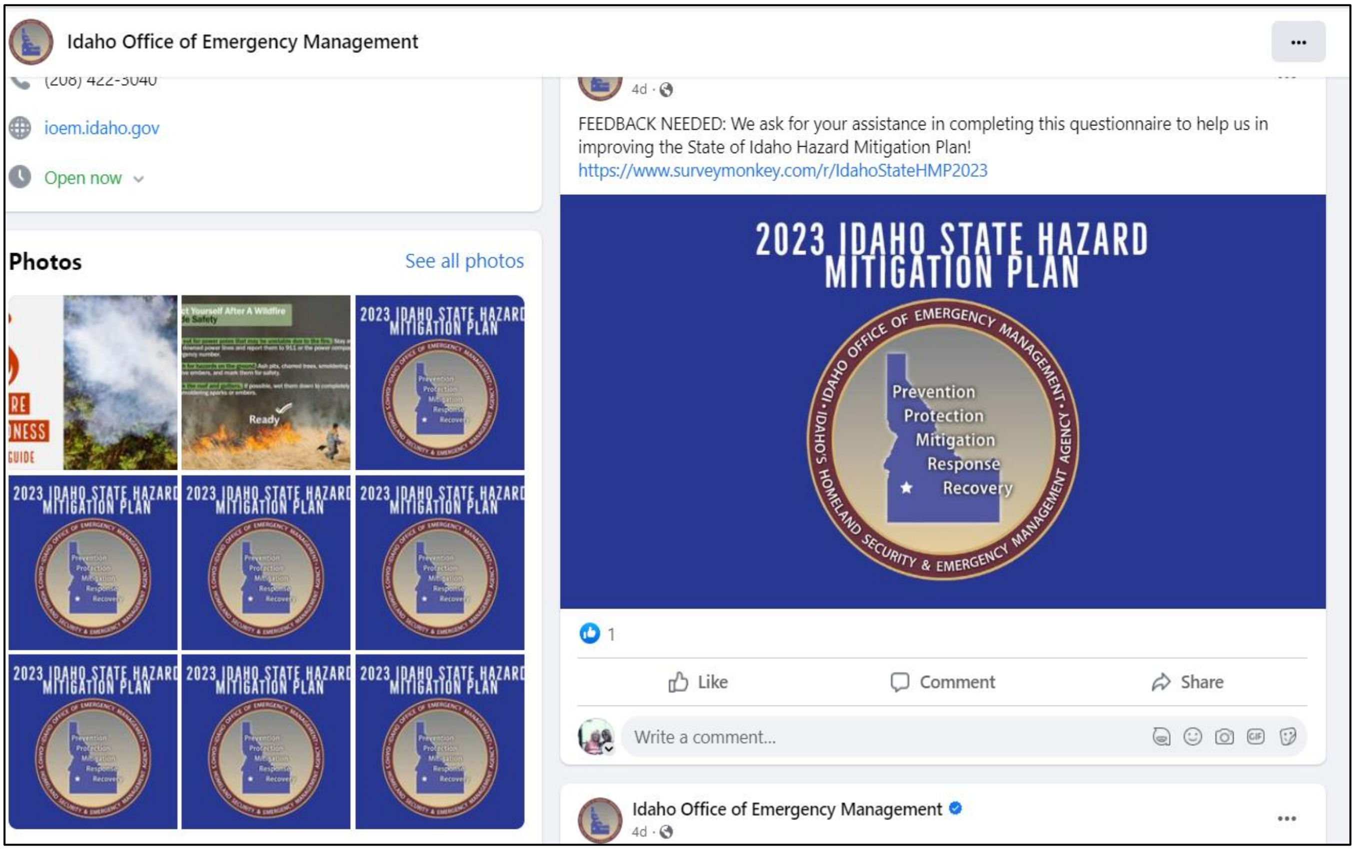


Figure 1-5. IOEM Facebook Post Promoting the Public Survey

1.3.4 Integration of Mitigation Planning with Other State Planning Efforts

IOEM used this update of the SHMP as an opportunity to further promote SHMP integration and coordination. Numerous plans were reviewed and integrated into the 2023 SHMP update, as documented in the References section. The following list highlights integration opportunities during the planning process as well as a sampling of plans that were integrated into the risk assessment:

- **Broad Subject-Matter Expert and Technical Working Group Collaboration on the Risk Assessment**—Subject-matter experts, who represented TWGs from state and federal agencies, academia, and the private sector, were consulted during the data collection phase and risk assessment methodology development for the 2023 SHMP update through group and one-on-one meetings as well as phone and email outreach. This collaboration produced an assessment that incorporated the best available data and allowed for revisions throughout the process to achieve the greatest accuracy when representing risk.
- **Local Hazard Mitigation Plans**—Local hazard mitigation plans (HMPs) were reviewed, and data and information were integrated as possible, including hazards of concern and potential new development. The outcome of these reviews emphasized the need for ongoing coordination between the SHMP and local HMPs to produce strong mitigation plans with a unified approach to assessing risk throughout the state.

- **Subject-Matter Expert Meetings Discussing FEMA HMGP Projects**—Subject-matter experts from the TWGs met during the performance period of the 2018 SHMP to identify and rank FEMA HMGP projects associated with disaster declarations. As a result of this coordination, more than $4.1 million was awarded for projects.
- **Annual Consultation**—The FEMA Region 10 annual consultation helped to identify challenges and opportunities as documented in the capability assessment included in the 2018 SHMP. The annual consultation allowed IOEM to develop targeted strategies to strengthen Idaho's mitigation program.
- **IOEM GIS**—Much of the spatial data used for the 2023 SHMP update was facilitated through the IOEM GIS geospatial data portal. The need for ongoing coordination and collaboration among planning efforts in the state was acknowledged when reviewing data outputs.
- **Idaho Implementation Strategy for National Fire Plan—**Working group members for the Idaho Implementation Strategy for National Fire Plan also served on the TWGs for the 2023 SHMP update and provided cross-agency coordination.
- **Silver Jackets Implementation Plan—**Working group members for the Silver Jackets Implementation Plan also served on the TWGs for the 2023 SHMP update and provided cross-agency coordination.

Chapter 23 provides further details on state programs and initiatives that foster SHMP integration and coordination in Idaho.

1.3.5 Schedule

The 2023 SHMP update was prepared under an expedited schedule. While TWG input, updates, and workshops were held over many months prior to the initiation of consultant support, most of the planning process was completed over a five-month process from March through July 2023 (Figure 1-6).

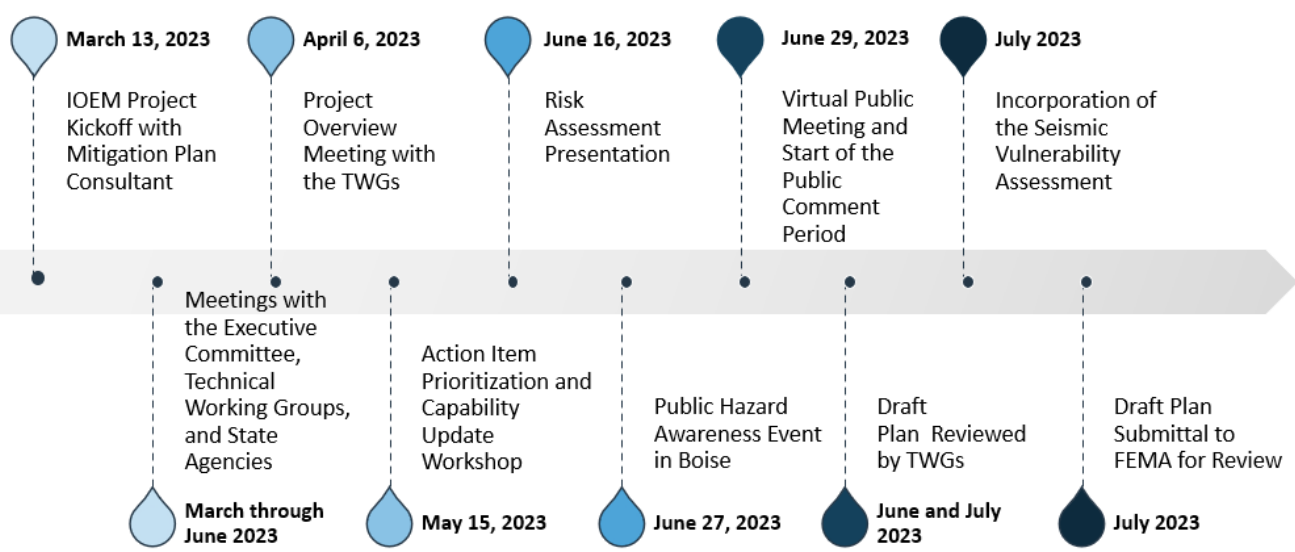


Figure 1-6. Milestones in the Planning Process

1.3.6 Plan Development and Review

Review and Incorporation of Content from 2018 SHMP

During the months before contractor support was secured to update the SHMP, IOEM met with the TWGs to discuss content from the 2018 plan that should be included in the 2023 update. Edits were made to several hazard sections, but much of the qualitative content of the 2018 SHMP was incorporated into the 2023 update.

Emergency Management Accreditation Program

The Emergency Management Accreditation Program (EMAP) provides emergency management programs an opportunity to be evaluated and recognized for compliance with standards certified by the American National Standard Institute. Applicants must demonstrate through self-assessment, documentation, and peer assessment verification that their programs meet the Emergency Management Standard. Accreditation is valid for five years.

The EMAP process accredits an overall emergency management program, of which hazard mitigation is one component. Many EMAP standards for hazard mitigation planning fall outside of what FEMA requires for state hazard mitigation plans. This SHMP was developed to be in full compliance with EMAP standards and criteria. The base plan emphasizes elements required by FEMA, in order to better support local planning in the state. Since the EMAP is a voluntary program, its components that deviate from FEMA requirements are packaged in Appendix B.

Preparation and Review of the Draft Plan

The draft plan incorporating the results of meetings, analyses, surveys, and other information was posted on the IOEM website along with a public comment tool to receive input on the draft plan. The final 2023 Idaho SHMP will also be posted on the IOEM website.

Public Meetings

IOEM presented links to draft plan sections and the survey at public events:

- **June 27, 2023—**IOEM attended the Disaster Days at the Park event in Boise in coordination with the Idaho Silver Jackets.
- **June 29, 2023—**IOEM hosted a statewide virtual public meeting to present and discuss the draft plan.

Draft Plan Public Survey Results and Incorporation

A survey with the link to the online draft plan was developed to guide the public through the chapters of the plan, soliciting feedback and gathering demographic data. The survey link was promoted through social media via IOEM Facebook and Twitter accounts in the same manner as the hazard input survey. This was a targeted, strategic outreach to gain public input.

The survey link was sent out to members of the Planning Executive Committee to send to their contact lists, as well as to the Public Information Emergency Response Team to be placed on other state agency social media accounts. The survey link was featured as a “Hot Topic” on the main IOEM webpage, was provided on a flyer detailing information about the plan and cut off tabs containing the link and QR code, and was sent to facilities and organizations throughout the state for posting on bulletin boards to reach the public. A news release with the survey info was sent out in June 2023 asking for public comment on the plan. Additionally, IOEM staff presented the draft plan and survey link at public events.

For the draft plan, at time of submission to FEMA, IOEM received 2 public surveys. Comments received will be used as a benchmark to help guide future revisions and planning efforts. Public comments will continue to be received up until official publishing of the plan once it has been promulgated and accepted through the Governor's office in October 2023. The comments focused on minor wording changes of an administrative nature and were incorporated in the plan.

Preparation and Adoption of Final Plan

The final SHMP was prepared after receipt of FEMA Region 10 comments and will be promulgated in October 2023.

1.4 WHAT'S IN THE FINISHED PLAN

1.4.1 Organization and Content

Risk Assessment

The risk assessment for this SHMP is organized alphabetically by hazard in Chapters 5 through 17, with individual chapters providing all hazard profile information and vulnerability assessment results for a single hazard. Each hazard chapter covers six requirements for state hazard mitigation plans:

- Identifying hazards
- Profiling hazard events
- Assessing vulnerability by jurisdiction
- Estimating potential losses by jurisdiction
- Assessing the vulnerability of state facilities
- Estimating potential losses of state facilities

Hazard Profiles

Each hazard profile describes the hazard and provides information regarding the geographic location and severity of the hazard in Idaho. Previous occurrences are summarized, including an overview of significant events in the state since the last plan update (from January 1, 2018, through December 31, 2022). Federal, state, and local sources were reviewed to obtain the historical information. Research was based on events that caused fatalities, injuries, property damage, and/or crop damage. The summary of past events describes damage, level of severity, dates of events, and sources of information.

Each hazard profile also discusses the hazard's probability of future occurrence, warning time, and secondary hazards. The probability of future occurrences is based on the number of past events divided by the number of years researched. Potential change in climate and its impacts on the hazards of concern are discussed.

Vulnerability Assessments

An updated risk assessment evaluated the State's vulnerability as a whole as well as local vulnerability by county. A new analysis of socially vulnerable populations was completed for each hazard.

Overview of Local Hazard Mitigation Planning in Idaho

The State is responsible for supporting local governments with mitigation planning through training, technical assistance, and, when available, funding. This ensures that the community is aware of hazard data, planning resources, and state priorities for mitigation. Considering local mitigation strategies and capabilities increases the State's awareness of local priorities and data. This informs and influences the State's risk assessment and mitigation priorities. This mutual understanding between the State and local governments allows for a streamlined review and approval process, better aligns mitigation strategies and plans, and directs available resources toward effective mitigation planning. This part of the SHMP summarizes key information about local hazard mitigation planning in Idaho.

Mitigation Strategy

Drawing upon the findings of the hazard risk assessments, the mitigation strategy outlines concrete steps for mitigating hazards in Idaho. The strategy consists of the following:

- A definition of the goals and objectives the State hopes to achieve through hazard mitigation
- A review of strategies outlined in previous Idaho State plans and the progress of their recommendations
- An assessment of the capabilities of all state agencies to carry out hazard mitigation activities
- An updated list of concrete recommended mitigation actions
- A plan for implementing the recommended actions

Appendices

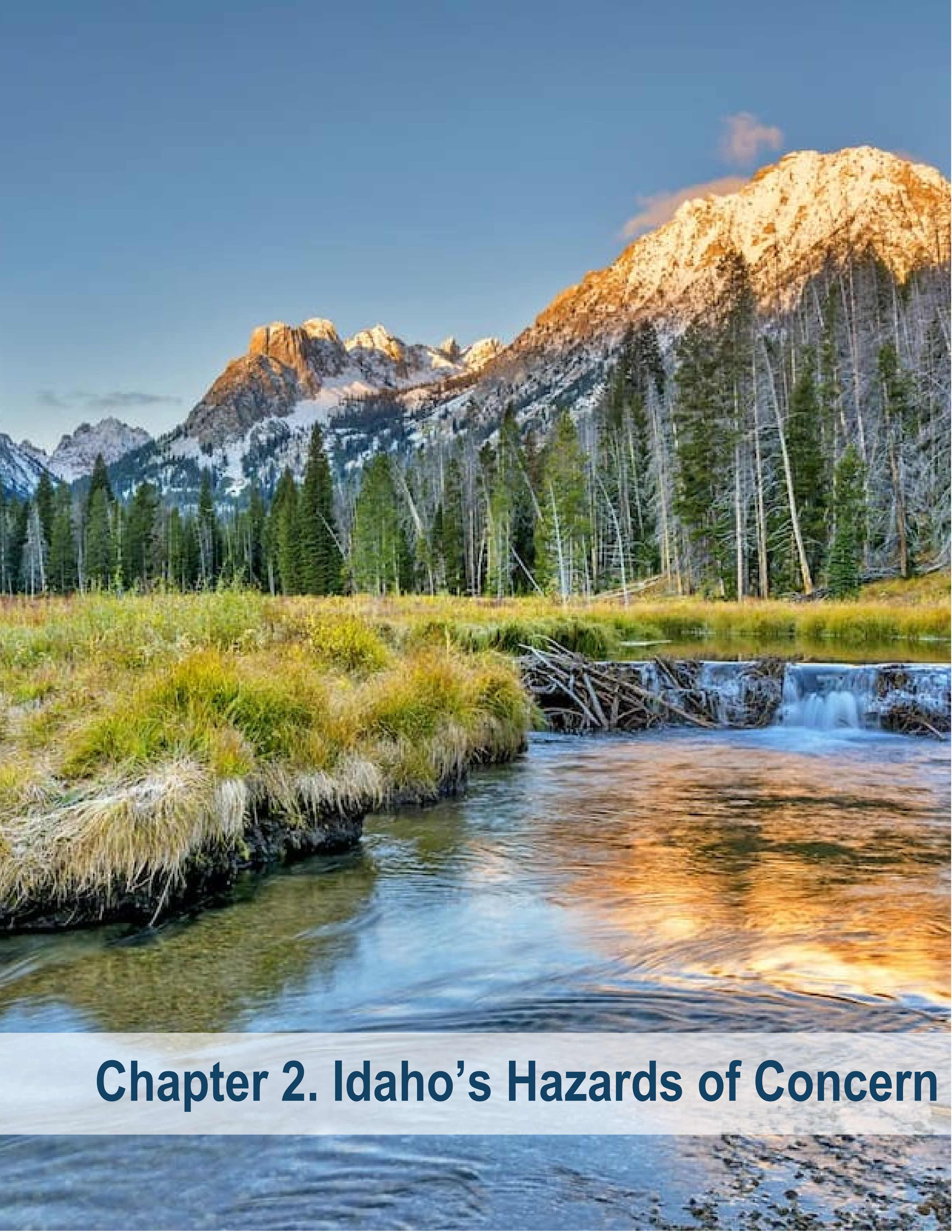
Appendices to the SHMP provide supplementary information that is too lengthy to include in the main part of the plan. The State of Idaho is not seeking enhanced status with this SHMP. However, Appendix C includes content that will be useful if the State pursues enhanced status in the future.

1.4.2 Key Changes from Previous SHMP

The 2023 SHMP represents a complete reorganization of the plan from 2018 to better align with new FEMA planning requirements. IOEM chose to focus the 2023 SHMP update on enhancing the risk and vulnerability assessments to include updated hazard information, data, mapping, and analysis. The overall planning process and IOEM GIS mapping were expanded. The 2023 update expanded upon the previous SHMP's risk assessment. Major improvements, enhancements, and updates are as follow:

- Each hazard section discusses potential impacts on socially vulnerable populations using the U.S. Centers for Disease Control and Prevention's Social Vulnerability Index.
- The vulnerability assessment summarizes information only by county, which allows Tribal Nations to maintain their sovereignty regarding mitigation planning.
- An updated and expanded critical facility spatial dataset was utilized.
- Critical facilities were organized in FEMA's seven community lifeline categories.
- U.S. Census block level aggregate building inventory and demographic data based on the 2020 U.S. Census was utilized in FEMA's hazard simulation model called Hazus (Hazards U.S.).

- The 2023 update expanded upon the previous SHMP's risk assessment. Improvements, enhancements, and updates are summarized below, including a number of newly available data sets that were incorporated, where possible, into the vulnerability and loss assessments:
  - A comprehensive critical facility inventory was developed combining data sources from the 2018 SHMP with additional input from IOEM.
  - FEMA's Hazus v6.0 demographic and building stock data is based on 2020 U.S. Census data at the block level, with valuations based on RS Means 2022. This data was used for the Hazus flood and earthquake models, in addition to being exported from the software to be used in the exposure analysis for dam failure, earthquake, flood, landslide, severe storm, and wildfire.
  - The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated population and land use projections for the United States through 2100. IOEM chose to use the SSP2 + RCP4.5 scenario that assumes consistent patterns of social, economic, technological, and domestic migration trends and stabilizing global greenhouse emissions by 2100. This data was used to understand population and development trend projections in identified hazard areas.
- The structure of the 2018 SHMP was reorganized for the 2023 update which allows for easier readability and layout for meeting the updated FEMA requirements for State HMPs.
- Hazard sections are presented in alphabetical order rather than in order of severity.
- Each hazard section includes a discussion of how the hazard may impact socially vulnerable communities and community lifelines.
- Available National Risk Index ratings are included for the counties identified as most vulnerable to each hazard.
- State capabilities include additional details about how each capability may advance mitigation efforts for socially vulnerable communities and how each capability impacts or could be impacted by future conditions (i.e., climate change).
- An updated risk ranking methodology was used in the 2023 SHMP which analyzed:
  - Probability
  - Impact on Assets
  - Impact on People
  - Future Impacts
- An updated mitigation action prioritization methodology was implemented. It used weighted scoring based on 14 questions to determine if actions have a high, medium, or low implementation priority.



Chapter 2. Idaho’s Hazards of Concern

2. IDAHO'S HAZARDS OF CONCERN

2.1 IDAHO'S HAZARD HISTORY

Idaho has experienced thousands of hazard events, resulting in casualties, millions of dollars in losses, 32 federal major disaster (DR) declarations, three federal emergency (EM) declarations, and 19 federal fire management assistance (FM) declarations. Federal disaster declarations in Idaho since 1956 are listed in Table 2-1 and shown on Figure 2-1. Based on the data listed, the distribution of declarations by incident type is as follows:

- Floods and wildfires were components of 22 declarations each (44 percent)
- Severe storms were a component of 10 declarations (21 percent)
- Landslides and mudslides were a component of four declarations (8 percent)
- Severe weather was a component of 2 declarations (4 percent)
- Earthquake, drought, dam collapse, and evaluation were components of one declaration each (2 percent)

Many of the declarations were classified as a combination of incident types; therefore, these percentages may include the same event in multiple declaration types. Similarly, in Table 2-1, the number of declarations by county adds up to more than the total number of declarations because many declarations apply to multiple counties.

Eight of the federal declarations have occurred since the adoption of the 2018 SHMP. In addition, Idaho experienced 12 State disaster declarations since 2018, as listed in Table 2-2.

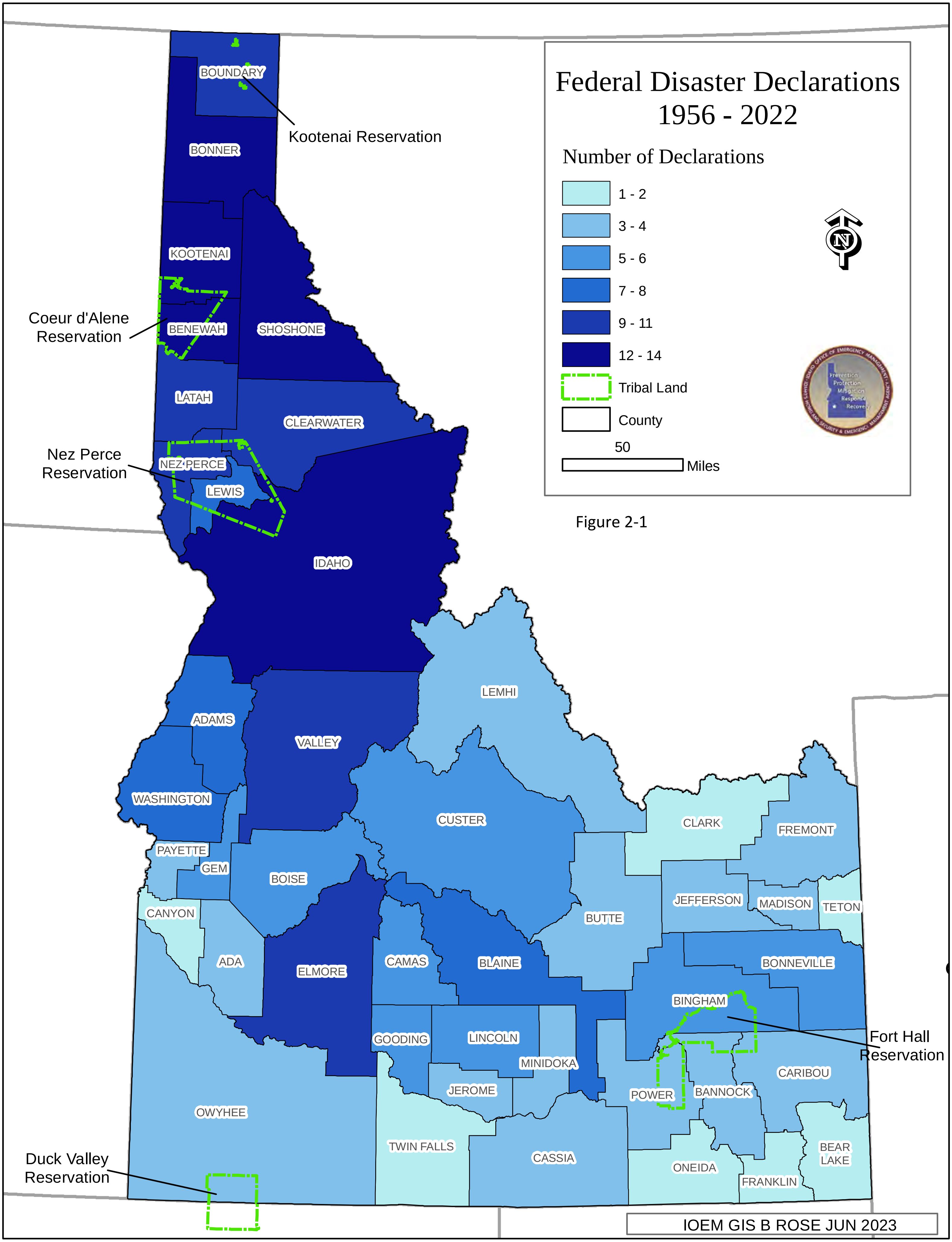
Table 2-1. Major Federal Disaster and Emergency Declarations

Incident Begin Date	Incident Type	Disaster Number	Declaration Type	Counties Affected
September 5, 2022	Ross Fork Fire	5452	Fire Management Assistance	Blaine
August 18, 2022	Four Corners Fire	5449	Fire Management Assistance	Adams, Gem, Valley
August 12, 2021	Bedrock Fire	5407	Fire Management Assistance	Nez Perce, Nez Perce Tribal Nation Land
January 13, 2021	Severe Storm and Straight-line Winds	4589	Major Disaster	Benewah, Bonner, Kootenai, Shoshone
January 20, 2020	COVID-19 Pandemic	4534	Major Disaster	Statewide, Including all tribal nation lands
January 20, 2020	COVID-19 Pandemic	3467	Emergency	Statewide
April 7, 2019	Severe Storms, Landslides, Flooding, Mudslides	4443	Major Disaster	Adams, Idaho, Latah, Lewis, Valley, Nez Perce Tribal Nation Land

Incident Begin Date	Incident Type	Disaster Number	Declaration Type	Counties Affected
July 28, 2018	Grassy Ridge Fire	5263	Fire Management Assistance	Clark
May 6, 2017	Flooding, Landslides and Mudslides	4333	Major Disaster	Blaine, Camas, Custer, Elmore, and Gooding
March 29, 2017	Flooding	4342	Major Disaster	Ada, Canyon
March 6, 2017	Severe Storms, Flooding, Landslides, and Mudslides	4313	Major Disaster	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Shoshone, and Valley
February 5, 2017	Severe Winter Storms and Flooding	4310	Major Disaster	Bingham, Cassia, Elmore, Franklin, Gooding, Jefferson, Jerome, Lincoln, Minidoka, Twin Falls, and Washington
August 21, 2016	Henry's Creek Fire	5151	Fire Management Assistance	Bonneville
December 16, 2015	Severe Winter Storms	4252	Major Disaster	Benewah, Bonner, and Kootenai
November 17, 2015	Severe Storm and Straight-line Winds	4246	Major Disaster	Benewah, Bonner, Boundary, Coeur d'Alene Tribal Nation Land, and Kootenai
August 29, 2015	Tepee Springs Fire	5110	Fire Management Assistance	Idaho
August 14, 2015	Municipal Fire	5105	Fire Management Assistance	Clearwater, Nez Perce Tribal Nation
August 10, 2015	Clearwater Lawyer Branch Fire Complex	5099	Fire Management Assistance	Lewis, Idaho, Nez Perce Tribal Nation
July 5, 2015	Cape Horn Fire	5088	Fire Management Assistance	Bonner, Kootenai
August 15, 2013	Beaver Creek Fire	5045	Fire Management Assistance	Blaine, Boise, Camas, Custer, Elmore, and Oneida
August 12, 2013	Elk Fire	5043	Fire Management Assistance	Blaine, Boise, Camas, Custer, Elmore, and Oneida
September 18, 2012	Karney Fire	5019	Fire Management Assistance	Boise
August 3, 2012	Trinity Ridge Fire	5006	Fire Management Assistance	Elmore
March 31, 2011	Flooding / Landslides / Mudslides	1987	Major Disaster	Bonner, Clearwater, Idaho, Nez Perce, Nez Perce Tribal Nation, Shoshone
August 26, 2010	Hurd Fire	2853	Fire Management Assistance	Valley
July 27, 2010	Severe Storms / Flooding	1927	Major Disaster	Adams, Gem, Idaho, Lewis, Payette, Valley, Washington
July 31, 2008	Flooding	1781	Major Disaster	Kootenai, Shoshone
August 30, 2007	Cascade Fire Complex	2726	Fire Management Assistance	Valley
August 30, 2007	East Zone Fire Complex	2725	Fire Management Assistance	Valley
August 29, 2007	Castle Rock Fire	2724	Fire Management Assistance	Blaine
February 27, 2006	Severe Storms / Flooding	1630	Major Disaster	Owyhee
September 13, 2005	Hurricane Katrina Evacuation	3244	Emergency	All 44 counties
July 6, 2005	Heavy Rains / Flooding	1592	Major Disaster	Nez Perce
September 1, 2000	Wildfires	1341	Major Disaster	Ada, Bannock, Bingham, Blaine, Clearwater, Custer, Elmore, Idaho, Jerome, Lemhi, Lewis, Lincoln, Power, Valley
June 13, 1997	Flooding	1177	Major Disaster	Benewah, Bingham, Bonner, Bonneville, Boundary, Butte, Custer, Fremont, Jefferson, Kootenai, Madison, Shoshone

Incident Begin Date	Incident Type	Disaster Number	Declaration Type	Counties Affected
January 4, 1997	Severe Storms/Flooding	1154	Major Disaster	Adams, Benewah, Boise, Bonner, Boundary, Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington
February 11, 1996	Storms/Flooding	1102	Major Disaster	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Payette, Shoshone
February 16, 1984	Flooding (Ice Jams)	697	Major Disaster	Lemhi
January 18, 1983	Earthquake	694	Major Disaster	Butte, Custer, and Gooding
May 22, 1980	Volcanic Eruption (Mt. St. Helens)	624	Major Disaster	Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Nez Perce, and Shoshone
August 8, 1979	20-Mile Fire	2038	Fire Management Assistance	No declared areas for this disaster
August 20, 1977	Wilson Creek Fire	2029	Fire Management Assistance	No declared areas for this disaster
May 5, 1977	Drought	3040	Emergency	Adams, Bear Lake, Blaine, Camas, Caribou, Elmore, Idaho, Lincoln, and Washington
June 6, 1976	Dam Collapse (Teton Dam)	505	Major Disaster	Bingham, Bonneville, Fremont, Jefferson, and Madison
January 25, 1974	Severe Storms/Flooding (Snowmelt)	415	Major Disaster	Adams, Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Shoshone, and Washington
March 2, 1972	Severe Storms/Flooding	324	Major Disaster	Latah
August 30, 1967	Forest Fires	231	Major Disaster	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, and Shoshone
December 31, 1964	Heavy Rains/Flooding	186	Major Disaster	Ada, Bannock, Benewah, Blaine, Boise, Bonneville, Butte, Camas, Caribou, Cassia, Clearwater, Elmore, Gem, Gooding, Idaho, Jerome, Kootenai, Latah, Lewis, Lincoln, Minidoka, Nez Perce, Owyhee, Payette, Power, Shoshone, and Washington
February 14, 1963	Flooding	143	Major Disaster	No declared areas for this disaster
February 14, 1962	Flooding	120	Major Disaster	No declared areas for this disaster
June 26, 1961	Flooding	116	Major Disaster	No declared areas for this disaster
July 22, 1960	Wildfires	105	Major Disaster	No declared areas for this disaster
May 27, 1957	Flooding	76	Major Disaster	No declared areas for this disaster
April 21, 1956	Flooding	55	Major Disaster	No declared areas for this disaster

Source: (FEMA 2023)



Federal Disaster Declarations
1956 - 2022
Number of Declarations
1 - 2
3 - 4
5 - 6
7 - 8
9 - 11
12 - 14
Tribal Land
County
50
Miles
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
Fort Hall Reservation
MINIDOKA
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023

Figure 2-1

Table 2-2. State of Idaho Disaster Declarations Not Resulting in a Federal Disaster Declaration

Year	Hazard	Date	State Declaration	Counties Affected	Comments
2022	Fire	September 9	ID-04-2022	Lemhi	Moose Fire – A 130,205-acre fire burned for four months near Salmon, Idaho resulting in the deaths of two helicopter pilots assisting in firefighting efforts.
2022	Fire	September 6	ID-03-2022	Jerome	Ross Fork Fire – Due to a lightning strike, a 37,868-acre fire burned through rural areas in the Sawtooth National Forest. No injuries or structural damage were reported.
2022	Fire	August 19	ID-02-2022	Valley	Four Corners Fire – A wildfire broke out near Lookout Peak in the West Mountain Range, west of Cascade, Idaho. The fire burned over 13,000 acres and impacted both the Payette National Forest and Boise National Forest.
2022	Flood	June 21	ID-01-2022	Idaho, Nez Perce	Spring Flooding – Following heavy rainfall, runoff and flooding occurred affecting Idaho and Nez Perce counties causing significant damage to roads and dangerous travel conditions. $3 million in Emergency Relief (ER) funding was quickly made available due to damage to roads and bridges.
2021	Fire	July 9	ID-02-2021	Idaho, Valley, Lemhi, Custer	Wildfires – Idaho Governor Brad Little issued an emergency declaration due to a number of wildfires that broke out in the state. Notable fires included the Dixie-Jumbo and Cougar Rock Fires that collectively burned over 40,000 acres. Hot, dry, and windy conditions greatly contributed to the spread of these fires.
2020	Fire	September 8	ID-03-2020	Bonner	Summer Wildfires – Numerous wildfires burned thousands of acres in northern Idaho and a number of structures were destroyed.
2020	Earthquake	April 1	ID-02-2020	Custer	Challis Earthquake – A magnitude 6.5 earthquake shook the area north of Boise near the mountain town of Stanley, Idaho. The shaking lasted 20-30 seconds.
2019	Flood	April 9	ID-02-2019	Washington	Spring Flooding – flooding from spring runoff ran over U.S. Highway 95 and Idaho Highway 55 through the Central Mountains.
2019	Winter Storms	February 25	ID-01-2019	Bonneville, Nez Perce	Winter Storms – After an atmospheric river was transported over Idaho and collided with Arctic air covering the state, heavy snowfall and wind created treacherous conditions. Record levels of snowfall were recorded.
2018	Fire	August 15	ID-03-2018	Clark, Washington	Summer Wildfires – Over 100,000 acres of land were burned in the 2018 Idaho fire season propelled by heavy winds and dry conditions.
2018	Flood	May 29	ID-02-2018	Jefferson	Late Spring Flooding – An emergency declaration was issued after late spring flooding caused significant damage to the Jefferson County levee. About 400 feet of levee were affected and 65 homes were at risk of flooding.
2018	Flood	March 19	ID-01-2018	Madison	Spring Flooding – Snowmelt due to warm weather and rainfall caused flooding beginning on March 19. 200 miles of Madison County roads were damaged in just one week.

Source: IOEM 2023

2.2 STATE HAZARDS OF CONCERN

The 2023 SHMP profiles the following hazards (listed alphabetically):

- Avalanche (snow)
- Civil disorder
- Cyber threat
- Drought
- Earthquake
- Flood (including dam failure)
- Hazardous materials release
- Landslide
- Pandemic
- Radiological accident
- Severe weather (includes lightning, winds/tornadoes)
- Volcanic eruptions
- Wildfire

Historically, the most significant of these hazards in Idaho have been severe weather, flood, and wildfire. This is based on recent major disaster declarations, the results of the vulnerability and loss assessments, and the hazards identified as significant in local plans. The data indicate that severe weather events occur frequently and are an element of many disaster declarations, both state and federal. Due to the widespread areas where flood and wildfire have been known to occur, these hazards are significant; however, they have occurred less frequently than severe weather events in Idaho. Based on the number of local plans identifying these hazards as significant, earthquake and landslide are also considered to be significant State hazards.

The natural hazards were similarly identified in the 2018 plan update. The key difference in that plan was that dam failure was profiled independently of the flood hazard.

2.3 COMMONLY RECOGNIZED NATURAL HAZARDS OMITTED

At the national level, hurricanes, tropical cyclones, and tsunamis are significant natural hazards. However, due to their statistical historical improbability of impacting Idaho, they are not assessed in this plan.

2.4 LOCAL HAZARDS OF CONCERN

Idaho has 44 counties that are eligible to develop a local hazard mitigation plan. In addition, five Tribal Nations may develop a hazard mitigation plan, although only four have done so. Planning efforts by local jurisdictions should be consistent with the SHMP.

Since 2010, the State has reviewed all local hazard mitigation plans and compiled key information from them into a database for analysis and mapping. This database has been updated annually to inform State hazard mitigation planning efforts. Local plans that have been approved since 2018 were reviewed to identify the hazards that are currently of greatest concern. Table 2-3 lists the hazards assessed by local plans in the state, and indicates which hazards each county and tribal nation rated as a major or high hazard, as noted in the table by an "H."

The highest-ranking significant hazards in the local plans are similar to those in this SHMP. The top three local hazards are severe weather, flood, and wildfire. There has been an increase in state and federal declarations for wildfires over the past five years.

Table 2-3. Hazards of Concern Assessed by Local Jurisdiction

Jurisdiction	Avalanche	Drought	Earthquake / Seismic	Flood (includes dam failure)	Landslide	Severe Storms (includes wind, tornado)	Volcano	Wildfire
Ada County	–	√	√	√	√	H	√	√
Adams County	–	–	√	√	√	H	–	H
Bannock County	√	–	√	√	√	H	–	H
Bear Lake County	√	–	√	√	√	H	–	√
Benewah County	–	–	√	H	√	H	–	H
Bingham County	√	H	√	H	√	H	–	H
Blaine County	√	H	√	H	√	√	–	H
Boise County	√	–	√	H	H	√	–	√
Bonner County	√	–	√	√	√	H	–	H
Bonneville County	√	√	√	H	√	H	–	H
Boundary County	√	√	H	H	√	H	–	H
Butte County	–	–	H	–	–	–	–	–
Camas County	√	H	H	H	√	H	–	H
Canyon County	–	√	H	√	√	H	–	√
Caribou County	√	–	√	√	√	H	–	√
Cassia County	√	–	√	√	√	H	–	H
Clark County	–	H	√	√	√	√	√	H
Clearwater County	–	–	–	H	H	H	–	H
Coeur D'Alene Tribal Nation	–	–	√	√	√	√	–	√
Custer County	√	√	√	H	–	√	–	H
Elmore County	–	–	√	H	H	H	–	H
Franklin County	√	–	√	√	√	H	–	√
Fremont County	–	√	H	H	√	H	√	H
Gem County	–	√	√	√	√	H	–	H
Gooding County	–	–	√	H	√	√	–	H
Idaho County	–	–	√	H	H	H	–	H
Jefferson County	–	–	√	√	√	√	–	√
Jerome County	–	H	√	√	√	H	–	H
Kootenai County	√	√	H	H	√	H	√	H
Kootenai Tribal Nation	–	–	–	–	–	–	–	–
Latah County	–	√	√	√	√	√	√	H
Lemhi County	–	√	√	√	√	H	–	H
Lewis County	–	–	√	H	√	H	–	√
Lincoln County	–	–	√	√	√	H	–	√
Madison County	–	√	–	√	–	H	–	√
Minidoka County	–	–	√	√	–	√	–	√
Nez Perce County	√	√	√	√	√	H	–	H
Nez Perce Tribal Nation	–	√	–	√	√	√	√	√
Oneida County	√	H	H	√	√	H	–	H

Jurisdiction	Avalanche	Drought	Earthquake / Seismic	Flood (includes dam failure)	Landslide	Severe Storms (includes wind, tornado)	Volcano	Wildfire
Owyhee County	√	–	√	√	√	√	–	H
Payette County	–	–	√	H	√	H	–	H
Power County	√	√	H	H	√	H	–	H
Shoshone-Bannock Tribal Nations	–	√	√	√	√	√	–	√
Shoshone County	√	–	H	√	√	H	–	√
Teton County	√	√	√	√	√	H	√	√
Twin Falls County	√	H	√	√	√	H	–	H
Valley County	–	–	H	√	H	√	–	H
Washington County	–	–	√	H	√	H	–	H
Total	21	21	40	43	39	44	6	41

√ = hazard assessed
H = assessed as high hazard
– = no assessed hazard
Source: IOEM 2023

Table 2-4 shows the hazards of concern for all of the local hazard mitigation plans that were reviewed for this and previous SHMP updates. The top three hazards identified by the local jurisdictions in 2023 are the same as they were in 2018. Wildfire, severe storms, and flood were dropped as high-ranked hazards by some jurisdictions, while drought, earthquake, and landslide were added as high-ranked hazards.

Table 2-4. Local Hazard Mitigation Plan Roll-Up, Jurisdictions Ranking Hazards of Concern as High or Major

Hazard	Number Ranked as High or Major (2023)	Number Ranked as High or Major (2018)	Number Ranked as High or Major (2013)	Number Ranked as High or Major (2010)
Avalanche	0	0	0	0
Drought	7	4	1	1
Earthquake	10	2	8	5
Flood (includes Dam Failure)	18	26	24	26
Landslide	5	2	6	6
Severe Storms (includes Wind / Tornado)	33	34	38	35
Volcanic	0	0	0	0
Wildfire	30	33	43	41

2.5 THE ROLE OF CLIMATE CHANGE

Climate change will continue to exacerbate the frequency, scale, and intensity of hazards across Idaho. Many communities have experienced substantial damage from climate-related hazards. Climate patterns are shifting, resulting in more extreme and variable weather conditions across the state, with more extreme precipitation events, declining snowpack, more frequent and severe heat waves, and drought conditions. Climate change has impacted Idaho's natural areas and forests, increasing the frequency of wildfires.

Adapting to the changing climate will require an approach to hazard mitigation that prioritizes long-term community resilience practices. Such practices aim to reduce harm for those who experience greater risk and burden of harm due to historical and current marginalization and under-investment, thus resulting in greater resilience across the whole community. The hazard mitigation actions necessary to achieve this goal constantly evolve as conditions change, and the participation of all levels of government, non-profit organizations, the private sector, and the public enhances all actions. It is important to ensure that hazard mitigation actions do not contribute to greenhouse gas emissions, which exacerbate climate change impacts.

As defined by the Intergovernmental Panel on Climate Change, climate adaptation actions are adjustments in natural or human systems that respond to climatic conditions and moderate harm (Intergovernmental Panel on Climate Change 2022). Both hazard mitigation and climate adaptation actions move toward the same goal of long-term risk reduction. Integration of hazard mitigation and climate adaptation planning is particularly applicable to natural hazards influenced by climate change, such as severe storms, flooding, extreme heat, wildfire, and drought.

Each hazard risk assessment chapter in the 2023 SHMP update includes a section describing the climate change impacts on the hazard. In 2022, AT&T, FEMA and Argonne National Laboratory launched the Climate Risk and Resilience Portal (ClimRR). ClimRR provides peer-reviewed climate datasets in a nontechnical format. For this SHMP, AT&T and IOEM collaborated to incorporate ClimRR data into the risk assessment. To ensure that state and local HMPs are in alignment moving forward, a web resource was developed to provide Idaho's local jurisdictions with climate projection insights when developing their local HMPs. A summary description of the ClimRR data and portal is provided in Appendix L.

Chapter 3. Idaho State Profile

3. IDAHO STATE PROFILE

3.1 GEOGRAPHY AND ENVIRONMENT

The State of Idaho covers a total of 83,564 square miles. Its boundaries include Montana, Wyoming, Utah, Nevada, Oregon, Washington, and Canada. The state has many distinct terrains critical to its natural environment such as forests, deserts, mountains, narrow valleys, and plains. Steep mountain streams and large, forceful rivers can also be found and shape many of the state's geological features. There are three major geographical regions within the state: the Rocky Mountains, the Columbia Plateau, and the Basin and Range Province. Idaho has a wide altitude range spanning from its lowest point of 738 feet above sea level at Snake River, to the highest of 12,662 feet on Mount Borah. The climate conditions in the state are unique in that they vary from north to south as a result of strong westerly winds. This diverse topography plays a key role in influencing and shaping the natural hazard environment that characterizes the State of Idaho.

3.1.1 Geology and Terrain

Idaho features a diverse topography and contains many distinct geological features. Outcroppings, steep slopes, and rugged relief are commonly found throughout the state and impact the daily lives of residents and visitors. Natural hazards affecting these geological features, such as earthquakes and landslides, are also common. These natural hazards can drastically alter the terrain and intensify many of the impacts experienced by Idaho's communities.

The northern portion of the state contains parts of the Rocky Mountain region with peaks reaching over 12,000 feet above sea level. The continental divide runs along this area, coinciding with the Montana state border. The landscape of this region is characterized by large variances in elevation over short distances, allowing for slopes and narrow V-shaped valleys to take place. Past glaciations are also evident in the northern regions of the state, uncovering layered metamorphic rocks dating back to 1.4 billion years ago. The major mountain ranges found in northern Idaho include the Selkirk, Coeur d'Alene, and Cabinet Mountains.

Central Idaho is underlain by the Idaho Batholith, a deeply eroded complex of coarse-grained granitic rock dating back to the Cretaceous and Paleogene period, nearly 43-145 million years ago. This area is marked by massive mountain ranges such as the Sawtooth, Salmon River, and Bitterroots mountains. The deeply eroded canyon of the westward-flowing reach of the Salmon River bisects this area and influences many of the natural hazards that can be found here. The exposed rocks in this area present an unstable terrain that is subject to landslides and rock falls. In addition to this, the soils are also unstable in this region because they are made up of loose granitic rocks which can increase the susceptibility to vegetation disturbance and wildland fires. The landscape in Central Idaho is continuously being formed and influenced by these natural hazards.

The southern portion of Idaho is characterized by broad basalt plains deeply cut by river valleys. The basin and Range Province region can be found here. The basalt plains that make up this region contain rock from one of the largest basaltic lava flows in North America. Although the volcanoes are categorized as dormant today, they still have the possibility of renewed lava flows in the future. The landscape is highly unstable and is susceptible to landslides and rock falls especially where the basalt plains are exposed as tablelands and steep cliffs. Just like the central region, these natural hazards are continuously shaping the landscape found in the southern portion of the state.

Due to Idaho's subsurface geology, seismic activity is prevalent throughout the state and has contributed to its naming of 'Earthquake Country' (IBHS 2009). Many of the earthquakes that have occurred in the state are caused by movements in fault lines from the stretching of Earth's crust. Most of these earthquakes occur along the Intermountain Seismic Belt that runs from northwest Montana along the Idaho-Wyoming Boarder, towards Nevada. The Intermountain Seismic Belt includes more than eight major active fault lines, where two of the largest historical earthquakes in the Intermountain West have been recorded. In addition to this, Idaho experiences a unique pattern of seismic activity unlike any other state due to the Yellowstone Tectonic Parabola. This region where the Intermountain Seismic Belt meets the Basin and Range Province, is influenced by the Yellowstone Hotspot, a lava plum that causes earthquakes when interacting with the Basin and Range Province extension. Although Idaho is categorized as having a moderate seismic threat, there are some areas of the state which are deemed relatively inactive: the northernmost section near the Panhandle and a small section southwest along the Snake River Plain.

3.1.2 Climate

Idaho has a diverse climate, but generally is characterized by warm, dry summers and cold, moist winters. Protected by the Cascade Range on the west and the Rocky Mountains on the east, Idaho is shielded from precipitation commonly found on the Pacific coast, and severe arctic cold spells and destructive summer storms commonly found on the Great Plains. Violent or prolonged adverse weather events, such as tornadoes and extended winter storms, rarely occur in the state.

Idaho's annual average precipitation is 22 inches. However, significant variations in precipitation are common due to the seven-degree latitude difference from north to south of the state. Heavy precipitation in the north and central area, commonly seen in the form of snow, is caused by the lifting of air masses over the mountainous regions. This occurrence can result in up to 60 inches of precipitation. In contrast, the southern and eastern areas experience lower precipitation of only 10 inches due to downwind. The winter snowfall precipitation ranges from 20 inches in the southwestern valleys, to up to 300 inches in the high mountain regions.

The wettest months for the State of Idaho are generally November through January. The wettest areas for the State of Idaho are generally located at higher altitudes due to a 'rain shadow' effect on the state by the central mountain region. The Snake River Plateau located east to west, is considered the driest region of the state. Spring and summer thunderstorms often influence the weather events and levels of moisture typically seen throughout the state. Idaho's significant altitudinal variations as previously mentioned, not only influence weather events but also can influence temperature. The highest summer temperatures typically occur in the southern portion of the state. Representative climate examples are illustrated in Table 3-1.

Table 3-1. Representative Climate Examples

City	Elevation (feet above sea level)	Average Annual Precipitation	Average Annual Snowfall	July Average High Temperature (Fahrenheit)	January Average Low Temperature (Fahrenheit)	July Average Afternoon Humidity
Boise	2,704 ft.	12.1 in.	20 in.	91	25	21%
Coeur d'Alene	2,188 ft.	27 in.	42 in.	83	21	44%
Idaho Falls	4,728 ft.	12 in.	39 in.	86	13	36%
Lewiston	1,096 ft.	12.3 in.	11 in.	89	30	25%
Pocatello	5,184 ft.	12.1 in.	44 in.	88	16	24%
Twin Falls	3,730 ft.	9.4 in.	18 in.	88	20	28%

Source: U.S. Climate Data, 2023

3.1.3 Water Bodies and Streams

Idaho contains 93 thousand miles of rivers and streams, the longest being the Snake River (IDWR 2022). The state's water bodies and streams play a key role in its natural hazard environment. Large rivers are found throughout the state and development is often located in riverine floodplain areas. Many Idaho residents live in close proximity to rivers and streams and are subject to periodic flooding. River and stream flow patterns often mirror the spring and early summer snow melt, as the majority of Idaho's precipitation falls as snow and is stored in snow packs. Therefore, flows are generally highest during the shift to warmer seasons, and lowest during the fall and winter. However, these natural flow patterns may fluctuate due to influences by water storage facilities. There are over 12 million acre-feet total of water storage capacity in the state (IDWR 2022). These facilities along with off stream water uses can significantly alter the natural flow patterns typically seen in these areas.

The Snake River is the longest river in Idaho with a total of 779 miles. The Snake River cuts across the southern portion of the State and is a key feature in Idaho as it flows from the Palisades Reservoir in Wyoming onto the Snake River Plain. Due to the river cutting across this large valley plain, it is extremely vulnerable to agriculture irrigation diversions in the summer months, resulting in low levels of water flow or even depletion of its water supply. As it flows westward, it can be replenished by the Snake Plain aquifer. The Snake Plain Aquifer has a storage capacity of up to 300 million acre-feet and most of the groundwater is located within the upper 300-500 feet of the system (ICL 2019). The Snake River then travels north to form the western boundary through Hells Canyon, the deepest canyon in North America. As the river enters Hells Canyon, it is impacted by river regulations set forth for hydropower production purposes and altered by inflowing waters from the Boise and Payette Rivers.

Major tributaries in Idaho, such as the Salmon and Clearwater tributaries, begin in the central mountains as small, steep streams. These tributaries maintain a relatively steep slope throughout before eventually flowing into one of the larger rivers or lakes. Lake Pend Oreille is the state's largest lake with a surface area of 148 square miles and a depth of 1,140 feet (IDWR 2022). It is located in the northern portion of the panhandle region along with two main rivers, the Kootenai and Clark Fork. These rivers are regulated by dams upstream in the State of Montana. Flood control and power production increase the flow of the Kootenai and Clark Fork rivers from late summer through winter. The Clark Fork River is also controlled by the Cabinet Gorge Dam. Another major river system is the Spokane River which flows west from Lake Coeur d'Alene. This lake is considered another one of Idaho's largest lakes and main water resource. Two major tributaries, Coeur d'Alene and the St Joe, originate in Idaho's Bitterroot Range and supply water into Lake Coeur d'Alene. Many of these larger lakes located in the panhandle are regulated by dams built on the outlets. Lake levels are generally lowered in the late fall to provide for winter flood protection. Other smaller lakes include Hayden Lake, Spirit Lake, Upper and Lower Twin Lakes, and Hauser Lake. High flows are commonly seen in May through June, and lower flows in July through September. Peak runoff during the summer months generally occurs due to snowmelt season. Water levels can also commonly be affected by reservoir releases for power generation, unregulated tributary inflow, and irrigation diversions. Major rivers and water bodies and the watershed sub-basins across the state are shown on Figure 3-1.

3.2 LAND USE AND DEVELOPMENT TRENDS

3.2.1 Agriculture

The state's growing season varies by region, lasting as long 200 days in the northwest region and as short as 60 days in higher altitudes. With no infrequent tornadoes, crop damage due to weather is minimal. Idaho crops experience only limited damage from hail and windstorms due to growing seasons. The greatest threats to Idaho crops remain drought and invasive species. According to the U.S. Department of Agriculture, approximately 11.5 million acres of land were used for agricultural purposes in 2022 (USDA/NASS 2022). Agriculture is one of the largest contributors to Idaho's economy, accounting for 12.5 percent of gross domestic product and the third largest agricultural state in the West for the year 2020, according to the Idaho Department of Agriculture.

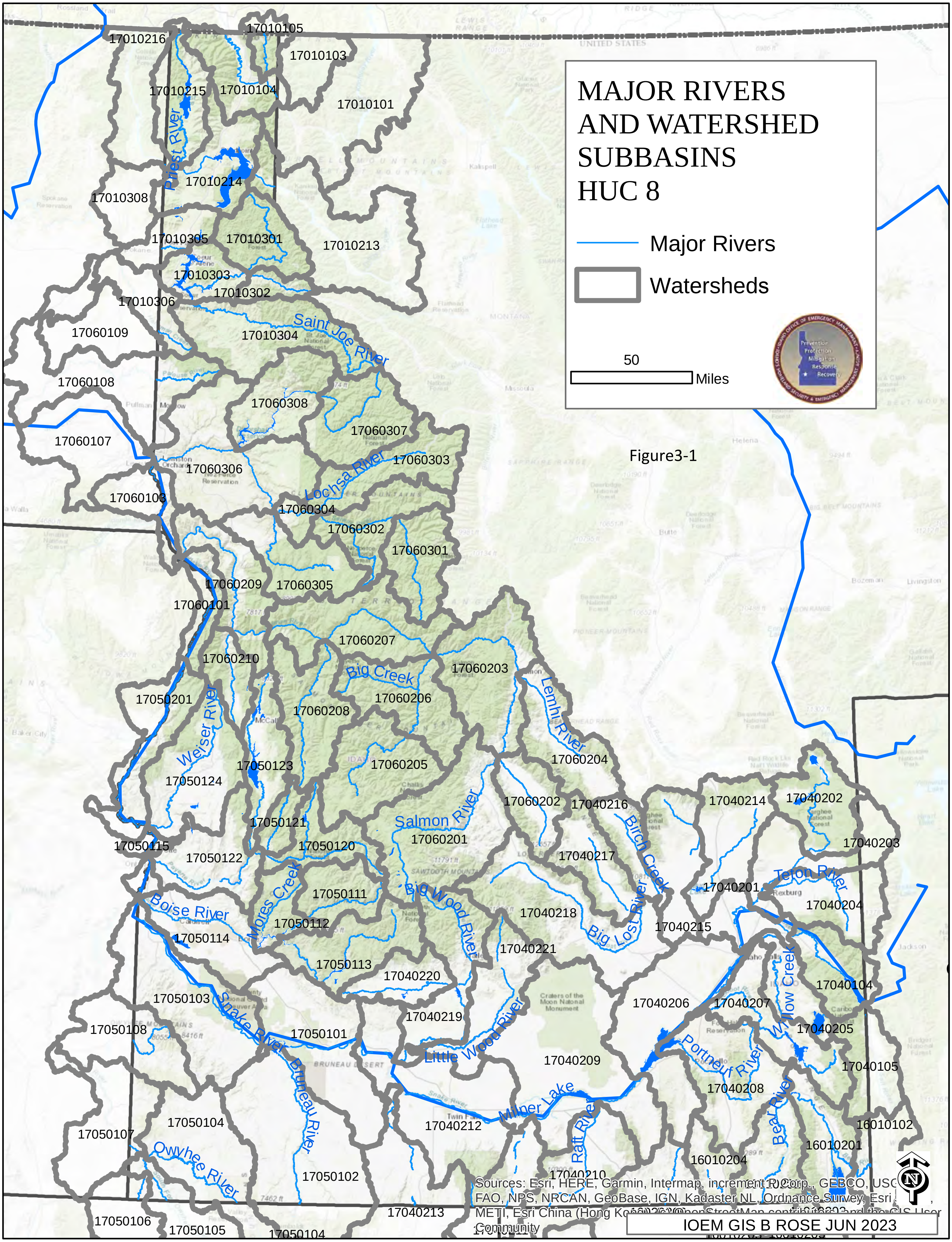
The use of rural resources for other purposes such as recreational rather than agricultural, which had previously sustained Idaho's rural economy in the past, has been increasing in the urban population of the state. Many people living in rural areas are developing innovative ways to gain economic growth through recreational tourism. In the 1970s and 1990s, Idaho was among the seven fastest growing states in the nation. This caused conflicting demands in regional policy debates to conserve land, water, and wildlife for recreational tourism.

3.2.2 Forestlands

Forests cover approximately 20.4 million acres and make up 40 percent of Idaho's land cover (USDA n.d.). According to the Idaho Forest Products Commission, approximately 89.6 percent of the forestland existing in 1630 is still present today. The United States government administers or manages through federal agencies 76 percent of all the land in Idaho and specifically manages nearly three-quarters of forests in Idaho. The rest of Idaho's forestland is divided between state management and private ownership. The State of Idaho and other public agencies own 10 percent, or 2.4 million acres; forest products companies own/administer 5 percent, or 1.1 million acres; and the remaining 10 percent, 2.2 million acres, is owned by ranchers, farmers, tribes, and other private landowners. There should be careful consideration when mandating restrictions on the small percentage of private properties. Collaboration is crucial for lessening the existing hazards to ensure that mitigation actions are applied and managed effectively by differing sets of rules per land ownership. Figure 3-2 shows land ownership.

3.2.3 Land Cover

Land cover in Idaho impacts the hazard types and vulnerabilities present for each community. Counties with a large percentage of forest cover, such as those that contain the Clearwater National Forest, are more susceptible to wildfire hazards and invasive species. Figure 3-3 displays land cover across Idaho, including urban or built-up areas. As urbanization continues across the state, areas that were once covered by trees and grass are being replaced by impervious surfaces of roads, roofs, and parking lots. This type of development reduces the infiltration of rainwater, thus increasing the amount of stormwater runoff and the potential for flash flooding.


MAJOR RIVERS AND WATERSHED SUBBASINS HUC 8
Major Rivers
Watersheds
50
Miles
Figure3-1
Priest River
Saint Joe River
Lochsa River
Big Creek
Lemhi River
Weiser River
Salmon River
Birch Creek
Big Wood River
Big Lost River
Teton River
Boise River
Mores Creek
Snake River
Little Wood River
Bruneau River
Milner Lake
Raft River
Portneuf River
Willow Creek
Bear River
Owyhee River
17010216
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17040214
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17050121
17040203
17060201
17050115
17050120
17050122
17040217
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17050111
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17040218
17050112
17040215
17050114
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17050113
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17040104
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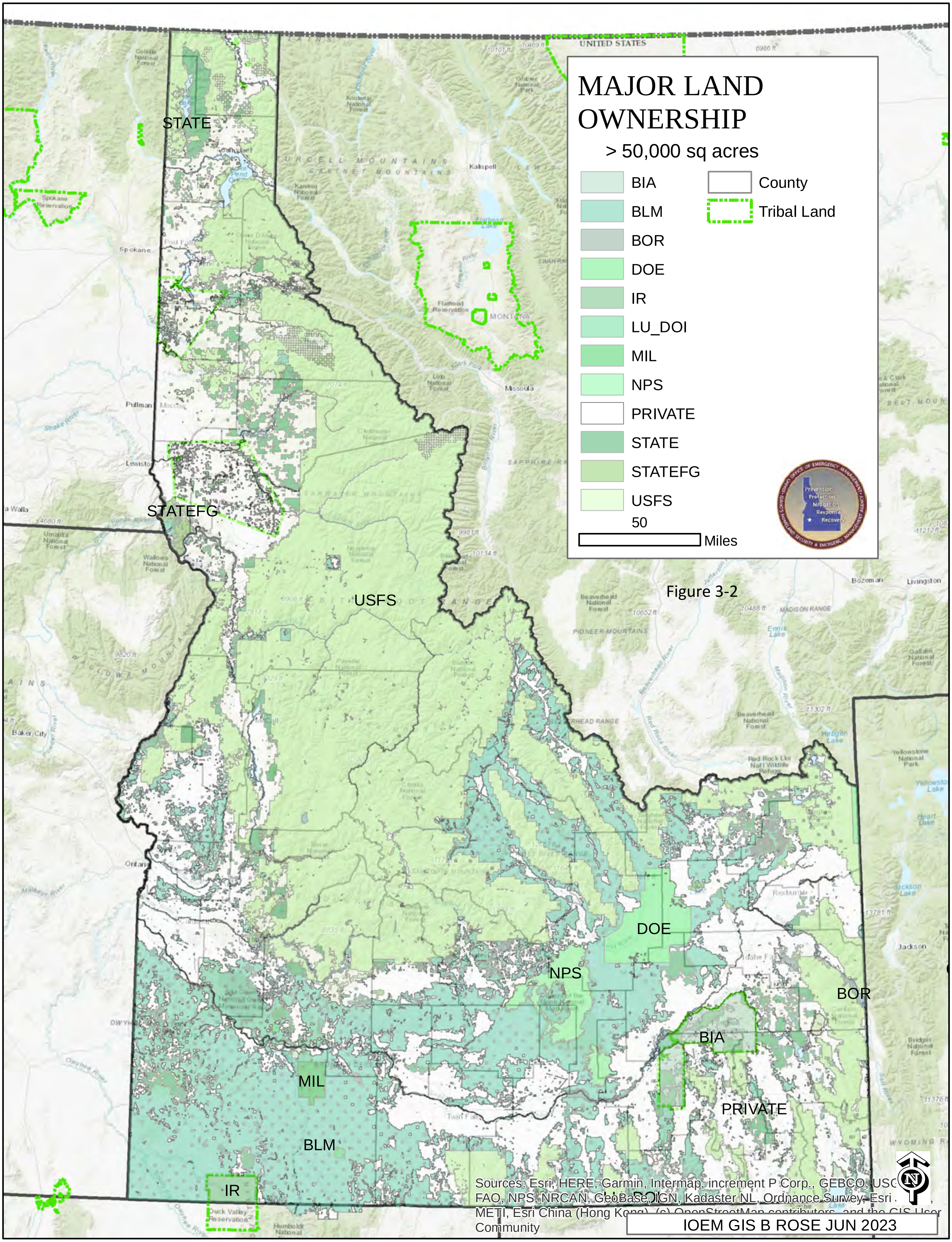
17040212
16010102
17050107
16010201
16010204
17050102
17040210
17040213
17050106
17050105
17050104
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
IOEM GIS B ROSE JUN 2023


MAJOR LAND OWNERSHIP
> 50,000 sq acres
BIA
BLM
BOR
DOE
IR
LU_DOI
MIL
NPS
PRIVATE
STATE
STATEFG
USFS
County
Tribal Land
50
Miles
STATE
STATEFG
USFS
DOE
NPS
BOR
BIA
MIL
PRIVATE
BLM
IR
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
IOEM GIS B ROSE JUN 2023
Figure 3-2

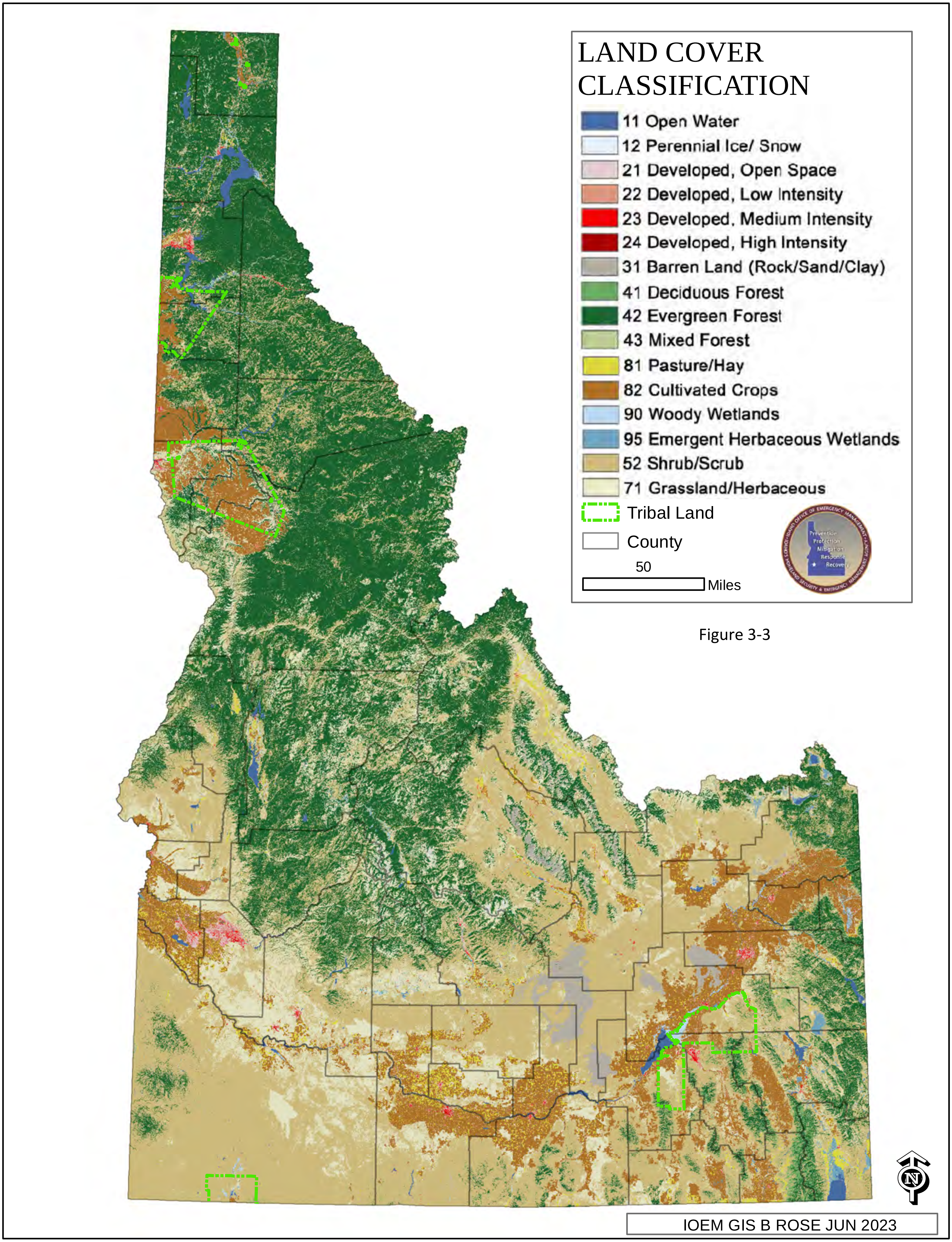

LAND COVER CLASSIFICATION
11 Open Water
12 Perennial Ice/ Snow
21 Developed, Open Space
22 Developed, Low Intensity
23 Developed, Medium Intensity
24 Developed, High Intensity
31 Barren Land (Rock/Sand/Clay)
41 Deciduous Forest
42 Evergreen Forest
43 Mixed Forest
81 Pasture/Hay
82 Cultivated Crops
90 Woody Wetlands
95 Emergent Herbaceous Wetlands
52 Shrub/Scrub
71 Grassland/Herbaceous
Tribal Land
County
50
Miles
IOEM GIS B ROSE JUN 2023

Figure 3-3

3.2.4 Land Use

Land use statewide can be assessed using the U.S. EPA's Integrated Climate and Land Use Scenarios (ICLUS) mapping. In this mapping, the EPA developed models of land use today and in the future under various scenarios of changing conditions, accounting for changes in demographics, migration, and climate. This SHMP used the ICLUS modeling (Scenario SSP2 + RCP4.5) to prepare statewide and county-specific estimates for Idaho land use in 2020 and 2030. Land use is broadly categorized as urban, suburban, exurban, rural, commercial/industrial, and natural. Table 3-2 shows the present and projected 2030 land use distribution by county.

Table 3-2. Estimated Idaho Current and Future Land Use from ICLUS Mapping

	Area (square miles)											
	Urban		Suburban		Exurban		Rural		Commercial, Industrial, Other		Natural	
	2020	2030	2020	2030	2020	2030	2020	2030	2020	2030	2020	2030
Ada	51.0	55.5	35.6	36.8	77.6	79.2	782.1	773.5	36.6	37.7	77.1	77.1
Adams	0.3	0.3	0.6	0.6	14.6	14.6	1,220.2	1,220.2	2.2	2.2	131.5	131.5
Bannock	12.6	15.3	8.2	9.8	39.4	40.7	998.4	991.6	14.8	15.9	74.6	74.6
Bear Lake	0.6	0.6	1.6	1.6	15.3	15.3	876.3	876.3	4.5	4.5	151.3	151.3
Benewah	0.6	0.6	1.0	1.0	28.1	28.1	694.5	694.5	3.0	3.0	58.4	58.4
Bingham	2.9	3.1	4.3	4.7	31.1	34.7	1,826.5	1,822.4	112.6	112.7	140.3	140.4
Blaine	3.2	3.4	4.7	5.1	26.4	28.8	1,758.5	1,755.4	6.9	7.0	853.1	853.1
Boise	0.6	0.6	2.3	2.6	31.0	32.5	1,743.7	1,742.0	3.7	3.7	125.3	125.3
Bonner	2.8	2.8	6.2	6.2	188.5	188.5	1,441.2	1,441.2	7.4	7.4	272.2	272.2
Bonneville	11.3	12.3	8.7	9.1	33.6	36.0	1,440.4	1,436.2	32.1	32.6	373.7	373.7
Boundary	0.5	0.5	1.2	1.2	48.2	48.2	1,103.9	1,103.9	2.7	2.7	120.5	120.5
Butte	0.2	0.2	0.3	0.4	4.2	4.2	1,376.2	1,376.1	554.1	554.1	300.9	300.9
Camas	0.1	0.1	0.2	0.3	3.6	4.7	1,028.6	1,027.4	0.8	0.8	42.7	42.7
Canyon	18.3	20.6	19.7	20.8	81.9	80.2	440.4	438.5	16.7	17.0	26.9	26.9
Caribou	0.8	0.8	0.7	0.7	8.2	8.2	1,701.5	1,701.5	5.1	5.1	84.9	84.9
Cassia	1.8	1.8	1.5	1.7	17.4	19.7	2,490.5	2,487.9	7.6	7.6	55.9	55.9
Clark	0.1	0.2	0.2	0.3	2.5	3.4	1,711.5	1,710.4	24.5	24.5	25.1	25.1
Clearwater	0.5	0.5	1.1	1.1	8.6	8.6	2,404.1	2,404.1	26.7	26.7	46.2	46.2
Custer	0.3	0.3	1.0	1.0	11.5	11.5	3,367.1	3,367.1	13.3	13.3	1,540.6	1,540.6
Elmore	3.1	3.3	2.9	3.1	26.1	29.3	2,809.5	2,805.7	21.4	21.6	238.0	238.0
Franklin	0.9	1.4	2.0	2.3	31.8	37.9	609.8	602.7	10.7	10.9	12.7	12.7
Fremont	1.1	1.1	2.1	2.4	19.1	25.3	1,646.4	1,639.9	4.8	4.8	222.9	222.9
Gem	1.2	1.2	2.4	3.9	19.9	20.4	530.8	528.8	1.3	1.3	9.1	9.1
Gooding	1.3	1.4	0.9	1.0	15.5	16.8	636.0	634.5	4.3	4.4	76.2	76.3
Idaho	1.0	1.0	1.4	1.4	22.6	22.6	4,308.2	4,308.2	6.6	6.6	4,155.7	4,155.7
Jefferson	1.0	1.0	3.3	3.6	23.4	23.2	738.0	737.9	233.4	233.4	105.2	105.2
Jerome	1.8	2.3	2.1	2.2	25.0	26.1	561.8	560.0	6.0	6.0	4.7	4.7
Kootenai	19.2	21.2	18.2	19.6	213.5	214.9	934.2	928.9	21.7	22.2	102.2	102.2
Latah	3.6	3.9	3.5	3.8	19.8	22.8	1,032.8	1,029.0	6.6	6.7	10.3	10.3
Lemhi	0.7	0.7	1.4	1.4	21.0	21.0	3,741.2	3,741.2	5.1	5.1	796.1	796.1
Lewis	0.4	0.4	0.6	0.6	1.1	1.1	469.8	469.8	2.0	2.0	6.5	6.5

	Area (square miles)											
	Urban		Suburban		Exurban		Rural		Commercial, Industrial, Other		Natural	
	2020	2030	2020	2030	2020	2030	2020	2030	2020	2030	2020	2030
Lincoln	0.3	0.3	0.5	0.5	5.1	6.1	1,021.2	1,020.1	2.3	2.3	175.2	175.2
Madison	2.6	3.5	3.2	4.0	13.2	13.0	408.3	406.5	3.5	3.8	42.5	42.5
Minidoka	1.9	1.9	1.8	1.8	12.2	12.3	484.9	484.6	4.0	4.1	260.3	260.3
Nez Perce	7.4	9.2	4.4	6.0	17.3	18.9	756.7	751.2	12.0	12.5	57.3	57.3
Oneida	0.2	0.2	0.8	0.8	3.4	3.4	1,188.0	1,188.0	2.8	2.8	5.3	5.3
Owyhee	0.5	0.5	0.9	0.9	12.3	12.7	6,309.7	6,309.4	164.6	164.6	1,206.1	1,206.1
Payette	2.1	2.1	2.4	2.6	18.8	19.2	379.8	379.2	2.9	2.9	4.2	4.2
Power	0.8	0.8	0.4	0.5	8.6	15.8	1,290.3	1,282.8	9.2	9.4	131.0	131.0
Shoshone	1.5	1.5	2.1	2.1	14.9	14.9	2,393.4	2,393.4	4.3	4.3	225.0	225.0
Teton	0.6	0.7	3.0	3.3	19.2	19.5	394.7	394.0	1.4	1.4	30.9	30.9
Twin Falls	9.4	10.5	5.8	6.7	40.5	44.8	1,829.4	1,822.7	10.4	10.9	30.7	30.7
Valley	1.2	1.2	5.4	5.4	50.2	50.2	1,561.2	1,561.2	4.7	4.7	2,111.3	2,111.3
Washington	1.0	1.0	0.9	0.9	7.2	7.4	1,399.6	1,399.4	2.6	2.6	62.2	62.2
Idaho Total	**173.2**	**192.0**	**171.8**	**185.8**	**1,333.3**	**1,386.5**	**65,841.2**	**65,749.4**	**1,423.6**	**1,429.5**	**14,583.1**	**14,583.2**

3.2.5 Buildable Land

Planning for hazard mitigation is improved by considering how much area that is currently undeveloped could be developed in the future with structures that are vulnerable to the impacts of identified hazards. A buildable lands analysis identifies currently vacant or underdeveloped lands that have the potential for development in the foreseeable future. For this SHMP, buildable lands were defined as all areas in the ICLUS urban and exurban categories. Table 3-3 summarizes the county and state estimates of buildable lands for 2020 and 2030.

Table 3-3. Estimated 2020 and Projected 2030 Area of Buildable Land, by County

	Area of Buildable Land (acres)	
	2020	2030
Ada	50,150	54,705
Adams	8,605	8,605
Bannock	21,368	22,966
Bear Lake	5,493	5,488
Benewah	16,128	16,128
Bingham	7,906	9,016
Blaine	8,562	9,426
Boise	10,697	9,037
Bonner	102,182	102,184
Bonneville	12,203	13,253
Boundary	26,841	26,841
Butte	2,211	2,218
Camas	1,615	2,172
Canyon	31,858	32,126
Caribou	4,115	4,115

	Area of Buildable Land (acres)	
	2020	2030
Cassia	6,296	7,518
Clark	482	694
Clearwater	4,621	4,621
Custer	5,190	5,190
Elmore	13,858	15,500
Franklin	8,751	10,275
Fremont	7,431	9,135
Gem	5,105	5,440
Gooding	8,160	8,839
Idaho	12,729	12,729
Jefferson	3,652	3,460
Jerome	11,005	10,428
Kootenai	121,486	122,582
Latah	11,845	13,579
Lemhi	11,637	11,637
Lewis	408	408
Lincoln	2,398	2,958
Madison	4,371	4,978
Minidoka	4,518	4,363
Nez Perce	9,844	10,762
Oneida	1,084	1,084
Owyhee	4,922	4,820
Payette	6,285	5,915
Power	4,381	7,288
Shoshone	6,724	6,724
Teton	5,545	5,465
Twin Falls	19,689	22,871
Valley	20,975	20,975
Washington	2,985	3,023
Total	**636,309**	**661,537**

3.2.6 Transportation

Land use development in Idaho is largely dictated by the State’s transportation infrastructure. Roads, rail lines and airports are important for the movement of people and the provision of goods and services. As a result, development typically occurs around transportation lines. Idaho has a widespread highway network of over 60,000 miles, which includes interstate highways such as Interstates 84, 86, 15, and 90 (See Figure 3-4). Idaho’s transportation system also includes about 4,000 bridges, 1,887 miles of rail lines, 68 county and city airports, 38 recreational and emergency airstrips, 14 public transportation providers, and one seaport, the Port of Lewiston (Idaho Transportation Department n.d.). The State of Idaho is responsible for nearly 5,000 miles of highway, just 10 percent of all roadway miles in the State. However, according to Idaho Department of Transportation, the State highway system accounts for 54 percent of the State’s vehicle miles of travel. More information on the development trends can be found throughout each hazard profile in Chapter 3.

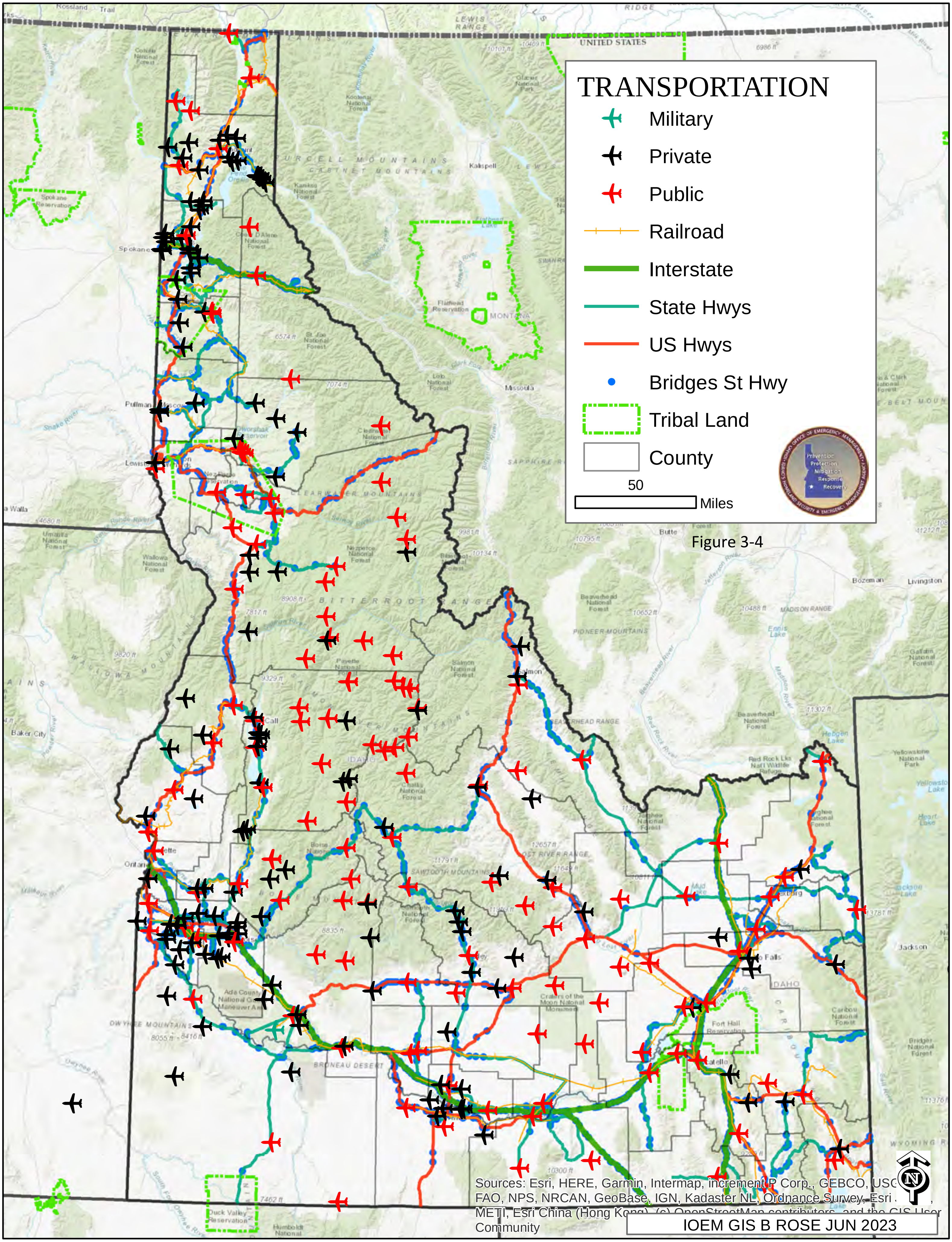

TRANSPORTATION
Military
Private
Public
Railroad
Interstate
State Hwys
US Hwys
Bridges St Hwy
Tribal Land
County
50
Miles
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Figure 3-4

3.3 POPULATION

Idaho is ranked as the 37th most populous state in the U.S. with a total population of over 1.9 million in 2023. The population has increased approximately 2 percent since 2022. The state accounts for 0.59 percent of the U.S. population (WPR 2023).

Table 3-4 lists 2024, 2026, and 2029 Idaho population estimates by region. The most populous region in Idaho is the Southwest region, with a 2024 estimated population of 885,560. The North Central region, with a population of 112,194 projected in 2024, is the least populated region in the state.

Table 3-4. Population Estimates by Region, as Projected by Idaho Department of Labor

Region and Counties	Projected Population		
	2024	2026	2029
North Benewah, Bonner, Boundary, Kootenai, Shoshone	258,733	263,943	271,075
North Central Clearwater, Idaho, Latah, Lewis, Nez Perce	112,194	112,838	113,620
Southwest Ada, Adams, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley, Washington	885,560	909,956	944,967
South Central Blaine, Camas, Cassia, Gooding, Jerome, Lincoln, Minidoka, Twin Falls	211,766	215,869	221,874
Southeast Bannock, Bear Lake, Bingham, Caribou, Franklin, Oneida, Power	178,278	180,039	182,426
East Bonneville, Butte, Custer, Clark, Fremont, Jefferson, Lemhi, Madison, Teton	243,044	248,430	256,270
Statewide	**1,889,575**	**1,931,075**	**1,990,232**

Source: Idaho Dept. of Labor 2023

Figure 3-5 shows the population estimates for Idaho by region as projected by the Idaho Department of Labor from the years 2016 to 2026. This graph projects that there will be overall growth in population for all regions in the state, but particularly in the Southwest region. The Southwest region is projected to have a total growth rate of approximately 15 percent by the year 2029 (IDL 2020). The North Central region will have the lowest projected growth rate, at approximately 3 percent by the year 2029.

Figure 3-6 depicts the historic and projected population growth in Idaho's statewide population between 2019 and 2029. The overall population for the state experienced growth between 2019 and 2023 and is projected to continue a positive trend. The most significant growth percentage between age groups are projected to be seen in the 65 and older population, at over 33 percent for the entire state in 2029 (IDL 2020). Population growth by county is shown in Figure 3-7. The Idaho Department of Labor produced population projection data for each region in the state through the year 2029. The projection numbers for 2018 to 2026 are displayed on Figure 3-8.

The City of Boise is the largest city in Idaho with a population of 236,634 in 2022 (USCB 2022). From 2016 to 2022, Boise had a 6 percent increase in population. The second most populous city is Meridian with a population of 129,736 (USCB 2022). Meridian had a 36 percent increase in population from 2016 to 2022, one of the highest overall seen in the state. Table 3-5 lists the most populated cities in the State of Idaho and the percent of population change from the year 2016 to 2022. Out of the most populated cities, Moscow had the lowest percent change from 2016 to 2022 population estimates, with only a 4 percent increase.

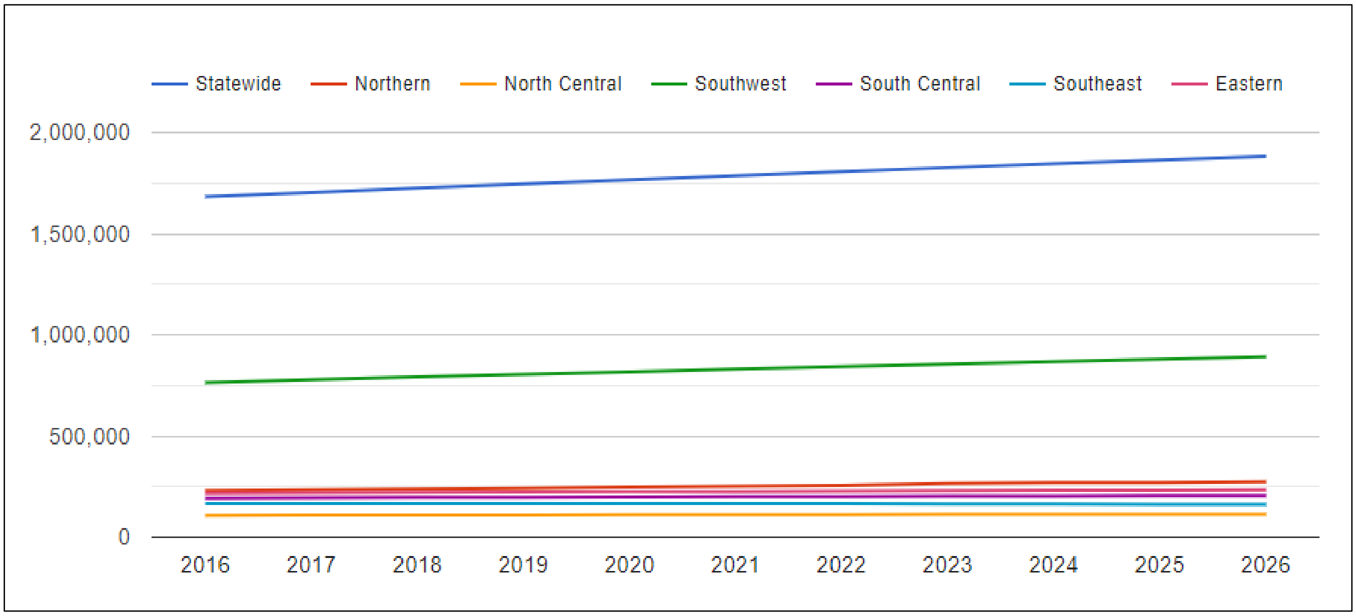

Figure 3-5. Population Estimates by Region, as Projected by Idaho Department of Labor

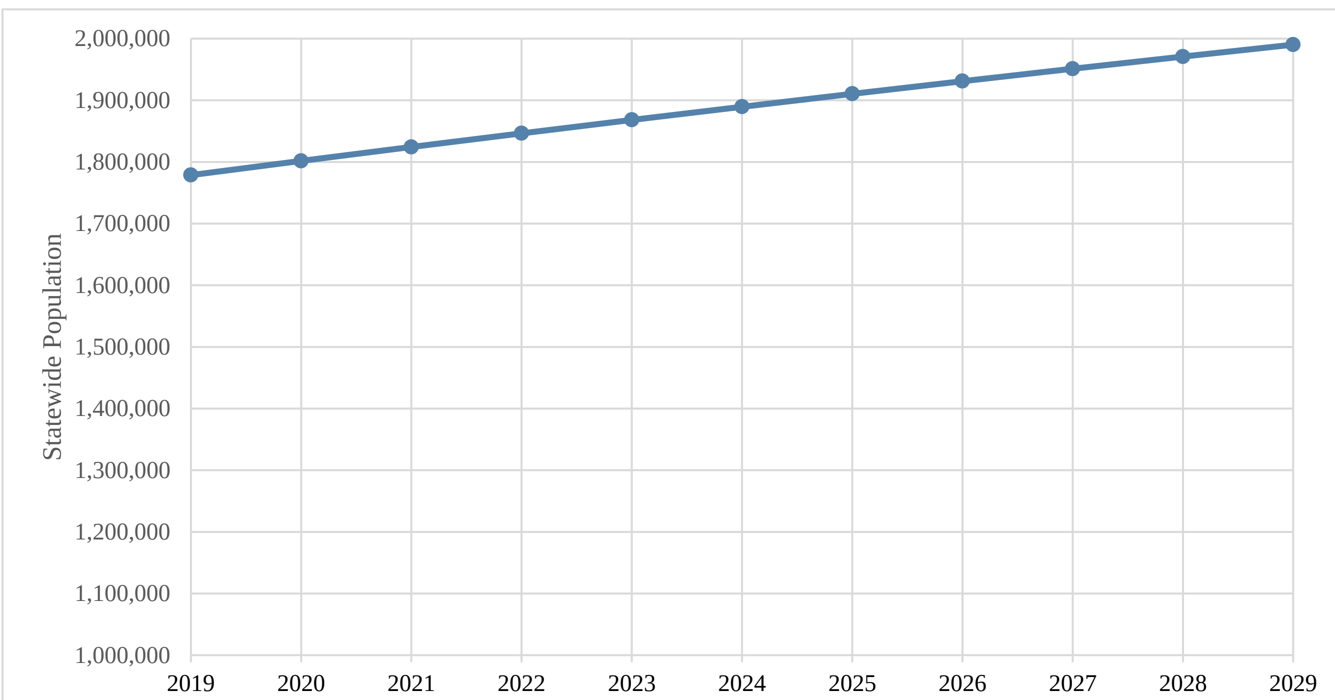

Figure 3-6. Statewide Historic and Projected Population Growth

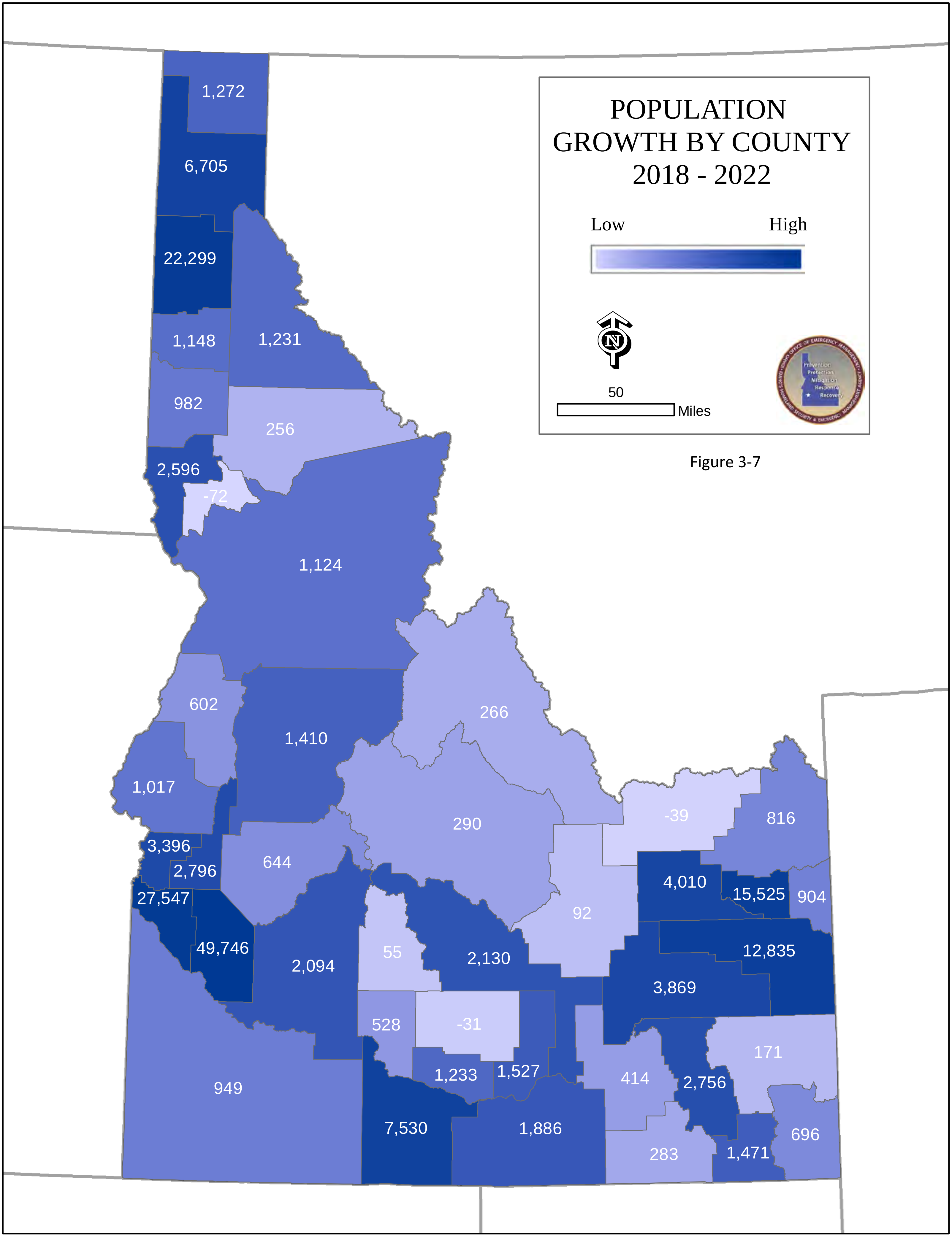
POPULATION
GROWTH BY COUNTY
2018 - 2022
Low
High
N
50
Miles
Prevention
Protection
Mitigation
Response
Recovery
1,272
6,705
22,299
1,148
1,231
982
256
2,596
-72
1,124
602
1,410
266
1,017
290
-39
816
3,396
2,796
644
4,010
15,525
904
27,547
92
49,746
2,094
55
2,130
12,835
3,869
528
-31
171
414
2,756
1,233
1,527
949
7,530
1,886
696
283
1,471

Figure 3-7

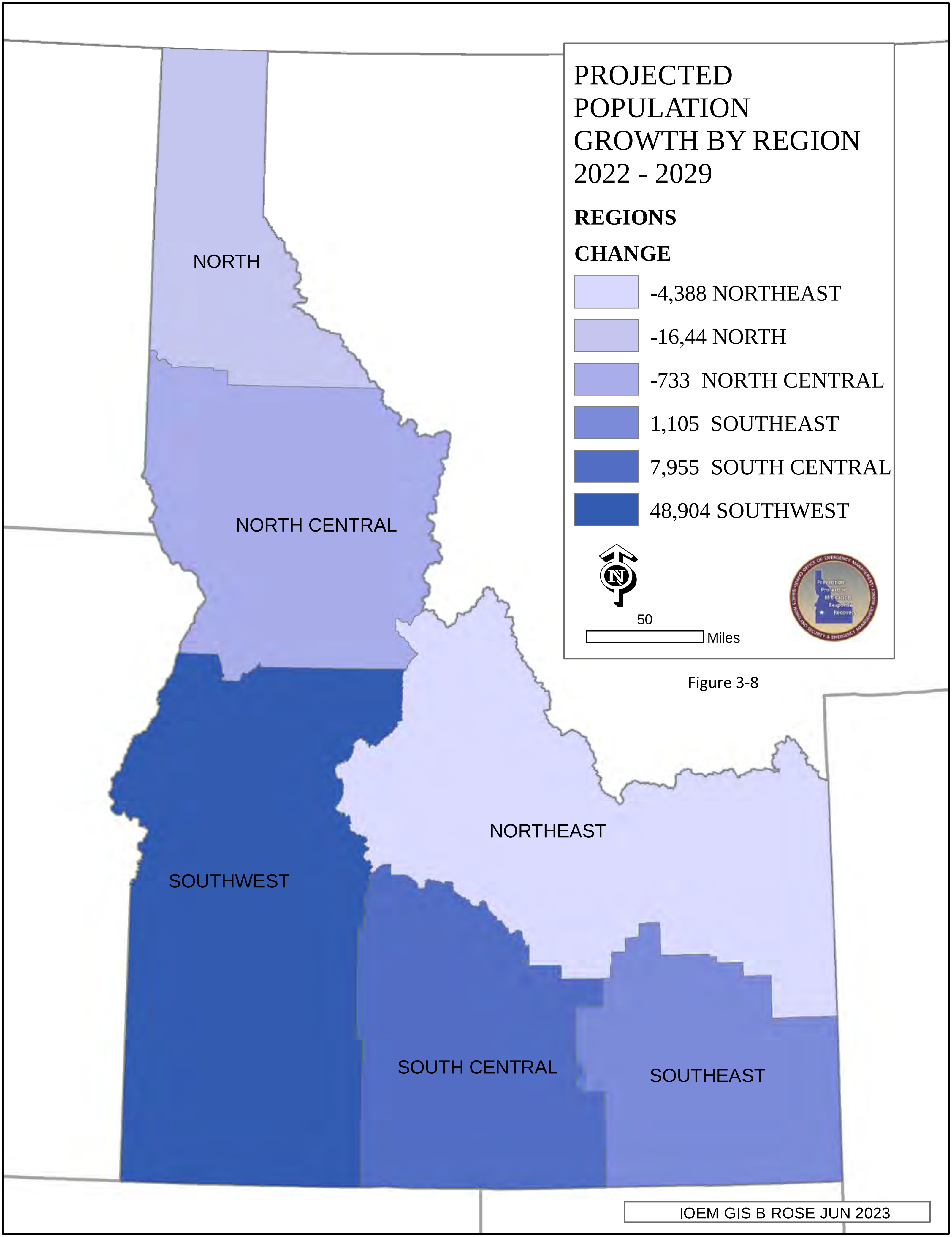
PROJECTED POPULATION GROWTH BY REGION 2022 - 2029
REGIONS
CHANGE
-4,388 NORTHEAST
-16,44 NORTH
-733 NORTH CENTRAL
1,105 SOUTHEAST
7,955 SOUTH CENTRAL
48,904 SOUTHWEST
50
Miles
NORTH
NORTH CENTRAL
NORTHEAST
SOUTHWEST
SOUTH CENTRAL
SOUTHEAST
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Figure 3-8

Table 3-5. Most Populated Cities of Idaho

City	2016 Population Estimates	2022 Population Estimates	Percent Change
Boise	223,154	236,634	6%
Meridian	95,623	129,736	36%
Nampa	91,382	110,951	21%
Idaho Falls	60,211	67,723	12%
Pocatello	54,746	57,730	5%
Coeur d'Alene	50,285	56,733	13%
Caldwell	53,149	65,920	24%
Twin Falls	48,260	54,300	13%
Lewiston	32,872	34,896	6%
Post Falls	31,865	44,194	39%
Rexburg	28,222	40,462	43%
Moscow	25,322	26,249	4%

Source: U.S. Census 2023

Population density has a strong correlation with hazard vulnerability and loss. For example, urban areas like Boise, Meridian, and Nampa in the Southwest region of the state have larger populations and numbers of structures; therefore, they are expected to experience greater loss during hazard events. According to the Idaho Department of Labor, the Southwest region had the greatest percent increase in population at 5 percent from 2019 to 2022 than any other region within the state. The North Central region had the least increase at only 1 percent.

3.4 EMPLOYMENT

As shown in Table 3-6, average employment for the State of Idaho continued to increase in the last three years. The percent change for average employment was approximately 11 percent from the years 2020 to 2022, with 2022 employment going up by almost 80,000 employees. Average yearly wages also increased for the state, with an overall 10 percent increase from 2020 to 2022. The sector with the highest average employment for all three years was "office and administrative support occupations," with an average employment of 105,490 in 2022. The sector with the lowest average employment was "farming, fishing and forestry occupation," with an average employment of 5,220 in 2022. In fact, this was one of the only sectors to decrease in average employment in the last three years.

The average 2022 wage was $51,351, an increase of over $10,00 from 2020. The highest average 2022 wage was in the "management occupation" sector at an average of $90,914. This is an overall 3 percent increase from 2020. "Legal occupation," despite having an increase for average employment, was one of the only sectors to report a decrease in average annual wages of $5,727 or –7 percent decrease from 2020 to 2022. The "food preparation and serving related occupation" sector had the lowest average wage at $27,660. However, this sector still saw an increase of 15 percent from 2020 to 2022.

According to the Idaho Department of Labor, the total average employment for all occupation sectors is projected to increase by 2030. Table 3-7 shows current and projected average employment by occupation sector. The sector projected to have the highest average employment by 2030 is office and administrative support. The lowest average employment by 2030 is projected to be in the "legal occupation" sector.

Table 3-6. Employment and Average Annual Wage Per Occupation Sector (2020-2022)

Occupation Sector	2020		2021		2022	
	Average Employment	Average Wages	Average Employment	Average Wages	Average Employment	Average Wages
Management	41,700	$88,087	48,420	$84,921	53,520	$90,914
Business and Financial Operations	31,500	$69,050	34,940	$68,159	39,770	$71,420
Computer and Mathematical	16,220	$78,238	18,00	$78,377	18,870	$84,429
Architecture and Engineering	14,340	$88,842	12,970	$83,761	12,780	$85,425
Life, Physical, and Social Science	10,230	$58,905	10,080	$61,720	10,790	$63,037
Community and Social Service	11,350	$47,820	11,760	$49,689	11,880	$52,213
Legal	4,640	$83,583	5,150	$76,183	5,240	$77,856
Education Instruction and Library	41,730	$44,722	40,360	$47,439	44,510	$51,998
Arts, Design, Entertainment, Sports, and Media	7,570	$44,526	7,930	$45,883	9,380	$54,721
Healthcare Practitioners and Technical	40,750	$79,369	44,920	$84,185	44,500	$88,346
Production	50,100	$39,132	53,160	$39,736	53,990	$42,992
Construction and Extraction	44,280	$44,342	44,290	$45,279	48,520	$49,620
Office and Administrative Support	101,050	$37,729	104,860	$38,136	105,490	40,247
Farming, Fishing and Forestry	5,730	$33,655	5,450	$35,625	5,220	$41,306
Food Preparation and Serving	60,310	$24,081	65,360	$24,856	72,180	$27,660
Total All Occupations	**718,820**	**$46,804**	**756,910**	**$47,941**	**797,420**	**$51,351**

Source: Idaho Dept. of Labor 2023

Table 3-7. Employment by Occupation Sector (2020 & 2030)

	Average Employment	
	2020	2030
Management	41,700	67,458
Business and Financial Operations	31,500	31,878
Computer and Mathematical	16,220	18,484
Architecture and Engineering	14,340	17,468
Life, Physical, and Social Science	10,230	11,741
Community and Social Service	11,350	14,476
Legal	4,640	5,338
Education Instruction and Library	41,730	49,452
Arts, Design, Entertainment, Sports, and Media	7,570	12,405
Healthcare Practitioners and Technical	40,750	43,462
Production	50,100	59,430
Construction and Extraction	44,280	76,143
Office and Administrative Support	101,050	118,293
Farming, Fishing and Forestry	5,730	20,754
Food Preparation and Serving	60,310	74,156
Total All Occupations	**718,820**	**931,359**

Source: Idaho Dept. of Labor 2023

There are 936,253 employed in the State of Idaho as of April 2023, with an unemployment rate of 2.6 percent (DOL 2023). This is a 1.3 percent employment increase from the previous year. The increase in employment and associated influx of visitors to the state presents new emergency management challenges and planning concerns related to hazard vulnerability. Often, tourists are more vulnerable to disasters due to unfamiliarity with the area including evacuation routes and local communication outlets such as radio, television or newspapers. Additionally, high staff turnover in the service industry can reduce overall community preparedness for disasters.

Part 2. Hazard Profiles and Risk Assessments

Chapter 4. What’s at Risk

4. WHAT'S AT RISK

4.1 RISK ASSESSMENT OVERVIEW

4.1.1 What Is a Risk Assessment?

Risk, for the purposes of hazard mitigation planning, is the potential for damage or loss created by the interaction of natural hazards with assets, such as people, buildings, infrastructure and/or natural and cultural resources. A risk assessment is the process by which a hazard mitigation plan team determines which hazards are of concern and assesses the potential impacts of those hazards on a statewide scale. The assessment evaluates risk to vulnerable people, infrastructure, structures, and critical facilities and the degree to which injuries or damage may occur. It assesses potential risk to socially vulnerable populations and underserved communities, especially those who have been, or could be, disproportionately affected. State risk assessments characterize the impacts of natural hazards on state assets, populations, and jurisdictions statewide. The risk assessment helps communicate vulnerabilities, develop priorities and inform decision-making.

4.1.2 How Is a Risk Assessment Used in Hazard Mitigation Planning?

The risk assessment serves as the basis to guide decisions and investments, and implement actions that will reduce risk, including impacts from climate change. The risk assessment allows the State to understand the impact on people and places, compare potential losses and determine priorities for mitigation measures. The State risk assessment also supports prioritizing jurisdictions for receiving technical and financial support to develop more detailed local risk assessments so communities can take mitigation actions. As part of this process, the risk assessment considers potentially disparate impacts on underserved communities.

The vulnerabilities and impacts identified in the State risk assessment are connected to the mitigation strategy; mitigation goals should address vulnerabilities, and mitigation actions should aim to reduce or eliminate damage to state assets as well as risks to local jurisdictions.

4.1.3 How the Risk Assessment Was Conducted for This Plan

To ensure the risk assessment is a strong basis for the mitigation strategy, it is essential to use the most accurate, current and relevant data. The risk assessment for this SHMP included several steps: review and confirmation of major hazards; update and collection of hazard profile information; Level 2 Hazus runs for flood and earthquake; and enhanced vulnerability assessments utilizing updated local facility inventories.

Hazards U.S. (Hazus)

To estimate losses caused by hazards, FEMA developed a standardized model called Hazards U.S. or Hazus. Hazus is a GIS-based software tool that applies engineering and scientific risk calculations to estimate damage and loss. It provides a consistent framework for assessing risk across a variety of hazards. Hazus uses GIS to produce detailed maps and analytical reports that estimate a community's direct physical damage to building stock, community lifelines, transportation systems, and utility systems. The model includes default data for inventory, vulnerability, and hazards; the default data can be supplemented with local data to provide a more refined analysis.

Damage reports can include induced damage (inundation, fire, and threats posed by hazardous materials and debris) and direct economic and social losses (casualties, shelter requirements, and economic impact) depending on the hazard and available local data. Hazus's open data architecture can be used to manage community GIS data in a central location. The use of this software also promotes consistency of data output and standardization of data collection and storage.

Uncertainties are inherent in any loss estimation methodology. They arise in part from incomplete scientific knowledge concerning hazards and their effects on buildings and facilities. They also result from the approximations and simplifications that are necessary for comprehensive analyses. Incomplete or inaccurate inventories of the built environment, demographics, and economic parameters add to the uncertainty. These factors can result in a range of uncertainty in loss estimates produced by Hazus. However, Hazus potential loss estimates are acceptable for the purposes of this SHMP.

The Hazus analysis included the following:

- The Hazus model for Idaho was updated, with State-owned and -leased buildings and critical facilities entered as user-defined facilities.
- A probabilistic analysis was conducted using Hazus v6.0 to estimate potential flood losses resulting from the 1-percent annual chance flood event. The analysis was performed for counties with available flood hazard data.
- Four scenario-based events available in Hazus v6.0 were used to estimate losses to State-owned and leased buildings and critical facilities:
  - Three USGS ShakeMap scenarios—Squaw Creek M7.0, Lemhi M7.0, and Eastern Bear Lake M7.3
  - The historical M6.9 Borah Peak event (from October 1983).

For hazards in which Hazus could not be used, an exposure-based methodology was applied using the best available spatial data gathered from the State's subject-matter experts, as well as the default data on demographics, state assets and community lifelines.

Assessment of Local Vulnerability

To assess the vulnerability of jurisdictions to the identified hazards of concern, a spatial analysis was conducted. Overall, the exposure and potential losses to population and buildings was evaluated to determine the jurisdictions most threatened by each hazard of concern. Asset inventory data at the U.S. Census-block or tract level was used for this analysis. Where spatially delineated hazard data was not available, a qualitative discussion summarizes the vulnerability of jurisdictions to the hazard of concern.

Changing Conditions

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. In addition, reflecting on changes since the previous plan will provide an understanding of changes in risk. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate

The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters. Analyses for this SHMP used the following ICLUS scenarios:

- Development Scenario SSP2 is a "middle-of-the-road" projection, where social, economic, and technological trends do not shift markedly from historical patterns. Domestic migration trends remain largely consistent with the recent past, with adjustments to account for how the desirability of changing local climate in different locations (average precipitation and temperature for summer and winter) will affect people moving to or from each location.
- Climate Change Scenario RCP4.5 assumes that global greenhouse gas emissions increase into the latter part of the 21st century, before leveling off and eventually stabilizing by 2100 as a result of various climate change policies.

4.2 PHYSICAL ASSETS

4.2.1 Facilities

Location

A spatial dataset of all State facilities was compiled from tables supplied by the Idaho Department of Administration (ADM), which manages this data for lease management and insurance purposes. The tables included an address or location description that was geocoded using Esri data and tools. The original dataset provided included 5,833 facilities.

The dataset includes a field denoting which agency is using each facility and a field called "confidence" (rated as high, medium, or low) to indicate how likely it is that the geocoded facility is in the correct location in the spatial database. The confidence in each location as reported by the Esri geocoder is expressed as a value out of 100. Every address with a value over 99 was considered "high" confidence. A sample of 20 addresses marked with a confidence of 99 were spot-checked to ensure that the address provided by ADM matched that found by Esri's geocoder. All 20 addresses in the sample were judged to be correctly geocoded.

All facilities with a confidence score less than 99 were manually checked against Google Street View and external datasets provided by the Military Division, Idaho Public Television and the Idaho Department of Parks and Recreation. Based on how well the data between those outside datasets and spatial dataset matched, the confidence level remained "low" or was adjusted to "medium" or "high." Data was shared with any agency that has any facilities marked with a low or medium confidence, allowing the agency to double check the location information and update the status and confidence levels.

For the final SHMP, an inventory of 5,339 State-owned or -leased facilities was accepted to use in the risk assessment. Most of these have a high location confidence; there were 117 facilities for which the location confidence was low, and 115 facilities marked with a medium location confidence level. Table 4-1 and Table 4-2 summarize the number of state buildings by agency and jurisdiction, respectively.

Replacement Cost Value

A separate review of the ADM data on State-owned or leased facilities was conducted to investigate the replacement cost value (RCV) of facilities included in the inventory. RCV data was available for only about 55 percent of the included facilities. In order to improve the reasonableness of risk assessment results for this SHMP, RCV estimates were developed for the 45 percent of facilities whose RCV was not included in the inventory database. An average RCV per facility was calculated for all facilities for which RCV data was available. All facilities for which RCV data was not available were then assigned the average value. The RCV data included in Table 4-1 and Table 4-2 uses these assumed values. Although the resulting estimates may be higher or lower than actual values, it is assumed that the average is a more reasonable estimate for analysis than assigning a value of zero.

Table 4-1. Summary of State Facilities by Agency

	State-Owned		State-Leased		State-Owned and -leased	
Agency	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]
Arts Commission	0	$0	2	$5,534,058	2	$5,534,058
Attorney General's Office	0	$0	4	$11,068,116	4	$11,068,116
Bean Commission	1	$2,767,029	2	$5,534,058	3	$8,301,087
Board of Tax Appeals	0	$0	2	$5,534,058	2	$5,534,058
Boise State University	200	$2,020,169,199	53	$226,792,315	253	$2,246,961,513
Boise Veteran's Home	4	$35,319,288	0	$0	4	$35,319,288
Commission for the Blind and Visually Impaired	1	$13,230,295	9	$24,903,261	10	$38,133,556
Commission on Aging	0	$0	1	$2,767,029	1	$2,767,029
Commission on Hispanic Affairs	0	$0	2	$5,534,058	2	$5,534,058
Commission on Pardons and Paroles	0	$0	3	$8,301,087	3	$8,301,087
Correctional Industries	2	$9,549,750	5	$13,835,145	7	$23,384,895
Council for Deaf and Hard of Hearing	0	$0	1	$2,767,029	1	$2,767,029
Dairy Products Commission	2	$4,869,667	0	$0	2	$4,869,667
Department of Administration	25	$966,635,451	5	$13,835,145	30	$980,470,596
Department of Agriculture	6	$14,795,851	31	$83,010,871	37	$97,806,722
Department of Commerce	4	$11,068,116	0		4	$11,068,116
Department of Correction	120	$692,965,997	67	$171,778,342	187	$864,744,339
Department of Education	0	$0	1	$2,767,029	1	$2,767,029
Department of Environmental Quality	0	$0	61	$168,788,769	61	$168,788,769
Department of Finance	1	$2,767,029	0	$0	1	$2,767,029
Department of Fish and Game	743	$316,063,969	35	$81,110,155	778	$397,174,125
Department of Health and Welfare	6	$13,161,463	73	$201,993,117	79	$215,154,580
Department of Insurance	0	$0	7	$19,369,203	7	$19,369,203
Department of Juvenile Corrections	76	$86,890,220	10	$27,670,290	86	$114,560,510

Agency	State-Owned		State-Leased		State-Owned and -leased	
	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]
Department of Lands	124	$70,318,018	14	$32,119,397	138	$102,437,415
Department of Parks and Recreation	725	$1,954,405,534	0	$0	725	$1,954,405,534
Dept. of Transportation	614	$305,462,561	1	$2,767,029	615	$308,229,590
Dept. of Transportation-Aeronautics	30	$5,141,221	1	$2,767,029	31	$7,908,250
Dept. of Transportation-District 1	1	$1,077,192	0	$0	1	$1,077,192
Dept. of Transportation-District 2	4	$896,492	0	$0	4	$896,492
Dept. of Transportation-District 3	2	$996,275	0	$0	2	$996,275
Dept. of Transportation-District 4	1	$7,000	0	$0	1	$7,000
Dept. of Transportation-District 5	1	$611,399	0	$0	1	$611,399
Dept. of Transportation-District 6	2	$2,199,267	0	$0	2	$2,199,267
Department of Water Resources	7	$27,589,260	10	$22,366,317	17	$49,955,576
Division of Financial Management	0	$0	1	$2,767,029	1	$2,767,029
Division of Human Resources	0	$0	1	$2,767,029	1	$2,767,029
Division of Military	347	$690,246,637	113	$220,587,898	460	$910,834,534
Division of Occupational and Professional Licenses	2	$3,302,004	14	$38,738,406	16	$42,040,410
Division of Veterans Services	1	$1,333,371	9	$24,903,261	10	$26,236,632
Division of Vocational Rehabilitation	0	$0	32	$88,544,928	32	$88,544,928
Educational Services for the Deaf and the Blind	16	$40,578,196	12	$33,204,348	28	$73,782,544
Endowment Fund Investment Board	0	$0	2	$5,534,058	2	$5,534,058
Forest Products Commission	0	$0	4	$11,068,116	4	$11,068,116
Governor's Office	0	$0	2	$5,534,058	2	$5,534,058
Idaho Barley Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho Beef Council	0	$0	1	$2,767,029	1	$2,767,029
Idaho Career & Technical Ed	0	$0	1	$2,767,029	1	$2,767,029
Idaho Commission for Libraries	0	$0	1	$2,767,029	1	$2,767,029
Idaho Crop Improvement Association	5	$1,702,266	4	$5,735,683	9	$7,437,949
Idaho Department of Labor	8	$40,065,456	12	$33,204,348	20	$73,269,804
Idaho Digital Learning Alliance	0	$0	1	$2,767,029	1	$2,767,029
Idaho Industrial Commission	0	$0	19	$52,573,551	19	$52,573,551
Idaho Office of Energy Resources	0	$0	1	$2,767,029	1	$2,767,029
Idaho Potato Commission	0	$0	2	$5,534,058	2	$5,534,058
Idaho Public Television	24	$56,115,651	39	$99,928,617	63	$156,044,267
Idaho Rangeland Resources Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho Soil and Water Conservation Commission	0	$0	14	$38,738,406	14	$38,738,406
Idaho State Bar	0	$0	2	$5,534,058	2	$5,534,058
Idaho State Historical Society	57	$55,594,645	3	$8,301,087	60	$63,895,732
Idaho State Liquor Division	2	$20,780,724	237	$655,785,873	239	$676,566,597
Idaho State Police	23	$83,886,839	4	$11,068,116	27	$94,954,955

Agency	State-Owned		State-Leased		State-Owned and -leased	
	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]
Idaho State University	137	$1,289,045,384	67	$185,390,943	204	$1,474,436,327
Idaho Tax Commission	1	$2,767,029	8	$22,136,232	9	$24,903,261
Idaho Wheat Commission	1	$1,073,655	0	$0	1	$1,073,655
Idaho Department of Health and Welfare (IDHW)—Bureau of Laboratories	1	$12,451,087	0	$0	1	$12,451,087
IDHW—State Hospital North	12	$20,272,004	0	$0	12	$20,272,004
IDHW—State Hospital South	15	$83,696,995	0	$0	15	$83,696,995
IDHW—State Hospital West	1	$13,587,753	0	$0	1	$13,587,753
IDHW Southwest Idaho Treatment Center	32	$42,533,281	0	$0	32	$42,533,281
Information Technology Services		$0	26	$71,942,754	26	$71,942,754
ISP—Racing Commission	1	$2,767,029	1	$2,767,029	2	$5,534,058
ISP—State Brand Board		$0	5	$13,835,145	5	$13,835,145
Judicial Branch / Supreme Court	46	$127,283,334	6	$16,602,174	52	$143,885,508
Lava Hot Springs Foundation	10	$17,060,226	1	$2,201,604	11	$19,261,830
Legislative House	0	$0	1	$2,767,029	1	$2,767,029
Legislative Senate	0	$0	1	$2,767,029	1	$2,767,029
Legislative Services	0	$0	2	$5,534,058	2	$5,534,058
Lewis-Clark State College	65	$269,856,723	10	$25,570,367	75	$295,427,089
Lewiston Veteran's Home	2	$13,797,210	0	$0	2	$13,797,210
Lieutenant Governor	0	$0	1	$2,767,029	1	$2,767,029
Lottery Commission	1	$2,767,029	14	$35,983,524	15	$38,750,553
Office of Administrative Hearings	0	$0	2	$5,534,058	2	$5,534,058
Office of Drug Policy	0	$0	1	$2,767,029	1	$2,767,029
Office of Performance Evaluations	0	$0	1	$2,767,029	1	$2,767,029
Office of Species Conservation	1	$2,767,029	5	$13,835,145	6	$16,602,174
Office of the State Controller	0	$0	4	$11,068,116	4	$11,068,116
Pocatello Veteran's Home	2	$13,450,568	0	$0	2	$13,450,568
Post Falls Veteran's Home	1	$2,767,029	0	$0	1	$2,767,029
Public Charter School Commission	0	$0	1	$2,767,029	1	$2,767,029
Public Employee Retirement System of Idaho	2	$14,023,853	3	$8,301,087	5	$22,324,940
Public Health District 1 (Panhandle)	6	$15,822,213	1	$2,767,029	7	$18,589,242
Public Health District 2 (North Central)	6	$10,718,676	0	$0	6	$10,718,676
Public Health District 3 (Southwest)	4	$11,397,223	1	$2,767,029	5	$14,164,252
Public Health District 4 (Central)	3	$10,590,362	9	$24,903,261	12	$35,493,623
Public Health District 5 (South Central)	5	$9,039,145	1	$2,767,029	6	$11,806,174
Public Health District 6 (South Eastern)	3	$9,039,560	5	$13,835,145	8	$22,874,705
Public Health District 7 (Eastern)	9	$10,446,542	3	$8,301,087	12	$18,747,629

Agency	State-Owned		State-Leased		State-Owned and -leased	
	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]	Number of Structures	Structure RCV[a]
Public Safety Communications	2	$5,534,058	0	$0	2	$5,534,058
Public Utilities Commission	0	$0	1	$2,767,029	1	$2,767,029
Secretary of State	0	$0	2	$5,534,058	2	$5,534,058
State Appellate Public Defender	0	$0	2	$5,534,058	2	$5,534,058
State Board of Education	2	$95,989,971	1	$2,767,029	3	$98,757,000
State Independent Living Council	0	$0	1	$2,767,029	1	$2,767,029
State Insurance Fund	2	$17,508,396	1	$2,767,029	3	$20,275,425
State Public Defense Commission	0	$0	2	$5,534,058	2	$5,534,058
State Treasurer	0	$0	2	$5,534,058	2	$5,534,058
STEM Action Center	0	$0	2	$2,777,667	2	$2,777,667
University of Idaho	531	$1,688,444,092	99	$346,879,054	630	$2,035,323,146
Veteran's Cemetery—Blackfoot	7	$2,532,000	0	$0	7	$2,532,000
Veterans State Cemetery Boise	14	$10,965,477	0	$0	14	$10,965,477
Workforce Development Council	0	$0	1	$2,767,029	1	$2,767,029
Total	**4,112**	**$11,382,558,264**	**1,227**	**$3,390,608,124**	**5,339**	**$14,773,166,388**

Table 4-2. Summary of State Facilities by County

County	State-Owned		State-Leased		State-Owned and -leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	787	$4,611,732,390	328	$1,049,405,122	1115	$5,661,137,513
Adams	18	$6,199,993	7	$16,606,860	25	$22,806,853
Bannock	192	$1,303,547,561	83	$226,373,424	275	$1,529,920,984
Bear Lake	50	$104,621,951	6	$13,945,842	56	$118,567,794
Benewah	91	$177,687,795	15	$41,505,435	106	$219,193,230
Bingham	111	$123,597,569	28	$75,959,051	139	$199,556,620
Blaine	55	$20,321,000	26	$53,040,975	81	$73,361,974
Boise	57	$24,095,302	16	$28,603,039	73	$52,698,341
Bonner	166	$224,396,848	28	$74,716,425	194	$299,113,273
Bonneville	74	$246,417,628	73	$197,752,077	147	$444,169,706
Boundary	33	$24,703,161	9	$22,159,866	42	$46,863,026
Butte	8	$5,088,986	7	$19,369,203	15	$24,458,189
Camas	17	$8,381,398	4	$8,550,156	21	$16,931,555
Canyon	143	$179,074,474	59	$159,677,789	202	$338,752,262
Caribou	31	$16,782,475	10	$24,958,610	41	$41,741,085
Cassia	70	$91,931,353	17	$44,281,320	87	$136,212,673
Clark	7	$8,370,940	5	$11,257,116	12	$19,628,056
Clearwater	117	$244,261,505	25	$69,175,725	142	$313,437,230
Custer	87	$73,058,999	10	$27,670,290	97	$100,729,289
Elmore	44	$77,400,470	16	$44,272,464	60	$121,672,934

County	State-Owned		State-Leased		State-Owned and -leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Franklin	21	$12,783,852	12	$33,204,348	33	$45,988,200
Fremont	189	$302,118,474	8	$16,651,175	197	$318,769,649
Gem	12	$4,640,884	11	$27,688,002	23	$32,328,886
Gooding	124	$176,554,266	10	$27,670,290	134	$204,224,556
Idaho	100	$56,021,134	24	$61,588,493	124	$117,609,627
Jefferson	57	$28,866,087	5	$11,073,651	62	$39,939,738
Jerome	23	$16,505,272	14	$31,149,140	37	$47,654,413
Kootenai	204	$341,063,437	79	$210,372,709	283	$551,436,146
Latah	354	$1,605,262,389	33	$91,311,957	387	$1,696,574,346
Lemhi	67	$25,765,676	21	$52,017,475	88	$77,783,151
Lewis	48	$68,186,470	7	$19,369,203	55	$87,555,673
Lincoln	23	$16,148,238	6	$16,602,174	29	$32,750,412
Madison	8	$10,226,586	10	$27,670,290	18	$37,896,876
Minidoka	34	$66,703,521	9	$24,903,261	43	$91,606,782
Nez Perce	190	$448,977,067	39	$101,895,452	229	$550,872,519
Oneida	18	$19,456,256	3	$8,301,087	21	$27,757,343
Owyhee	55	$91,168,690	15	$33,264,125	70	$124,432,815
Payette	30	$19,799,497	13	$33,222,060	43	$53,021,557
Power	55	$81,227,331	8	$22,136,232	63	$103,363,563
Shoshone	31	$42,303,869	22	$58,125,321	53	$100,429,189
Teton	35	$31,087,146	5	$13,835,145	40	$44,922,291
Twin Falls	76	$51,725,865	68	$185,516,277	144	$237,242,142
Valley	165	$283,977,187	27	$59,906,611	192	$343,883,798
Washington	35	$10,317,273	6	$13,852,857	41	$24,170,129
Total	**4112**	**$11,382,558,264**	**1227**	**$3,390,608,124**	**5339**	**$14,773,166,388**

4.2.2 Highways, Bridges, Dams, and Canals

Table 4-3 lists State highways, bridges, dams, and canals by county, identified as follows:

- Data on highways and bridges was provided for this SHMP by the Idaho Transportation Department (ITD). It includes number of bridges and miles of highway on State highways, U.S. highways and Interstate highways.
- State-regulated dam data was downloaded from the Idaho Department of Water Resources GIS Data Hub (last updated on September 26, 202). It includes hydraulic structures greater than or equal to 10 feet in height and reservoirs that impound a volume of water greater than or equal to 50 acres.
- Length of canals in miles was carried over from data used in the 2018 SHMP.

Table 4-3. Summary of State Highways, Bridges, and Dams by County

County	Miles of Highway	Number of Bridges	Number of State-Regulated Dams	Miles of Canals	County	Miles of State Highway	Number of State Bridges	Number of State-Regulated Dams	Miles of Canals
Ada	188.8	91	16	378.8	Gem	37.2	9	7	133.0
Adams	69.8	22	8	27.0	Gooding	144.5	53	7	401.7
Bannock	215.0	96	5	139.7	Idaho	285.0	66	2	22.0
Bear Lake	98.5	21	6	195.3	Jefferson	164.2	59	0	423.8
Benewah	98.5	31	0	5.3	Jerome	144.9	50	7	426.5
Bingham	194.7	81	2	577.0	Kootenai	287.4	120	9	26.0
Blaine	141.5	41	9	117.9	Latah	168.0	37	2	0
Boise	122.3	38	1	10.6	Lemhi	185.1	41	13	111.1
Bonner	165.7	34	6	1.0	Lewis	79.1	28	1	0
Bonneville	191.9	91	10	346.5	Lincoln	98.9	13	0	205.6
Boundary	75.0	19	3	78.8	Madison	67.9	33	1	185.6
Butte	118.3	14	0	162.4	Minidoka	93.2	26	0	251.7
Camas	40.3	31	4	4.7	Nez Perce	84.8	29	5	11.6
Canyon	172.9	79	3	902.8	Oneida	124.7	29	10	39.6
Caribou	95.9	22	19	166.9	Owyhee	207.1	31	45	360.7
Cassia	260.7	53	6	619.0	Payette	89.2	39	8	197.6
Clark	132.4	29	2	68.0	Power	144.4	53	3	100.2
Clearwater	84.4	15	5	0	Shoshone	104.8	77	7	0
Custer	181.7	48	12	120.2	Teton	51.2	13	0	79.2
Elmore	227.1	44	20	190.0	Twin Falls	141.1	31	15	506.7
Franklin	92.2	18	21	218.8	Valley	62.7	17	42	59.4
Fremont	125.5	36	13	343.4	Washington	76.3	22	25	62.0
					Total	5,934.7	1,830	380	8,278.2

4.2.3 Critical Facilities and Community Lifelines

Critical facilities and community lifelines are key assets and resources that assist the State in maintaining the continuity of operations before, during, and after hazard (disaster) events. Lifelines are the most fundamental services in a community that, when stabilized, enable all other aspects of society. FEMA has broken down lifelines into seven categories, as shown in Figure 4-1.

FEMA created the concept of community lifelines to establish a unified nationwide approach to emergency response for these critical assets. However, the concept can be applied beyond questions of response to cover the entire preparedness cycle, including hazard mitigation. Efforts to protect lifelines and build them back stronger and smarter during recovery will benefit overall resilience across the United States.

Impacts on critical facilities/systems and community lifelines can lead to catastrophic and cascading fatal impacts throughout multiple communities. For example, if power is lost for life-sustaining medical devices or refrigeration of essential medications, health-dependent communities, and systems that rely on them may face severe health events. Road or bridge failure could result in an inability to evacuate an impacted area or inaccessibility for emergency medical services. If potable water treatment systems are disrupted, water- and food-borne diseases may spread, and access to clean water becomes difficult. If untreated wastewater or other hazardous materials spill, exposure could result in infection, rash, gastrointestinal illness, tetanus, or leptospirosis (Centers for Disease Control and Prevention 2022).

Figure 4-1. FEMA Lifeline Categories

For mitigation planning, the most important impact on community lifelines to avoid through mitigation actions is loss of function. Each lifeline can be associated with a critical service needed for the State and local governments to respond and recover from hazard events. Maintaining the continuity of operation of these lifelines is critical for community resilience.

To compile an updated community lifeline inventory for this SHMP, the following Homeland Infrastructure Foundation-Level Data layers were used: electrical substations, electric power plants, fire stations, hospitals, police, railway bridges, schools, urgent care facilities, wastewater treatment. The replacement cost value was not available for critical facilities and therefore dollar losses were not estimated. Table 4-4 summarizes the facility counts of community lifeline categories by county and statewide. The table does not include the communications and hazardous material categories because no facilities in these categories were identified for the inventory.

Table 4-4. Community Lifeline Counts by County and Category

County	Energy	Food, Water, Shelter	Health & Medical	Safety & Security	Transportation	Total
Ada	64	2	29	234	15	344
Adams	15	0	0	10	23	48
Bannock	26	1	7	58	20	112
Bear Lake	9	0	1	23	18	51
Benewah	13	0	1	17	15	46
Bingham	46	2	5	47	25	125
Blaine	13	3	1	26	0	43
Boise	6	0	0	21	12	39
Bonner	39	1	6	59	34	139
Bonneville	55	1	9	80	33	178
Boundary	14	0	2	28	21	65
Butte	22	0	1	8	1	32
Camas	1	0	0	6	0	7
Canyon	50	1	8	117	26	202
Caribou	41	1	1	14	10	67
Cassia	58	0	2	30	7	97
Clark	7	0	0	4	9	20
Clearwater	9	1	2	22	8	42
Custer	12	0	1	17	0	30
Elmore	56	0	2	34	14	106
Franklin	10	1	1	15	7	34
Fremont	31	0	0	20	20	71
Gem	11	0	1	19	13	44
Gooding	33	1	1	20	9	64
Idaho	10	0	2	36	11	59
Jefferson	31	0	1	27	24	83
Jerome	48	1	1	19	12	81
Kootenai	35	1	10	121	13	180
Latah	12	1	2	37	16	68
Lemhi	18	0	1	20	0	39
Lewis	5	0	0	13	9	27
Lincoln	12	0	0	14	3	29
Madison	15	1	2	22	23	63
Minidoka	21	0	1	19	5	46
Nez Perce	14	1	2	39	16	72
Oneida	4	0	1	9	2	16
Owyhee	14	0	0	23	0	37
Payette	6	2	2	23	15	48
Power	28	0	1	12	3	44
Shoshone	11	0	1	23	17	52
Teton	13	0	1	14	0	28
Twin Falls	90	2	2	66	15	175
Valley	19	1	2	21	7	50
Washington	9	0	2	16	8	35
Total	**1,056**	**25**	**115**	**1,503**	**539**	**3,238**

The "safety and security," "energy," and "transportation" categories account for 96 percent of community lifelines in the state. The County with the greatest number of community lifelines is Ada County, with 11 percent of the State total, followed by Canyon County with 6 percent and Kootenai County with 5 percent.

Similar to state assets, a spatial analysis was conducted in GIS using the best available hazard data and the community lifelines inventory to determine exposure to the identified hazard. When the analysis determined that a facility is located in the hazard area, it was deemed exposed to the hazard and potentially vulnerable. The replacement cost value was not available for critical facilities and therefore loss results are the average structure damage percentages.

4.3 SOCIALLY VULNERABLE POPULATIONS

The 2023 SHMP risk assessment identifies socially vulnerable communities using the 2020 Social Vulnerability Index (SVI) dataset developed by the U.S. Centers for Disease Control and Prevention (CDC). The SVI dataset helps to identify communities that will likely need support during and after a hazardous event. It uses 15 social factors from U.S. Census data to identify vulnerable communities. These 15 factors are calculated for each census tract, and each tract is assigned an overall ranking. For the risk assessment analysis in this plan, Census tracts with an SVI overall index value of 0.8 or greater were considered to be "highly vulnerable."

The boundaries of the 2020 SVI dataset were adjusted to better represent locations where people live. For the risk assessment, developed areas were defined using 2020 Census block data extracted from Hazus (v6.0). These Census block boundaries were adjusted using a combination of building footprints and land use and land cover data. The 2020 SVI dataset was clipped using these block boundaries. The clipping process adjusted the census tract boundaries so that they represent developed areas. The adjusted census tract boundaries were used in the risk assessment exposure analyses as they more accurately represent. Table 4-5 shows total and socially vulnerable populations by county as used in the vulnerability assessment.

Table 4-5. Total and Socially Vulnerable Populations by County

	Total Population	Socially Vulnerable Population	% of Total Population That Is Socially Vulnerable
Ada	469,473	26,996	5.8%
Adams	4,200	0	0.0%
Bannock	86,742	16,194	18.7%
Bear Lake	6,054	0	0.0%
Benewah	9,231	9,231	100.0%
Bingham	46,246	20,685	44.7%
Blaine	22,729	5,496	24.2%
Boise	7,625	0	0.0%
Bonner	44,688	3,413	7.6%
Bonneville	116,970	31,670	27.1%
Boundary	12,156	0	0.0%
Butte	2,603	0	0.0%
Camas	1,069	0	0.0%
Canyon	223,890	65,783	29.4%
Caribou	7,028	0	0.0%
Cassia	23,847	7,026	29.5%
Clark	885	885	100.0%
Clearwater	8,735	4,024	46.1%
Custer	4,193	0	0.0%
Elmore	27,043	11,283	41.7%
Franklin	13,736	0	0.0%
Fremont	13,111	8,744	66.7%
Gem	17,771	12,726	71.6%
Gooding	15,280	8,392	54.9%
Idaho	16,511	4,357	26.4%
Jefferson	29,238	3,922	13.4%
Jerome	24,074	16,939	70.4%
Kootenai	161,676	22,940	14.2%
Latah	40,052	0	0.0%
Lemhi	7,929	2,583	32.6%
Lewis	3,850	1,706	44.3%
Lincoln	5,342	5,342	100.0%
Madison	39,725	0	0.0%
Minidoka	20,817	14,695	70.6%
Nez Perce	40,468	15,128	37.4%
Oneida	4,429	0	0.0%
Owyhee	11,724	7,979	68.1%
Payette	23,705	17,187	72.5%
Power	7,635	7,635	100.0%
Shoshone	12,700	8,830	69.5%
Teton	11,776	0	0.0%
Twin Falls	86,198	14,584	16.9%
Valley	11,085	0	0.0%
Washington	10,128	8,312	82.1%
Total	**1,754,367**	**384,687**	**21.9%**

Chapter 5. Avalanche

Avalanche

An avalanche is a slope failure composed of a mass of rapidly moving, fluidized snow that slides down a mountainside. The flow can be composed of ice, water, soil, rock, and trees. The amount of damage depends on the type of avalanche, the composition and consistency of the material contained in the avalanche, the velocity and force of the flow, and the avalanche path.

CHANGES SINCE 2018

+0
Federal Disasters

+10
Significant Avalanche Events

STATE IMPACT RATING

Medium (21)

SOCIALLY VULNERABLE POPULATION

36.8%
Of Total Population

14,741
Persons

CLIMATE PROJECTIONS

Warmer temperatures can weaken snowpack and make it more difficult for the layers of snow to stick together

Greater variability in weather patterns may cause layers of rain to fall after light layers of snow, destabilizing the snowpack

CANALS

194
Miles

COMMUNITY LIFELINES

97
Total

168
State Buildings

123
State Bridges

28
State Dams

247
Miles of State Roads

5. AVALANCHE

2023 SHMP Changes

- Avalanche events that occurred in the State of Idaho from January 1, 2018, through December 31, 2022, were researched for the 2023 SHMP.
- New and updated figures from federal and state agencies were incorporated.
- This section discusses how the avalanche hazard may impact socially vulnerable populations and community lifelines.
- National Risk Index ratings are included for the counties identified as most vulnerable to the avalanche hazard.

5.1 HAZARD DESCRIPTION

An avalanche is a slope failure composed of a mass of rapidly moving, fluidized snow that slides down a mountainside. The flow can be composed of ice, water, soil, rock, and trees. The amount of damage depends on the type of avalanche, the composition and consistency of the material contained in the avalanche, the velocity and force of the flow, and the avalanche path.

The slope failure associated with an avalanche is caused by several factors, but primarily by large accumulations of snow on a steep slope. Avalanches occur on slopes averaging 25 to 50 degrees, and the majority are on slopes between 30 and 40 degrees. They are triggered by natural seismic or climatic factors such as earthquakes, thermal changes, and blizzards, or by human activities.

The most common types of avalanches are loose-snow and slab avalanches. A **loose-snow avalanche** is composed of dry, fresh snow deposits that accumulate as an unstable mass atop a stable snow and slick ice sub-layer. A loose-snow avalanche releases when the sheer force of its mass overcomes the underlying resistant forces of the cohesive layer.

A **slab avalanche** generally is composed of a thick, cohesive snowpack deposited or accumulated on top of a light, cohesion-less snow layer or slick ice sub-layer. At the starting surface or top of the slab, a deep fracture develops in the slab of well-bonded, cohesive snow. A slab avalanche release is usually triggered by turbulence or impulse waves. Release also occurs when the internal cohesive strength of the slab layer is greater than the bonding at the base and lateral slab boundaries. As a release occurs, the slab accelerates, gaining mass and speed as it travels down the avalanche path.

An **avalanche path** is determined by the physical limitations of the boundaries of the local terrain and man-made features. An avalanche may follow a path along a channelized or confined terrain, similar to debris flows or streams, before spreading onto alluvial fans or gentle slopes. The avalanche path itself varies in width as it transitions along the path, depending on the confinement of the terrain and the velocity of flow. An avalanche path is described as having three specific transition zones:

- The **Starting Zone** is typically located near the top of the ridge, bowl, or canyon, with steep slopes of 25 to 50 degrees.
- The **Track Zone** is the reach with mild slopes of 15 to 30 degrees and the area where the avalanche will achieve maximum velocity and considerable mass.
- The **Runout Zone** is the area of gentler slopes (5 to 15 degrees) located at the base of the path, where the avalanche decelerates and massive snow and debris deposition occurs.

When avalanche material is deposited in the Runout Zone, it tends to harden quickly. Even very light avalanches of powdery, dry snow can form concrete-like masses after being "worked" by the mechanical forces involved in the slide. Victims are rarely able to extract themselves from even very shallow burials.

5.2 HAZARD LOCATION

Avalanche activity is considered to be localized in the state and is most likely to occur in areas that have an avalanche starting zone slope of 25 to 50 degrees. The counties most prone to reported damaging avalanches are Bonner in the northern panhandle, Blaine and Camas in central Idaho and Bonneville, Fremont and Teton in the eastern portion of the state. While no comprehensive statewide mapping of the hazard has been generated, the National Avalanche Center has delimited high-hazard areas for which avalanche risk is posted regularly through the winter. Figure 5-1 shows the mapped areas within Idaho.

Avalanches can close transportation routes in mountainous areas, although damage and loss of life are rare. The 9-mile section of Highway 21 between Grand Junction and Banner Summit, called Canyon Creek, has 54 avalanche chutes and experiences about 90 percent of the highway-impacting avalanches in the state. Other transportation routes impacted by avalanches include Teton Pass on Highway 33/ WYO 22 in Teton County, U.S. 12/Northwest Passage Scenic Highway between mile markers 125-174, and Highway 75 between Stanley and Salmon. No other critical infrastructure at risk in the State appears to be significant.

5.3 PREVIOUS HAZARD OCCURRENCES

Avalanches are unique to mountainous terrain. In the 19th and early 20th century, mining, and transportation-related activities (e.g., railroad construction and travel) accounted for a majority of the damages and casualties from avalanche events. Few individuals not engaged in these activities found themselves in hazardous locations. Subsequent reductions in backcountry mining activity and improvements in transportation-related avalanche safety such as use of signs and highway warnings, led to a decline in avalanche damages and casualties.

In the latter half of the 20th century, recreational use increased in the mountainous backcountry in the winter. Skiers, snowboarders, hikers, and snowmobilers now account for nearly all avalanche casualties. In almost all cases, avalanche victims or their parties trigger the slides that catch them, and the vast majority of these occur outside of avalanche-patrolled and controlled areas.

According to the Colorado Avalanche Information Center (CAIC), from 1950 through 2022, Idaho ranked 7th for most fatalities compared to other states (see Figure 5-2). Skiing is currently the leading cause of avalanche fatalities in Idaho. Snowmobiling, backcountry snowboarding, snowshoeing, and cross-country skiing also involve serious avalanche risk. Slab avalanches account for almost all avalanche fatalities (CAIC 2023). Some development in avalanche areas is susceptible to damage when a nearby avalanche occurs (see Figure 5-3).

(Avalanche.org 2023)

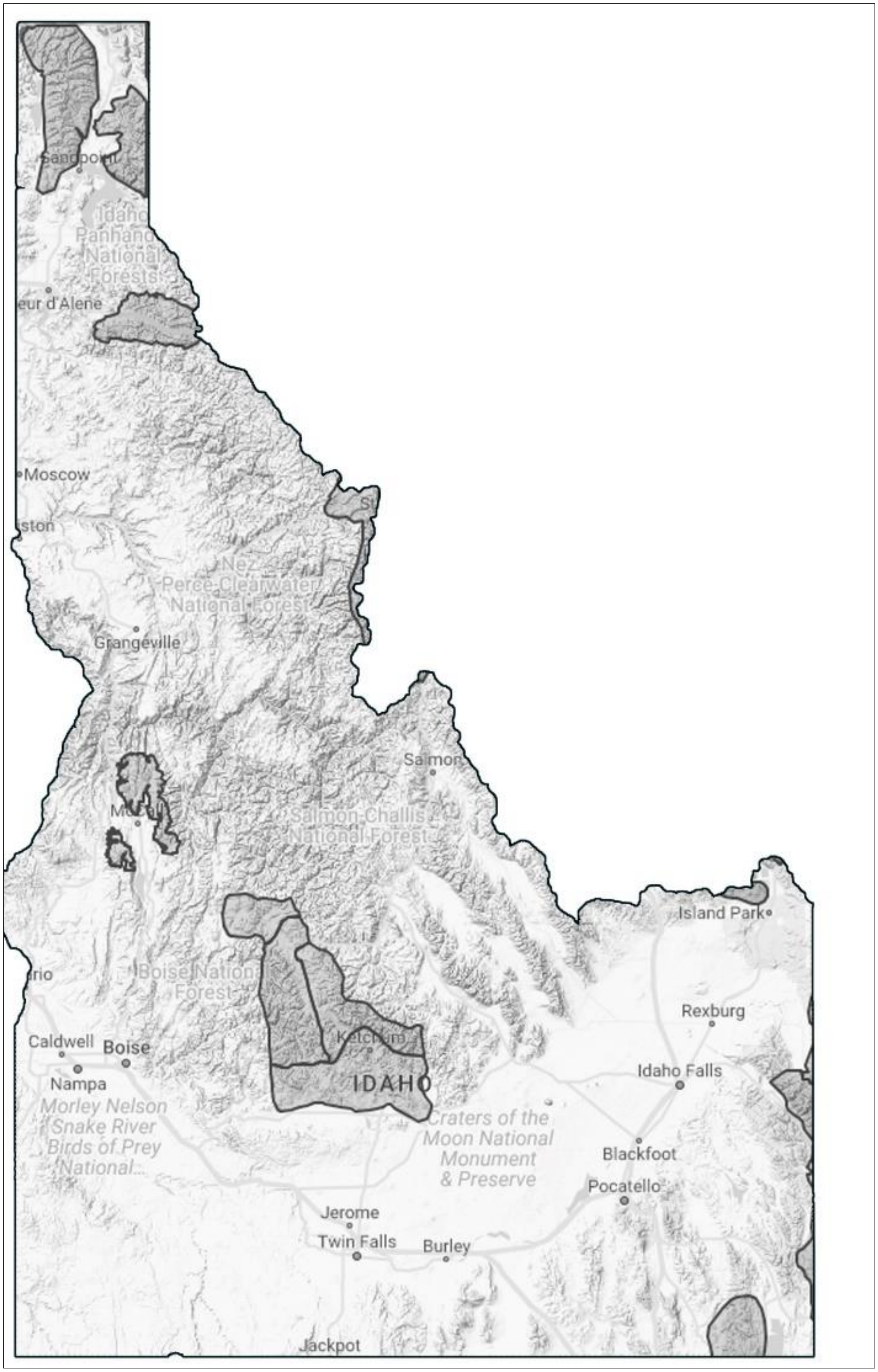


Figure 5-1. Mapped Avalanche Hazard Areas in Idaho

Source: *(CAIC 2023)*

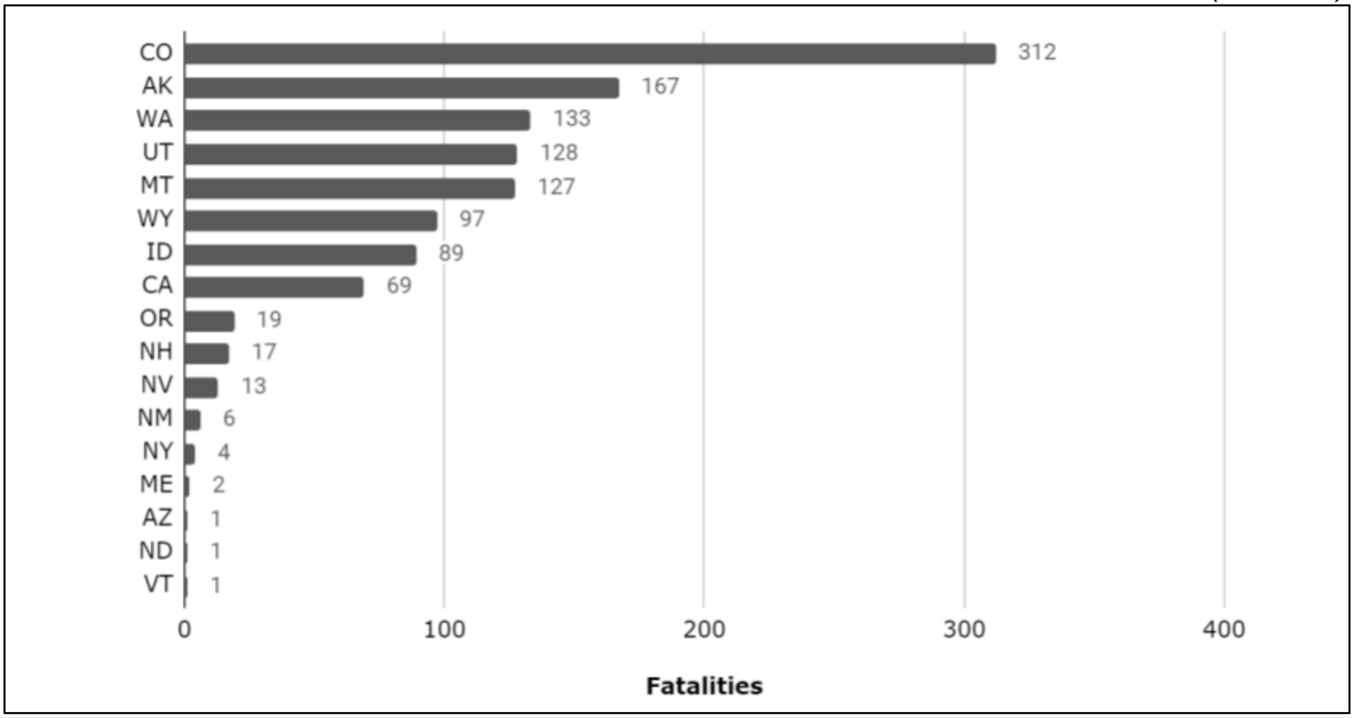


Figure 5-2. Avalanche Fatalities by State 1950-2022

Source: Roland Lane

Figure 5-3. Home Near Ketchum Destroyed by an Avalanche in April 2019

It is impossible to determine how many avalanches of all sizes occur in the State each year. Small avalanches occur throughout the winter and spring with no damage. Typically, avalanche activity that does not result in serious injury, death, or significant property damage is not reported.

5.3.1 Disaster and Emergency Declarations

Between 1954 and 2022, FEMA did not include avalanche in major disaster (DR) or emergency (EM) declarations. Based on all sources researched, known avalanche events that have affected Idaho and were declared a state and/or FEMA disaster, are identified in Table 5-1. This table provides information on the one state disaster declaration for avalanche, including date of event, state disaster declaration, and counties affected.

Table 5-1. Flooding, Landslides, and Avalanche-Related State and Federal Declarations (1954 to 2022)

Date of Event	State Declaration	Counties Affected	Description
3/10 – 3/29, 2017	ID-02-2017	Clearwater, Benewah, Bonner, Kootenai, Latah, Shoshone, Boundary, Idaho, Lewis, Valley	Beginning on February 10, 2017, the effects of extraordinary flooding caused by warmer temperatures, rain, and rapid snow melt were experienced within the State of Idaho.

Source: IOEM

5.3.2 Event History

The U.S. Avalanche Accidents Database records avalanche activity resulting in injuries or losses in Idaho. Table 5-2 lists significant avalanche events that impacted the State of Idaho between 2018 and 2022. Due to the significant number of events, the table includes only events that caused one or more direct deaths and/or injuries. Events prior to 2018 are listed in Appendix D.

Table 5-2. Avalanches in Idaho (2018 to 2022)

Date of Event	County or Region Affected	Description
12/17/2021	Big Hole Mountains	An avalanche near Driggs and Relay Ridge killed two teenagers.
4/3/2020	Big Hole Mountains	An avalanche killed a snowmobiler near Austin Canyon area north of Mount Baird and Palisades Reservoir.
4/1/2020	Big Hole Mountains	An avalanche near Taylor Mount and Teton Pass killed one snowboarder.
3/15/2020	Marsh and Arbon Highlands	A 300-yard avalanche killed one skier. It is believed the avalanche was caused by heavy, wet snow at high elevations.
1/15/2020	Blaine County	An avalanche in the Baker Creek area trapped two snowmobilers at 9,000 feet in elevation. Only one of the snowmobilers survived.
1/7/2020	Central Panhandle Mountains	An avalanche at Silver Mountain killed three and injured two skiers. A total of 25 inches of snow was reported.
1/25/2019	Bonneville County	A snowmobiler died in an avalanche that occurred at 6pm near Palisades Lake in Bonneville County.
2/20/2018	Caribou Highlands	A snowmobiler was killed in an avalanche in Sheep Falls area east of Palisades Reservoir.
1/20/2018	Upper Snake Highlands	A snowmobiler died due to an avalanche near Island Park east of Reyes Peak just below the waterfall.
1/10/2018	Upper Snake Highlands	A snowmobiler died due to an avalanche on January 10th near Island Park.

Source: (CAIC 2023)

5.4 PROBABILITY OF FUTURE HAZARD EVENTS

In the mountains of Idaho, many avalanches occur each winter. Idaho has been in the top 10 states in the nation in the number of avalanche fatalities since 1950.

The geophysical processes that contribute to avalanches during a particular year are statistically independent of past events. Avalanche occurrence is not directly attributed to a specific major meteorological event, but it is more commonly a result of a combination of three factors: weather, snowpack, and terrain. Weather and the height of the snowpack are the most important factors when deciding whether avalanches are likely to happen. From the weather the temperature, wind speed, and wind direction are important to watch. With a quick change in any of the weather dynamics an avalanche could be expected. For example, if the temperature were to have a rapid increase, then a wet slab avalanche is likely to occur.

It can reasonably be assumed, based on historical recorded events of injuries and losses from 1956 through 2022, that an avalanche can occur an average of one time per year. There is a 100-percent chance that an avalanche will occur in any given year in Idaho.

Currently, there are three avalanche centers (Ponderay, McCall, and Sun Valley) in the State that make observations and collect data regarding this hazard. Recent historical levels of avalanche events may be expected to continue. Based on the recorded fatalities due to avalanche in the state, Idaho will continue to be rated as having a moderate severity of avalanche hazard relative to other states.

5.4.1 Overall Probability

Based on historical records, the State of Idaho has experienced no FEMA declarations associated with avalanches since 1956. Looking at all avalanche events, there have been 58 events between 1956 and 2022 (NOAA 2023). Based on this data, the State of Idaho may experience an estimated one avalanche event each year (see Table 5-3). Overall, the State can expect to at least experience similar average frequency of these events in the future, with the possibility of an increase in frequency due to the impacts from climate change.

Table 5-3. Probability of Future Avalanche Events in Idaho

Hazard Type	Events Between 1956 and 2022	Average Frequency
Avalanche	58	1 event per year

Source: (NOAA 2023)

5.4.2 Climate Change Impacts

Providing projections of future climate change for a specific region is challenging. Shorter term projections are more closely tied to existing trends, making longer term projections even more challenging. The further out a prediction reaches the more subject to changing dynamics it becomes. Greater variability in weather patterns may cause layers of rain to fall after light layers of snow, and this sequence can destabilize snowpack and increase the frequency and severity of avalanches. Records have shown that over the past 100 years, the State has seen an increase in temperature of 1 to 2 ºF. That has led to a trend in declining snowpack, especially in south-central Idaho (Figure 5-4).

Source: (U.S. EPA 2023)

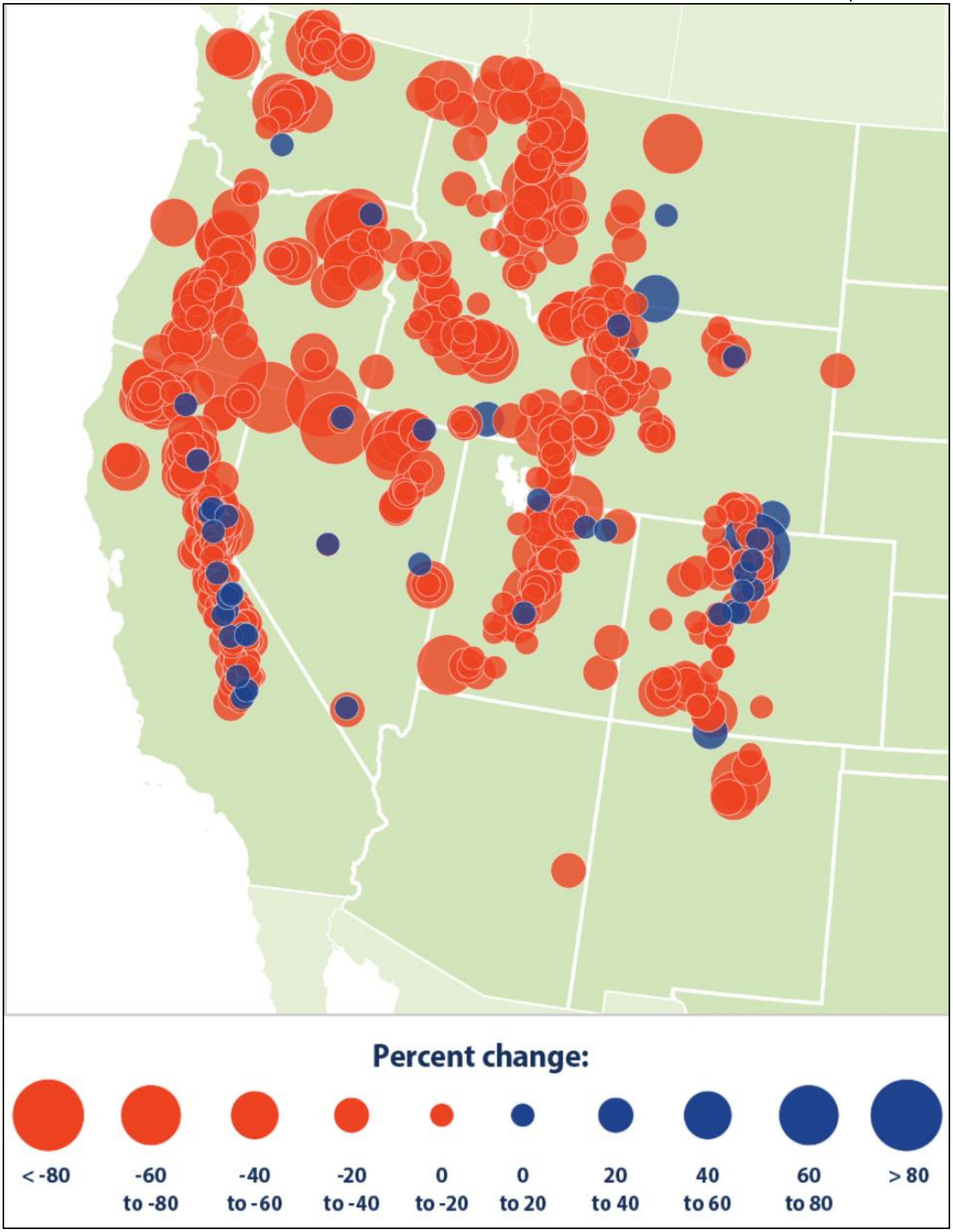


Figure 5-4. Snowpack Percent Change in Idaho, 1955-2022

Warmer temperatures can weaken snowpack and make it more difficult for the layers of snow to stick together. When combined with wind gusts or an earthquake, warmer temperature increases the possibility of an avalanche. The changing temperature has affected the quality of mountain snow cover, which is believed to have led to more frequent avalanches. Average temperature projections based on climate modeling show a significant increase in annual daily maximum temperatures by mid-century (Figure 5-5). The RCP4.5 scenario represents a projected peak of greenhouse gas emissions around 2040, then a decline assuming that implemented policies achieve the goal of limiting emissions.

Source: (Climate Risk and Resilience Portal 2023)

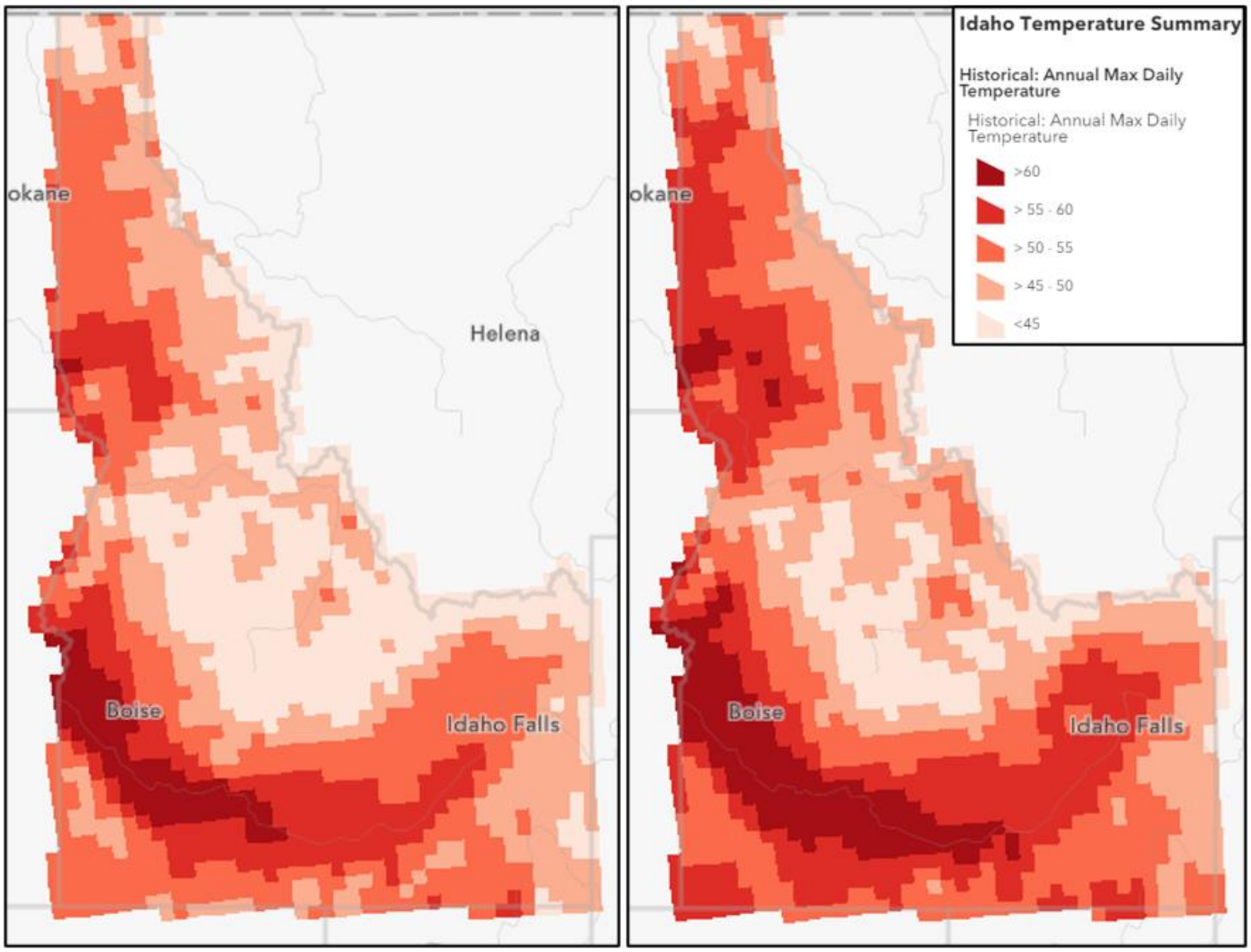


Figure 5-5. Annual Daily Maximum Temperatures – Historical Model (left), RCP4.5 Mid-Century Projection of Increased Temperatures (right)

5.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development

- Projected changes in population
- Other identified conditions as relevant and appropriate.

The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections.

Appendix E lists the estimated land-use area (square miles) located in the identified landslide hazard area for 2020 and projected area for 2030 by jurisdiction. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029. Changes in land-use are seen in the exurban and rural categories. Though population growth may not directly increase the number of people living in areas susceptible to avalanches, the increase in population may lead to more individuals utilizing winter recreational facilities and mountainous areas that are more prone to avalanche events.

Avalanches begin in areas that have slopes of 25 to 50 degrees, which are usually too steep for high-density development. However, because avalanches reach maximum velocity in the track zone and maximum deposition in the runout zone, where slopes range from 5 to 30 degrees, such areas could support higher density development. Land in these zones would have to lie directly beneath areas that would be characterized as a starting zone. Development of new or expansion of existing ski resorts could place structures in these areas of greatest risk. Analysis of the historical data indicates relatively little property damage (five houses destroyed in 59 years of record) and does not indicate that more houses are destroyed as more development occurs. The increasing trend in loss of life suggests that more people are found in areas prone to avalanche occurrences but that the victims were only using these areas for recreation.

Overall, any development within known or suspected avalanche areas will increase the hazard somewhat, because it will also increase the use of the exposed areas. Even when infrastructure and buildings are specifically designed for avalanche forces, there remains the small risk that persons outside are exposed if an avalanche occurs. The City of Ketchum, located in Blaine County, commissioned a study to identify the areas where avalanche potential exists. As a result, the city established an avalanche zone overlay district, where special regulations and restrictions apply.

5.5 IMPACT ANALYSIS

5.5.1 Severity

Worldwide, several classification systems are used to rate hazards and conditions associated with avalanches. In the United States, a five-level scale is used to classify the size of an avalanche, as shown in Table 5-4.

Property damage associated with avalanches is a function of several factors. Large external lateral loads can cause significant damage to structures and fatalities. Table 5-5 indicates the estimated potential damage for a given range of impact pressures. The measurement kPa represents the kilopascal (kPa) of 1,000 newtons per square meter. For example, standard atmospheric pressure (or 1 atm) is defined as 101.325 kPa.

Table 5-4. United States Classification for Avalanche Size

Size	Destructive Potential
1	Sluff or snow that slides less than 50m (150 feet) of slope distance
2	Small, relative to path
3	Medium, relative to path
4	Large, relative to path
5	Major or maximum, relative to path

Source: (Avalanche.org 2023)

Table 5-5. Avalanche Impact Pressures Related to Damage

Impact Pressure		
Kilopascal (kPa)	Pounds per Square Foot	Potential Damage
2-4	40-80	Break windows
3-6	60-100	Push in doors, damage walls, roofs
10	200	Severely damage wood frame structures
20-30	400-600	Destroy wood-frame structures, break trees
50-100	1000-2000	Destroy mature forests
>300	>6000	Move large boulders

Source: (Avalanche.org 2023)

5.5.2 Warning Time

The North American Avalanche Danger Scale is a tool designed to facilitate communication of potential avalanches between avalanche forecasters and the public. It is used by regional avalanche forecast centers in the United States. As of 2023, the United States and Canada adopted and use this avalanche danger scale. As seen in Figure 5-6, the categories represent the probability of avalanche activity and recommended travel precautions.

Idaho’s three avalanche centers—the Idaho Panhandle Avalanche Center, the Sawtooth Avalanche Center, and the Payette Avalanche Advisory—are critical resources to the state and individual jurisdictions for predicting and preparing for an avalanche.

5.5.3 Cascading Impacts

Locations of past avalanche paths do have the ability to increase the immediate area’s susceptibility to future landslides and flooding, due to the removal and transport of trees, vegetation, and other ground materials.

The damaging effects of avalanches may be widespread or limited, depending on the factors which provoked them. A localized incident can have consequences beyond its immediate surroundings; notably when communication links such as roads and railways are interrupted or infrastructure is destroyed (critical facility, electric grids, power lines, telecommunication networks, water, or gas pipelines) and an energy shortage occurs.

Source: (Avalanche.org 2023)

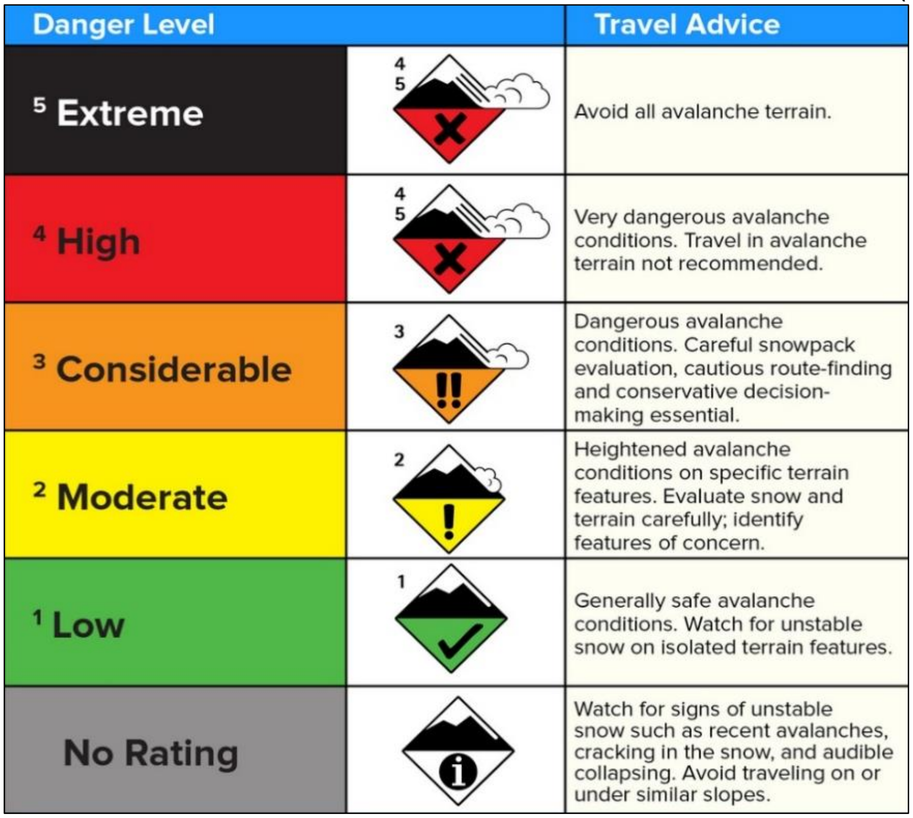


Figure 5-6. North American Public Avalanche Danger Scale

5.5.4 Environmental Impacts

Avalanches have minor environmental impacts compared to most other hazards. Large amounts of debris are often carried by avalanches and can be left in freshly scoured gullies. Trees may be broken due to the excessive force of the onrushing snow. Temporary dams can form, blocking the flow of rivers and streams and remaining as a threat to the downstream natural and built environment. Accumulated debris could potentially cover historic and archeological resources. It is unlikely that the continued existence of rare species or vegetative communities would be jeopardized by avalanches, because of the localized nature of the hazard.

5.5.5 Local Hazard Mitigation Plan Impacts

Twenty-one of the hazard mitigation plans prepared for Idaho's counties list avalanche as a hazard of concern, and no counties rank it as a high-impact hazard. Eight counties identified avalanche as a medium-impact hazard.

Table 5-6 summarizes potential losses to vulnerable structures due to avalanche, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 5-6. Avalanche Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

Estimated Total Population Exposed	705,554
Estimated Number of Structures at Risk	No structures identified; 1,805.1 miles of roadway
Estimated Value of Structures at Risk	$708,350,000

5.6 VULNERABILITY OF PEOPLE AND ASSETS

5.6.1 Total and Socially Vulnerable Populations

Vulnerable populations are the elderly, low income or linguistically isolated populations, and people with life threatening illnesses who may not be able to respond to an avalanche event. An avalanche may isolate a community and interrupt the supply chain. Vulnerable populations may be especially impacted if they do not have the resources to stock a supply of food, fuel, or other necessary commodities for survival should they become isolated as a result of an event. These populations are also vulnerable because they may not have access to the necessary resources to respond or rebuild after an event.

Table 5-7 summarizes the vulnerable and total population within the defined hazard area. Detailed results for all counties are provided in Appendix E.

Table 5-7. Population Exposed to Avalanche Hazard

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	40,070	1. Shoshone (11,063)	2. Blaine (20,475)	3. Franklin (2,896)
Vulnerable Population in the Hazard Area	14,741	1. Shoshone (8,829)	2. Blaine (5,495)	3. Bonner (364)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	36.79%	1. Clark, Elmore (100%)		

5.6.2 National Risk Index Ratings

According to the National Risk Index, 21 of the state’s 44 counties have NRI identified avalanche risk rated from very low to relatively moderate. The risk rankings for the highest ranked counties are shown in Table 5-8.

Table 5-8. NRI Ratings for Avalanche in Highest-Ranked Idaho Counties

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Elmore	$597,952.53	Relatively High	Relatively Low	1.31	$828,371.47	88.46
Blaine	$600,399.12	Relatively Moderate	Relatively Low	1.00	$571,788.87	82.69
Bannock	$492,893.41	Relatively High	Relatively Moderate	1.11	$538,204.00	81.73
Fremont	$607,774.56	Relatively High	Relatively Low	1.07	$436,808.59	77.88
Clark	$251,912.99	Relatively High	Very Low	1.47	$369,859.30	73.08

5.6.3 State-Owned or -Leased Facilities

Table 5-9 summarizes the number and estimated replacement cost value of all State-owned or -leased facilities in the defined hazard area. Table 5-10 shows the number of State agencies and counties that have State-owned or -leased facilities in the hazard area. Table 5-11 lists the top three state agencies and counties with State-owned or -leased facilities in the hazard area, by number of facilities and by total estimated replacement cost value. Detailed results for all counties and state agencies are provided in Appendix E

Table 5-9. Total State Facilities Within the Avalanche Hazard Area

	Facilities in the Hazard Area		
	State-Owned	State-Leased	Total
Number of Facilities in the Hazard Area	121	47	**168**
Total Estimated Replacement Cost Value	$146,334,039	$113,916,154	**$260,250,193**

Table 5-10. State Facilities Within the Avalanche Hazard Area by State Agency and County

	Total Number of State Agencies with Facilities in the Hazard Area	Total Number of Counties with Facilities in the Hazard Area
State-Owned	14	8
State-Leased	12	6
Total[a]	**26**	**14**

a. Total number of agencies or counties with vulnerable facilities may not be equal to the sum of those with state-owned facilities and those with state-lease facilities, as some agencies and counties have both state-owned facilities and state-leased facilities.

Table 5-11. Top Three State Agencies and Counties with State Facilities Within the Avalanche Hazard Area

	Greatest Number of Facilities in Hazard Area				Greatest Replacement Cost Value in Hazard Area			
	State Agencies		Counties		State Agencies		Counties	
	Name	Facilities	Name	Facilities	Name	Value	Name	Value
1.	Department of Fish and Game	43	Shoshone	49	Department of Parks and Recreation	$55.3 million	Shoshone	$97.6 million
2.	Department of Transportation	23	Blaine	45	Department of Fish and Game	$49.7 million	Blaine	$63.0 million
3.	Department of Parks and Recreation	20	Custer	40	Idaho State Liquor Division	$38.7 million	Bonner	$47.1 million

5.6.4 Highways, Bridges, Dams, and Canals

Table 5-12 summarizes the miles of highway and number of bridges and dams within the defined hazard area statewide, as well as the counties with the greatest number of each. Detailed results for all counties are provided in Appendix E.

Table 5-12. State Highways, Bridges, and Dams Within the Avalanche Hazard Area

	Statewide Total	Highest-Ranked Counties		
Miles of Highway	247	Shoshone (89)	Blaine (73)	Custer (51)
Number of Bridges	123	Shoshone (73)	Blaine (22)	Custer (20)
Number of State-Regulated Dams	28	Blaine, Shoshone, Valley (7 each)		
Miles of Canals	193.7	Franklin (67.6)	Blaine (62.5)	Bear Lake (51.3)

5.6.5 Buildable Lands

Table 5-13 summarizes the amount of buildable land within the defined hazard area for 2020. Appendix E provides details on buildable land and ICLUS land use in the hazard area for all counties for 2020 and 2030.

Table 5-13. Buildable Lands Within the Avalanche Hazard Area 2020

	Statewide Total	Highest-Ranked Counties		
Buildable Land in the Hazard Area (acres)	37	Blaine (11)	Bonner (8)	Shoshone (7)
Hazard Area Buildable Land as % of Total County or State Buildable Land	0.01%	Blaine (0.13%)	Shoshone (0.11%)	Bear Lake (0.05%)

5.6.6 Community Lifelines

Table 5-14 summarizes the number of community lifelines by type within the defined hazard area. Detailed results for all counties are provided in Appendix E.

Table 5-14. Community Lifelines Within the Avalanche Hazard Area

	Number of Lifelines Within the Hazard Area			
	Statewide Total	Highest-Ranked Counties		
Energy	29	Shoshone (11)	Blaine (8)	Bonner & Boundary (3 each)
Food, Water, Shelter	3	Blaine (3)		
Health & Medical	3	Blaine, Custer, Shoshone (1 each)		
Safety & Security	52	Blaine (26)	Shoshone (20)	Bonner and Custer (3 each)
Transportation	10	Shoshone (9)		Kootenai (1)
Total	**97**	**Shoshone (41)**	**Blaine (38)**	**Bonner (6)**

5.6.7 Potential Losses Due to a Hazard Event

Although avalanche can cause significant damage to State assets, there are no standard generic formulas for estimating associated losses. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the replacement cost value of all State-owned or -leased facilities exposed to the landslide hazard (see Table 5-15). This allows the State to select a range of potential economic impacts based on an estimate of the percentage of damage to these assets. Damage in excess of 50 percent is considered substantial by most building codes and typically requires total reconstruction of the structure.

Table 5-15. Loss Potential of State Facilities for Avalanche

	Total Replacement Cost	Estimated Loss Potential Based on % Damage		
		10%	30%	50%
State-Owned Facilities	$146,334,039	$14,633,404	$43,900,212	$73,167,019
State-Leased Facilities	$113,916,154	$11,391,615	$34,174,846	$56,958,077
Total	**$260,250,193**	**$26,025,019**	**$78,075,058**	**$130,125,097**

5.7 MITIGATING THE HAZARD

5.7.1 Mitigation Rationale

Avalanches are not considered a major natural hazard, because they impact relatively small areas of Idaho. Compared with other hazards, avalanches have localized impacts and individually do not affect large numbers of people. However, the fatality numbers for avalanche are high given the small amount of people affected by this hazard.

The reoccurrence of avalanches at the same topographic sites means that mapping offers a route to hazard mitigation, if only through the qualitative recognition, and avoidance, of susceptible sites. Remote sensing has been used for many years to produce preliminary maps of landslide tracks, as many avalanche tracks also function as landslide gullies during the spring and summer. With the continued development of GIS, hazard-zoning maps can be improved and updated to provide local communities with the data necessary to adopt loss-reduction measures.

Recent avalanche mitigation approaches have included avalanche hazard zoning, evacuation, artificial release, and avalanche-control structures. Artificial release is the most common measure used in the United States. Where other methods are ineffective or cannot be used, control structures may be installed.

5.7.2 General Mitigation Approaches

Mitigation of avalanches is established, generally, in the Idaho Disaster Preparedness Act of 1975 as amended (Idaho State Code Chapter 10, Title 46) and, more specifically, in the Governor's Executive Order, 2000-04. The Executive Order also assigns the Idaho Transportation Department the responsibility for providing engineering support to state mitigation activities relative to avalanches.

The avalanche hazard can be mitigated in three ways:

- **Terrain modification**—Involves changing the ground surface or building structures in the release zone and/or track to prevent the release or stop the natural run of an avalanche. Possible mitigation techniques include retention, redistribution, and retarding/catchment structures and reforestation.
    - Retention structures, which prevent an avalanche release, include snow rakes, snow bridges, and nets. These structures are generally limited to areas with partial snowpacks and may create negative aesthetic impacts.
    - Redistribution structures, snow fences and similar techniques, reduce snow drifting and control the buildup of large snow loads.
    - Retarding/catchment structures stop, divert, confine, or slow slides. These include ditches, terraces, dams, and mounds constructed on the ground surface. Some have been effectively carved into existing, stable snowpacks to mitigate slides of later snow accumulations.
    - Reforestation provides a natural form of protection. Many of the above structures can be simulated with vegetation.
- **Snow-cover modification**—Involves modifying the snowpack, either through stabilization or controlled releases, to prevent releases or minimize the volume of snow included in an avalanche. Stabilization can be accomplished through compaction, which may be performed by grooming equipment. This technique is most effective early in the season. Controlled release of potential avalanche slopes is the most common technique for reducing the avalanche hazard. Slopes are generally triggered through the use of explosives delivered by hand, aerial bombing (primarily by helicopters), and artillery (the predominant method of avalanche control in the U.S.).
- **Human behavior modification**—Involves rendering avalanches harmless by keeping people out of their paths. It can also reduce the number of avalanche occurrences by eliminating potential triggers (people). Techniques include the closure of recreational areas and relocation of residences and businesses from hazardous areas.

Public education and outreach programs are essential for bringing avalanche information to the attention of the general public. Any hazard-reduction program depends on public understanding and support. Therefore, education on avalanche matters, oriented primarily toward those who live, work, or vacation in Idaho's mountainous regions, may be undertaken by individuals, agencies, schools, nonprofit organizations, and special-interest groups. Special attention should be given to snowmobile dealerships and user associations, Nordic ski shops, and backcountry equipment suppliers. The Idaho Department of Parks and Recreation has several online avalanche training videos, as well as avalanche descriptions, information, and advisories for certain parts of the state.

Additionally, there are currently three avalanche information centers located within Idaho: the Idaho Panhandle Avalanche Center, the Payette Avalanche Center (McCall), and the Sawtooth National Forest Avalanche Center (Sun Valley). These avalanche centers provide the public with educational training and events, observation information, current advisories, and event reporting. Figure 5-7 is an example of an avalanche advisory issued by the Idaho Panhandle Avalanche Center.

Source: (Idaho Panhandle Avalanche Center 2023)

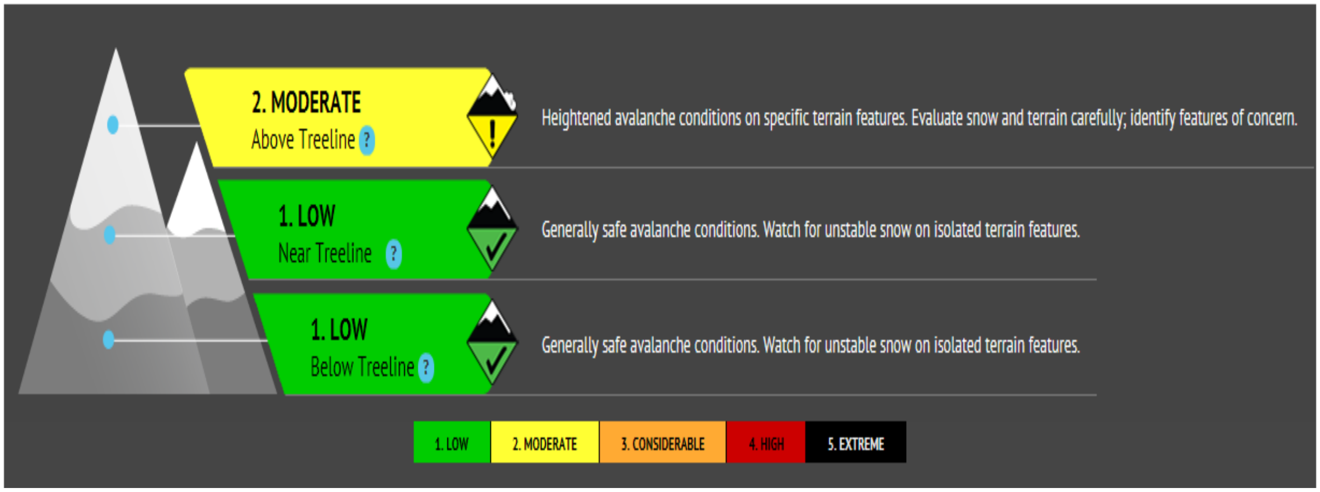


Figure 5-7. Example Avalanche Advisory

5.7.3 Catalog of Potential Mitigation Alternatives

Table 5-16 summarizes a range of potential alternatives for mitigating the avalanche hazard.

5.7.4 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the avalanche hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-002: Develop a statewide approach to modeling and mapping projected future conditions
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-009: Develop a statewide avalanche vulnerability assessment to inform the public of current risk
- Action 2018-006: Create all-hazards publications for public education

Table 5-16. Potential Opportunities to Mitigate the Avalanche Hazard

Community-Scale	Organizational-Scale	Government-Scale
Manipulate the hazard: ➢ None **Reduce exposure and vulnerability:** ➢ Monitor avalanche reports before any winter-related outdoor activities. ➢ Avoid avalanche areas. ➢ Monitor avalanche reports before any winter-related outdoor activities. **Build local capacity:** ➢ None	**Manipulate the hazard:** ➢ None **Reduce exposure and vulnerability:** ➢ None **Build local capacity:** ➢ None	**Manipulate the hazard:** ➢ None **Reduce exposure and vulnerability:** ➢ Controlled avalanches as necessary (i.e., triggering an avalanche through detonation ➢ Install static defense structures in avalanche areas ➢ Identify and map avalanche paths and avalanche areas in the state ➢ Construct snow sheds over highways and railroads that cross potential avalanche paths ➢ Have proper equipment to support rescue, mitigate head injuries, and create air pockets (avalanche beacon, portable shovel, avalanche probe in backpack, helmet, and avalanche airbags) **Build local capacity:** ➢ Identify and map avalanche paths and avalanche areas in the state
Nature-based opportunities: ➢ Restrict or prohibit new development downslope of areas susceptible to avalanche and preserve these areas for open space/recreational uses. ➢ Preserve forest ecosystems in avalanche-prone areas to provide a resistance buffer area to absorb impacts from avalanches.		

Chapter 6. Civil Disorder

Civil Disorder

Civil disturbance, also referred to as civil disorder or civil unrest, is defined as any public disturbance involving acts of violence by groups of three or more people, which causes an immediate danger of or results in damage or injury to property or other people. Civil disturbance can include riots, demonstrations, threatening individuals, or assemblies that have become disruptive and may cause harm to others.

CHANGES SINCE 2018

+0

Decalared Disasters

+2

Multi-Day Civil Disorder Events

STATE IMPACT RATING

Low (14)

SOCIALLY VULNERABLE POPULATION

21.9%

Of Total Population

384,570

Persons

CLIMATE PROJECTIONS

While extremely unlikely, climate change impacts may act as an aggravating factor for civil disturbance

Climate impacts create the potential for the disadvantaged to riot or protest when the resources they need are unavailable

CANALS

8,278

Miles

COMMUNITY LIFELINES

3,238

Total

5,339

State Buildings

1,830

State Bridges

380

State Dams

5,935

Miles of State Roads

6. CIVIL DISORDER

2023 SHMP Changes

- Civil disorder events that occurred in the State of Idaho from January 1, 2018, through December 31, 2022, were researched for the 2023 SHMP.
- New and updated figures from federal and state agencies were incorporated.
- This section discusses how civil disorder may impact socially vulnerable populations and community lifelines.

6.1 HAZARD DESCRIPTION

Civil disorder, also referred to as civil disturbance or civil unrest, is defined as any public disturbance involving acts of violence by assemblages of three or more persons, which causes an immediate danger of or results in damage or injury to the property or person of any other individual, as defined in 18 U.S. Code 232. In this context, civil disorder is distinct from peaceful public celebrations, lawful protests, and acts of civil disobedience (such as peaceful but un-permitted protests, sit-ins and comparable protest actions).

Civil disorder can include riots, demonstrations, threatening individuals, or assemblies that have become disruptive and may cause harm to others. Civil disorder is typically a symptom of, and a form of protest against, perceived major socio-political problems. Typically, the severity of the action coincides with the level of public outrage. In addition to a form of protest against perceived major socio-political problems, civil disorder can also arise out of union protest, institutional population uprising, or from large celebrations that become disorderly.

Civil unrest results in urban conflicts that arise from highly emotional, social, and economic issues. Tensions can build quickly in a community over a variety of issues and span a variety of actions, including labor unrest, strikes, civil disobedience, demonstrations, riots, and rebellion. Civil disorder may arise from acts of civil disobedience caused by political grievances and urban economic conflicts or a decrease in the supply of essential goods and services. Tension in these areas creates a potential for violence. When tensions are high, it takes a small or seemingly minor incident, rumor, or act of injustice to ignite groups within a crowd to riot and act violently. This is particularly true if community relations with authorities are part of the problem. Civil disorder is often a form of protest, which could arise from highly emotional, social, and economic issues as shown in Figure 6-1.

While the State does not track or monitor 1st Amendment protected activities or groups engaged in them, there is the responsibility to maintain public safety and operations of government services.

6.1.1 Gatherings and Protests

Gatherings in protest are recognized rights of any person in the U.S., and most protestors are law-abiding citizens who intend that their protests be nonviolent. Some protest planners insist that an event involve some sort of violence, often to drive home an issue. Violence is often the result of demonstrators conducting unlawful or criminal acts.

The depth of violence is determined by the willingness of the demonstrators to display and voice their opinions in support of their cause.

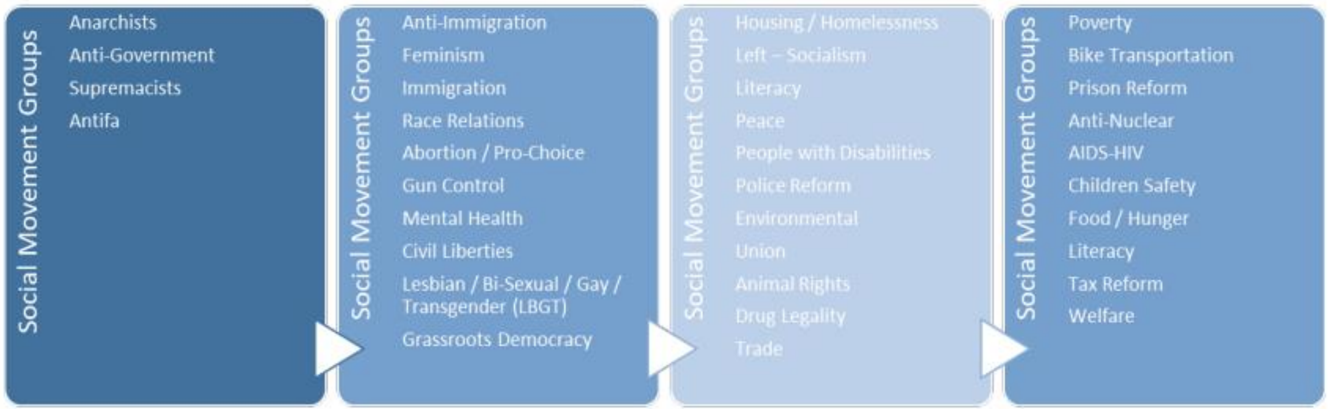


Figure 6-1. Groups and Issues Commonly Associated with Civil Disorder

Civil disturbances can take the form of small gatherings or large groups blocking or impeding access to a building or disrupting normal activities by generating noise and intimidating people. Demonstrations can range from a peaceful sit-in to a full-scale riot, in which a mob burns or otherwise destroys property and terrorizes individuals. Even in its more passive forms, a group that blocks roadways, sidewalks, or buildings interferes with public order. Often protests intended to be a peaceful demonstration to the public and the government can escalate into general chaos. The circumstances surrounding civil disturbance may be spontaneous or may result from escalating tensions within a community or the larger society. This was the case with the Occupy Wall Street movement that began in September 2011 in New York City and spread to over 100 cities in the United States, including Boise. Occupy Wall Street is just one example of a demonstration that grew into a national response. Boise experienced a group that launched from the movement, spurred by the September 17 Occupy Wall Street protest. Local officials expended time and resources planning for contingencies and dealing with permit issues. The U.S. Army Civil Disturbance Field Manual (Stanton 2005) states, "gatherings that turn into civil disturbances are often either organized or assisted by the activities of individuals or groups with a specific agenda, such as yelling catchy slogans anyone can easily pick up and join in on. These types of gatherings can be either impromptu or organized.

- Impromptu gatherings usually develop informally and are mostly done by word of mouth and social media.
- Participants spread intelligence by telling one another when, where, and what is happening and inviting them to participate.
- Organized gatherings rely more on centralized planning and organization. One or more of the groups offer organizers lists of individual names and groups, which they contact as potential participants. Modern technologies such as the use of social media increasingly facilitate this much more quickly than in the past.

Both gatherings rely on intelligence and pass along information. Rarely is one represented group responsible for pulling together a gathering. Organized gatherings rely heavily on established groups that attract people to gather. Recent examples of these well-organized groups are anarchists, anti-globalization groups, and anti-free-enterprise groups. Groups representing extreme religious faiths and ethnic organizations have been common too." (Stanton 2005).

Being part of a crowd of people has certain effects on different people, and individuals are susceptible to behaving in a way that is contrary to their normal behavior, causing law abiding citizens to act in ways they might not normally act:

- Crowds provide individuals with a sense of anonymity; they are viewed as just another face in the crowd. This gives a sense of invulnerability.
- Crowd behaviors are impersonal by nature. The “them-against-us” attitude affords those within the crowd the ability to freely be verbally abusive, throw objects, or attack anyone who gets in the way.
- Crowds provide individuals with the idea that their moral responsibilities have shifted from themselves as a person to the crowd as a whole. Large numbers of people discourage individual behavior, and the urge to imitate others within the crowd is strong.
- Crowd behavior influences the actions of both the disorderly individuals of the crowd and the authorities tasked to control them.

Individuals within a crowd are at times driven by deeply felt emotions. Emotional contagion is the most dramatic psychological factor of crowd dynamics. It provides the crowd with a temporary bond of psychological unity. Lasting long enough, this unity can push a simple organized crowd into a mob. Normal law and authority are rejected en masse under these conditions, increasing the potential for violence and panic to erupt. Panic can erupt quickly, especially when crowds turn into mobs. Individuals within the mob can easily sense that their safety and wellbeing are at risk, putting them in a “fight or flight” mentality. Adding to the panic and confusion is the use of riot control agents by authorities in an attempt to gain control. Individuals in a mob, during the heat of confrontation, may attempt to leave and find that there are no escape routes and that roads are blocked. This can often lead to violent, physical attacks.” (Stanton 2005).

Crowds can exhibit both nonviolent and violent behavior. Most gatherings of individuals and small groups into a crowd do not involve violent behavior. A public disorder or disturbance usually involves some harmless name calling, demonstrations to express views, corporate yelling and chanting, even singing and dancing. Nonviolent actions of a crowd can be disruptive because they impede the legitimate functions of a particular space.

They can also become disruptive through direct conflict with what authorities want them to do, such as refusing to leave when directed, locking arms, and sitting in front of or around areas and buildings that the authorities are attempting to clear. An example of this was seen on February 19, 2018, where protesters marched to the Capital bearing 183 child-sized, symbolic coffins, which they stacked on the Statehouse steps. They called for Idaho lawmakers to repeal the State’s faith-healing exemption, under which parents are immune from criminal or civil liability if they deny their children medical care and the children die (Russell 2018). This impeded normal activities as well as both foot and vehicle traffic around the capital.

A crowd that becomes a mob can be very violent and destructive. Violent actions of a crowd include striking out physically at bystanders or others in the crowd, destroying both private and government property, setting fires, and in extreme cases employing bombs. The only limitations for violent crowds are their own imaginations, the training of their leaders, and the materials readily available.

The knowledge of existing groups that have political, economic, social, or emotional agendas can also help determine possible civil disturbance incidents, especially if one of these groups is present at an organized gathering. In Idaho, the violent civil disturbance issues have not generally come from specific hate groups.

6.2 HAZARD LOCATION

Information is key for acts of civil disorder. There must be knowledge of who the demonstrators are, when, where, and why they are demonstrating, what their capabilities are, and what their possible course of action is. Because of their often-spontaneous nature, it is difficult to identify specifics. The entire State of Idaho is vulnerable to the civil disorder hazard.

Government facilities, landmarks, prisons, and universities are common sites where crowds and mobs may gather. The State of Idaho has correctional facilities, treatment units, and youth development centers, as well as local and private facilities throughout the State that may be targets for incidents of civil disorder. Civil disorder can erupt anywhere, but the most likely locations are those areas with large population groupings or gatherings. Civil disorder can also occur in proximity to locations where a “trigger event” occurred, as was the case in the 2020 unrest following the death of George Floyd.

The magnitude or severity of incidents of civil disorder coincides with the level of public outrage. They can take the form of small gatherings or large groups blocking access to buildings or disrupting normal activities. Civil disorder can take form as peaceful sit-ins or a full-scale riot.

6.3 PREVIOUS HAZARD OCCURRENCES

6.3.1 Disaster and Emergency Declarations

No FEMA, USDA, or State disaster declarations or proclamations related to civil disorder have been issued relevant to Idaho or any of its counties.

6.3.2 Event History

Table 6-1 lists significant events of civil disorder that impacted the State of Idaho between 2018 and 2022.

Table 6-1. Civil Disorder in Idaho (2018 to 2022)

Date	Event Type	Counties Affected	Description
May 4 – 14, 2022	Protests	Ada	A few hundred protestors gathered in front of the State Capitol in Boise, Idaho to protest the leaked (and later official) U.S. Supreme Court opinion in Dobbs v. Jackson that overturned the Constitutionally protected right to abortion. These demonstrations resulted in no injuries and no arrests.
May 30 – June 6, 2020	Protests and Civil Disorder	Ada, Bannock, Blaine, Bonner, Bonneville, Kootenai, Madison, Nez Perce, Teton, Twin Falls	Hundreds of protestors gathered to protest the murder of George Floyd at the hand of Minneapolis, Minnesota police officers. Gatherings in Idaho remained peaceful with the exception of a single gunshot fired near the State Capitol. One man was arrested, and the incident was deemed to be accidental.

6.4 PROBABILITY OF FUTURE HAZARD EVENTS

6.4.1 Overall Probability

The history of civil disorder events listed in Table 6-1 suggests that such events can happen every year or two.

6.4.2 Climate Change Impacts

Because civil disorder is a short-term, human-caused hazard, no climate change impacts are associated with the hazard. However, adverse effects on the human populace due to climate change could create a possibility for events of civil disorder. An example would be critical resource shortages (such as water) during a drought, or prolonged power and service issues resulting from floods or severe storms causing the populace to become angry with the government.

6.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

The U.S. EPA’s Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change’s (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029.

Civil disturbances, as have been seen in recent years, typically occur in populous, major cities. Civil disturbances can occur anywhere in the urban, rural, or natural environment. Normally, development of new or expansion of existing areas will not directly impact this human-caused hazard.

6.5 IMPACT ANALYSIS

Civil disorder events can impact the safety of the people of Idaho. Concern about civil disorder is ongoing for Idaho and the United States, as these events are often spontaneous or unplanned. Civil disorder impacts could have severe adverse effects on the structure and wellbeing of Idaho as a whole.

6.5.1 Severity

Civil disorder severity depends on the nature of the disturbance. The high-profile World Trade Organization (WTO) 2000 conference in Seattle resulted in mass arrests, civilian curfews, and over 20 million dollars in property damage. Compare this episode to the Rodney King beating which unleashed 7 days of violence, $1 billion in property damage, and left 50 people dead. It is not possible to predict the potential severity of civil disorder events; however, it is necessary to think about the potential of such a disturbance. Incidents like these may be less likely to occur in a smaller city, due to the noncontiguous nature of suburban development patterns.

Mob violence is segregated into three separate forms, including riots, lynches, and vigilante groups. Mobs are typically associated with disorder and lack of respect for the law. Uncontrolled, unorganized, angry, and emotional, these commons masses, otherwise known as mobs, share a common purpose.

There is a low, medium, and high range that can be associated with the severity of the hazard of civil disorder. Such disturbances may be derived from a political rally or university football game celebration getting out of control or demonstrations by environmental logging protestors. Police dispatched to control traffic corridors or intrusion on private property is considered a low severity civil disorder. Disruption of businesses and potentially, property damage, are assessed as a moderate act of civil disorder. In these cases, police intervention would be required to restore order without employing chemical agents or physical force. A severe act of civil disorder would involve rioting, arson, looting, and assault, where police action (tear gas, curfews, and mass arrests) may be required.

In general, a high hazard severity rating would be assigned to an event where emotionally charged and highly contentious business or police action engendered the outrage of a certain segment of the population. While the hazard severity would be high, there would be a moderate vulnerability in such an event and low probability, and as such, a low risk rating is assigned to a high-severity act of civil disorder.

A moderate hazard severity rating would be assigned to a localized event that resulted in damage to property, police action, or some physical harm to the people involved, either protesters or police. In that the vulnerability to such an event is moderate, the severity is moderate, and the probability is moderate, a moderate risk rating is assigned to the potential moderate civil disorder event.

A low hazard rating would be assigned to a localized event that resulted in minimal to no property damage, no police action (though potential police presence), and no physical harm to the participants, bystanders, or police. As such, while there may be a high probability rating for such forms of low-severity act of civil disorder, and while the vulnerability rating may be moderate, a low severity hazard would be given a low hazard rating.

6.5.2 Warning Time

Civil disorder often occurs with little to no warning; however, certain events may trigger riots. As demonstrated in the Previous Hazard Occurrences section and discussions regarding severity, riots can occur as a result of controversial court rulings, unfair working conditions, or general unrest. Riots can also be triggered as a result of favorable or unfavorable sports outcomes. Thus, generally there will be a certain degree of warning time that a riot may occur; however, achieving certainty that an incident is imminent is not possible. Intelligence sharing with regards to crowd size and behavior, as well as known group presence, can assist authorities in determining the possibility of an organized nonviolent demonstration turning violent.

6.5.3 Cascading Impacts

Incidents of civil disorder generally do not influence or impact the initiation of natural hazards. Despite this, it is plausible that humans could be the cause for a wildfire event or a dam/levee/canal failure. Such an incident would most likely be classified as an arsonist or terrorist event. Additionally, human actions in the midst of a natural disaster can cause civil disorder. During a wildfire or flood event, some homeowners may choose not to evacuate, causing first responders more danger when responding to the disaster. An example of this is homeowners not evacuating during a fire, and then fleeing to firefighters engaged in firefighting tasks for assistance when the fire gets close, causing the firefighting efforts to be abandoned.

Events not local to Idaho may have an impact on mitigation planning activities. Idaho Governor, Butch Otter, has directed school safety assessments be conducted as a result of school shootings in other parts of the country. Many resources have been devoted to protecting citizens since the attacks of September 11, 2001. Just the nature of a planned or spontaneous civil disorder will ensure collateral damage to property and/or environmental assets. However, civil disorder can result in other secondary hazards. Depending on the size and scope of the incident, civil unrest may lead to widespread urban fire, utility failure, transportation interruption, and environmental hazards. The most significant impact of civil disorder is the cascading impact of interruption of continuity of government, which can also lead to several of the aforementioned secondary hazards. The extent of cascading impacts will vary significantly based on the extent and nature of the act of civil disorder. Civil disorder may also lead to environmental impacts.

6.5.4 Environmental Impacts

Civil disorder can result in environmental impacts, but they are likely to be limited. Fires that are started during civil unrest events can spread throughout cities, burning through areas that may include natural resources or hazardous materials and facilities.

Any damages, such as the destruction of vegetation or the contamination of waterways, would likely be incidental to the physical intrusion of protestors. The natural environment would be assigned a low impact and vulnerability rating.

6.5.5 Local Hazard Mitigation Plan Impacts

While 19 of the hazard mitigation plans prepared for Idaho's counties list civil disorder as a hazard of concern, none of the counties rank civil disorder as a high-impact hazard. Of these 19 plans, seven counties identified civil disorder as a medium-impact hazard. Local plans do not provide data that can be used to summarize statewide exposure and loss potential of people and structures for the civil disorder hazard.

6.6 VULNERABILITY OF PEOPLE AND ASSETS

6.6.1 Total and Socially Vulnerable Populations

Overall, the entire State is vulnerable to the civil disorder hazard. However, government facilities, landmarks, prisons, and universities are common sites where crowds and mobs may gather. Facilities, such as homes, businesses, and other essential infrastructure, such as dams, utilities sites, and other public common areas are vulnerable to events of civil disorder. Civil violence, by its very nature, is most often directed at objects that reflect civil values—property, industry, and services. During the WTO protests, it was the recognized brand name stores, such as GAP and Starbucks, which were first to be singled out as token representatives of the global commercialization that the WTO protesters were opposing. As such, the manmade environment would receive a high impact and vulnerability rating.

Additionally, the magnitude or severity of incidents of civil disorder coincides with the level of public outrage, and though difficult to predict, events like controversial court rulings and favorable or unfavorable sports outcomes, can be used to estimate the potential for an event. The systems most likely impacted by civil disorder include community systems, such as the police, fire departments, and emergency medical teams. Straining such limited services, particularly in rural counties, could be disastrous. Transportation systems could also be impacted if transit routes are blocked, such as major corridors through Idaho including Interstate 84 or Highway 55, or if the civil disorder has rendered part of the city unsafe, like the capitol building in Boise. At this time, no detailed State vulnerability assessment is available for civil disorder. Given its role as the State's capital and the high concentration of state buildings, the City of Boise in Ada County is considered more vulnerable to this hazard compared to other areas of the State.

Because the civil disorder hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction. Table 6-2 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 6-2. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

6.6.2 National Risk Index Ratings

The NRI does not include data on hazard events relating to civil disorder for the State of Idaho.

6.6.3 Vulnerability of Facilities, Infrastructure and Community Lifelines

State-owned or -leased facilities are often targets of civil disorders, making them more vulnerable to the effects of these events. They often become the focus of these types of events. All State-owned or -leased assets are exposed to the risk of civil disorder. Interruption of services may impact facilities that need to be in operation during a civil disorder incident.

6.6.4 Potential Losses Due to a Hazard Event

State assets could be targets for civil disorder events, but there are no standard generic formulas for estimating associated losses. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the replacement cost value of all State-owned or -leased facilities (see Table 6-3). This allows the State to select a range of potential economic impacts based on an estimate of the percentage of damage to these assets. Damage in excess of 50 percent is considered substantial by most building codes and typically requires total reconstruction of the structure.

Table 6-3. Loss Potential of State Facilities for Civil Disorder

	Total Replacement Cost Value	Estimated Loss Potential Based on % Damage		
		10% Damage	30% Damage	50% Damage
State-Owned Facilities	$11,382,558,264	$1,138,255,826	$3,414,767,479	$5,691,279,132
State-Leased Facilities	$3,390,608,124	$339,060,812	$1,017,182,437	$1,695,304,062
Total	**$14,773,166,388**	**$1,477,316,639**	**$4,431,949,916**	**$7,386,583,194**

6.7 MITIGATING THE HAZARD

6.7.1 Mitigation Rationale

For civil disorder, mitigation basically implies efforts to prevent or minimize the damage that can result from civil unrest. These efforts can be developed using lessons learned from previous civil disturbances. Mitigation can take place during preparation for an event or recovery afterward. The aim is to reduce risk through anticipating actions. Mitigation is best accomplished through programs to cope with potential disruption or destruction of physical and social networks (FEMA; U.S. Fire Administration 1994).

6.7.2 General Mitigation Approaches

State Statutes

Currently, the Idaho Statues contain provisions relating to civil disturbances. State law Title 18 (Crimes and Punishments) includes the following definitions related to civil disorder:

- **18-6401. Riot defined—**Any action, use of force or violence, or threat thereof, disturbs the public peace, or any threat to use such force or violence, if accompanied by immediate power of execution, by two (2) or more persons acting together, and without authority of law, which results in:
  - Physical injury to any person; or
  - Damage or destruction to public or private property; or
  - A disturbance of the public peace; is a riot.
- **18-6404. Unlawful assembly defined—**Whenever two or more persons assemble together to do an unlawful act, and separate without doing or advancing toward it, or do a lawful act in a violent, boisterous or tumultuous manner, such assembly is an unlawful assembly.
- **18-8102—**"Civil disorder" means any public disturbance involving acts of violence by an assemblage of two or more persons which acts cause an immediate danger of or result in damage or injury to the property or person of any other individual.

Building Relationships Among Agencies

No single agency can effectively manage a sizeable disturbance. Planning for an emergency requires the resources and expertise of law enforcement, EMS, the fire service, and other local public agencies. It also requires becoming familiar with operational procedures carried out by key players in these agencies. Agencies must share intelligence. For example, if police know that rock concert attendees have the propensity to commit arson, they should share this information with the fire department. Critical issues to be addressed through intelligence gathering include: the probability of civil unrest; capability assessments required; legal ramifications to be determined; existing mutual aid agreements which may need to be reviewed, fine-tuned, and rehearsed, as necessary; floor plans of buildings, and other information which may help police devise effective tactical maneuvers, (e.g., information relating to hazardous materials, identification of everything in the impact zone that could affect tactical plans). Emergency declaration policy guidelines should be established (these can be fine-tuned during preparation for civil unrest), to define such matters as alert phases for different levels of activity.

Fusion Centers

The need to develop and share information and intelligence across all levels of government has significantly changed over the last few years. The need to identify, prevent, monitor, and respond to terrorist and criminal activities remains a significant need for the law enforcement, intelligence, public safety, and private sector communities. In 2004 and 2005, many states began creating fusion centers with local, state, and federal funds. A fusion center is a collaborative effort of two or more agencies that provide resources, expertise, and information with the goal of maximizing their ability to detect, prevent, investigate, and respond to criminal and terrorist activity.

Idaho's fusion center is the Idaho Criminal Intelligence Center, located in Meridian. Its mission is integrating, analyzing, producing, and disseminating actionable criminal intelligence in combating terrorism and criminal activity through an all-crimes approach. The center offers the following services:

- Coordination of Idaho drug tip hotline
- Case de-confliction/watch center
- Threat assessments
- Timelines, relationship charts, and flow charts
- Telephone toll analysis
- Drug and extremist intelligence
- Case support
- Photo lineups
- Heat maps tracking high frequency of incidents in a certain area
- Fusion liaison officer program
- Open-source intelligence gathering

The Criminal Intelligence Center also contains several useful information databases that can be used in assisting with understanding the threat of civil disturbances and known group activity. These can be used to determine and communicate threat assessments and information sharing assists with management of civil disturbances The Criminal Intelligence Center is truly an integrated planning and response law enforcement center, with participation from the following local, state, and federal entities:

- Ada County Sheriff's Office
- Alcohol Tobacco and Firearms
- Bannock County Sheriff's Office
- Boise Police Department
- Canyon County Sheriff's Office
- Chubbuck Police Department
- Coeur d'Alene Police Department
- Federal Bureau of Investigation
- Idaho Attorney General's Office

- Idaho Bureau of Homeland Security
- Idaho Department of Corrections
- Idaho National Guard Counter Drug Program
- Idaho State Police
- Nampa Police Department
- Pocatello Police Department

The Fusion Liaison Officer (FLO) program is administered by the Idaho Criminal Intelligence Center (Idaho's fusion center) and is similar to other state terrorism liaison officer or intelligence liaison officer programs. The goal of the program is to coordinate Idaho's police, fire, EMS, and private security entities to be on the lookout for and report suspicious criminal or potentially terrorist activity to the fusion center. The fusion center then passes this information along to the appropriate entity for further investigation or follow up. The FLO program does this by training, coordinating, and communicating with FLOs. This program acts as a civil disturbance early warning and mitigation system.

Communications

A strong communications infrastructure should be established among the fire department, the police department, and the media. Communication often proves to be the controlling element in assessing whether a civil disturbance will quickly dissipate or intensify. Each jurisdiction must decide whether its agencies should replace their separate communication systems and build a single, more efficient one, or whether their present systems are compatible and need only to be updated or modified. A unified dispatch system must be in place and ready for operation on short notice, as needed. The public information officer (PIO) is invaluable to ensuring good communications in the event of a civil disturbance. The PIO would participate in all meetings and decisions regarding the civil unrest situation and would act as official liaison to the public and media on behalf of each agency. In the event of a state declaration, the Public Information Emergency Response Team would be activated at the state level to surge communications response as necessary for the situation.

Training

Civil disturbances can be difficult for local communities to handle. Officials must walk a fine line between the constitutional right of individuals and groups to assemble and air grievances, and the overall needs of the community to provide essential services, ensure the personal safety of citizens, prevent property damage, and facilitate normal commerce. Fortunately, most demonstrations and large public gatherings are held in a peaceful, nonviolent manner. However, as referenced in earlier sections there are twelve identified hate groups within the state, it is known that groups do exist whose primary objective is to disrupt normal activities and even cause injury and property damage.

Fire and law enforcement agencies should work closely with local legislators and government officials to maintain or increase funding for joint training programs. These programs, if carried out on a regular schedule, would enhance the effectiveness of firefighters and officers in all facets of their field work. Media personnel should be included in certain aspects of training to ensure that the public has an understanding of how agencies operate to avoid civil disorder.

Handling events that could result in civil disturbance is a difficult operation, at best. Normally, law enforcement personnel are outnumbered, and can be ill equipped and under-trained to handle a large, unruly crowd. Proper training of law enforcement personnel, adequate resources, and incident anticipation and planning are the keys to successful incident management.

The Idaho Crime and Safety Conference

The Idaho Crime & Safety Conference is a training event hosted annually by the Idaho Office of Emergency Management (IOEM) and the Idaho Criminal Intelligence Center. In planning the conference, presenters with experience or subject matter expertise come from across the United States teach at the conference. This conference is for all Idaho First Responders (Police/Fire/EMS) and educates and encourages all first responders to network and coordinate their efforts to potentially mitigate a civil disturbance and in their response to a critical incident. Additional training includes the following:

- Crowd Intervention Training
- Advanced Law Enforcement Rapid Response Training
- National Guard Anti-Terrorism Training

A civil disturbance requires a police department to adopt a military model, which creates stressful situations within the organization and in its relationships with other agencies. Joint training exercises among police, fire/EMS, National Guard, and public works personnel are essential to alerting them to circumstances that could lead to civil disorder and to measures that can be taken to prevent the development of an explosive situation. Media personnel/PIOs should be included in certain aspects of training to ensure that the public has an understanding of how agencies operate to avoid civil unrest (Joint Task Force on Civil Unrest, 1994)."

Community Relations and Community Policing

The primary aim of mitigation is to reduce risk through anticipating actions. Community relations may prove to be the most valuable mitigation effort in the prevention of civil unrest. Community activities should include:

- Preparing land-use and development plans for hazardous areas
- Educating decision makers and community representatives about the risk of civil unrest and circumstances that can cause civil unrest

Public service announcements and campaigns are good maintenance tools to adopt to keep the community involved in government and to remind people that these agencies exist to protect and help them. Agencies need to support community leaders and to include them in regular and comprehensive briefings on agency policies and activities. The accumulation of unresolved grievances by residents, coupled with a minor police action such as a simple arrest, can easily be perceived as explosive enough to spark a riot situation. Local gangs usually include influential leaders who are accorded much respect and authority within their communities. Harnessing this leadership can help bring harmony to the community and enable local fire and police departments to interact with the gangs through innovative programs and social events that will make them an important and productive part of the community. Recent civil disturbances have demonstrated that community-oriented programs connect the public with fire and police. Increased public awareness promotes changes in attitude toward fire and police personnel. Public support is essential when agencies and their personnel become the target of rioters.

Agencies can implement various programs designed to build trust and develop a partnership with the community through:

- Dialogue/town meetings
- Networking with community leaders and Community relations assistants, who monitor the vital signs of the community and report directly to the chief executives
- Hotlines, which are set up immediately before, during, and after civil unrest
- Designating “safe places” sponsored by the fire and/or police departments to carry on community activities, such as food drives, clean-up programs, child-care services, and fund-raising drives for other services to respond to specific community needs
- Establishing cultural sensitivity workshops for agency executives, officers, and other personnel. When properly conducted, these programs can enhance police/community relations
- Recruiting culturally diverse personnel Strengthening media relations
- Establishing a public access system, possibly through the PIO (ideally, direct access to chief executives of both police and fire agencies)

See Something Say Something

The Idaho Criminal Intelligence Center and IOEM have coordinated with the Department of Homeland Security (DHS) to obtain Idaho personalized television and radio ads for the See Something, Say Something program, a copyrighted program that DHS administers. Funds are expended to ensure these broadcasts take place statewide during the spring and summer months of the year as this is Idaho’s heavy travel and tourism season. Additionally, the Idaho State Police posts these ads on internet media outlets as well. Additional strategies include the following:

- Crime Stoppers
- Neighborhood Watch
- Tip Lines
- Outreach to refugee populations

6.7.3 Catalog of Potential Mitigation Alternatives

Table 6-4 summarizes a range of potential alternatives for mitigating the civil disorder hazard.

Table 6-4. Potential Opportunities to Mitigate the Civil Disorder Hazard

Community-Scale	Organizational-Scale	Government-Scale
Manipulate the hazard: ➢ None **Reduce exposure and vulnerability:** ➢ None **Build local capacity:** ➢ None	**Manipulate the hazard:** ➢ None **Reduce exposure and vulnerability:** ➢ Evaluate existing emergency plans and update accordingly ➢ Implement security measures and enhance security levels ➢ Electronic illegal entry system – Confirm systems are in service and activate all features to the extent that operations permit ➢ Video surveillance system – Confirm the system is in full service and recording conditions. Enhance video surveillance of key areas such as the lobby, entrances, and docks. If possible, record video files to an off-site server or cloud computing platform. Ensure cameras can provide sufficient quality to identify persons ➢ Verify fire protection systems are ready, and ignitable materials are secured. Verify all fixed fire protection systems are in service ➢ Develop and implement evacuation procedures **Build local capacity:** ➢ Connect and coordinate with local fusion centers.	**Manipulate the hazard:** ➢ None **Reduce exposure and vulnerability:** ➢ Evaluate existing emergency plans and update accordingly ➢ Implement security measures and enhance security levels ➢ Electronic illegal entry system – Confirm systems are in service and activate all features to the extent that operations permit ➢ Video surveillance system – Confirm the system is in full service and recording conditions. Enhance video surveillance of key areas such as the lobby, entrances, and docks. If possible, record video files to an off-site server or cloud computing platform. Ensure cameras can provide sufficient quality to identify people. ➢ Verify fire protection systems are ready, and ignitable materials are secured. Verify all fixed fire protection systems are in service ➢ Develop and implement evacuation procedures **Build local capacity:** ➢ Leverage the capabilities and capacities of fusion centers.
Nature-based opportunities: ➢ There are no identified nature-based solutions to mitigate the impacts from civil disorder.		

6.7.4 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the civil disorder hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects

Chapter 7. Cyber Threat

Cyber Threats

A significant cyber disruption event may cause harm to critical functions and services across the public and private sectors by impairing the confidentiality, integrity, or availability of electronic information, information systems, services, or networks; and/or threaten public safety, undermine public confidence, have a negative effect on the state economy, or diminish the security posture of the state.

CHANGES SINCE 2018

+0

Federal Disasters

+2

Cyber Threat Events

CANALS

Cyber threat impacts on canals are unknown at this time

STATE IMPACT RATING

Medium (18)

SOCIALLY VULNERABLE POPULATION

21.9% Of Total Population

384,570 Persons

CLIMATE PROJECTIONS

Climate change impacts are not known to have a direct effect on cybersecurity

Climate activists and deniers may carry out hacks to make a statement, prove a point, or benefit financially from instability

COMMUNITY LIFELINES

3,238

Total

Cyber threat impacts on these physical state assets are unknown at this time.

State Bridges

State Buildings

State Dams

Miles of State Roads

7. CYBER THREATS

2023 SHMP Changes

- Cyber threat events that occurred in the State of Idaho from January 1, 2018, through December 31, 2022, were researched for the 2023 SHMP.
- New and updated figures from federal and state agencies were incorporated.
- This section discusses how cyber threats may impact socially vulnerable populations and community lifelines.

7.1 HAZARD DESCRIPTION

A significant cyber disruption event as defined from the National Cyber Incident Response Plan dated September 2010 as “an event that is likely to cause, or is causing, harm to critical functions and services across the public and private sectors by impairing the confidentiality, integrity, or availability, of electronic information, information systems, services, or networks; and/or threaten public safety, undermine public confidence, have a negative effect on the state economy, or diminish the security posture of the state”.

Cyber disruption is a hazard that touches many aspects of communities: industry, government, health, business, and private. As information technology continues to flourish and grow in capability and interconnectivity, cyber disruptions become increasingly frequent and destructive. They are a fast-growing area of crime, and more criminals are using the Internet to commit a diverse range of criminal activities. These types of crimes can cause serious harm and pose a real threat to victims worldwide (INTERPOL 2017).

Cyber security has shifted its focus from preventing initial entry to limiting damage once a system has been penetrated by identifying breaches and isolating the malware to stop it. Centralized systems like Supervisory Control and Data Acquisition (SCADA) are used to control infrastructure such as: communications, utilities, transportation, medical facilities, law enforcement, business, financial systems, and personally identifiable information, all which may be compromised by cyber disruptions spreading. A state cyber-security group is working to address risk to state agencies’ systems.

Cybercrime costs “include damage and destruction of data, stolen money, lost productivity, theft of intellectual property, theft of personal and financial data, embezzlement, fraud, post-attack disruption to the normal course of business, forensic investigation, restoration and deletion of hacked data and systems, and reputational harm.” The 2022 Official Cybercrime Report provides cyber economic facts, figures, predictions, and statistics that convey the magnitude of the cyber threat, and market data to help understand what can be done about it (Cybersecurity Ventures 2022).

In 2020, the State of Idaho ranked 38th in the United States for the number of cybercrime victims reported to the Internet Crime Complaint Center. The State ranked 42nd for total victim losses as reported to the Internet Crime Complaint Center (FBI 2020).

This SHMP update addresses three types of cyber threat for Idaho, as described in the sections below: cybercrime, cyber terrorism, and space weather.

7.1.1 Cybercrime

Computer systems on the county, local, and individual level are likely to experience a variety of cybercrime, from malware to targeted attacks on system capabilities. These cybercrime attacks specifically seek to breach information technology (IT) security measures designed to protect an individual or organization. The initial attack is subsequently followed by further, more severe attacks for the purpose of causing harm or stealing data. Organizations are prone to a multitude of different types of attacks. Table 7-1 describes the most common types of cyber-attacks seen today.

Table 7-1. Common Cyberattack Mechanisms

Type	Description
Social Engineering	In the context of cyber-security, this refers to an effort to psychologically manipulate a person, especially through misrepresentation or deception (as in a con game), to gain access to information. The manipulation often relies on the trusting nature of most individuals or makes use of many persons' natural reluctance to offend others or appear too mistrustful. The ruse may involve creating impressions that make things appear more benevolent, trustworthy, and reliable than they actually are. Some schemes are very complex and involve several stages of manipulation over a substantial period of time.
Socially Engineered Trojans	Programs designed to mimic legitimate processes (e.g., updating software, running fake antivirus software) with the end goal of human-interaction caused infection. When the victim runs the fake process, the Trojan is installed on the system.
Unpatched Software	Nearly all software has weak points that may be exploited by malware. Most common software exploitations occur with Java, Adobe Reader, and Adobe Flash. These vulnerabilities are often exploited as small amounts of malicious code are often downloaded via drive-by download.
Spoofing	Attempting to gain access to a system by posing as an authorized user, synonymous with impersonating, masquerading, or mimicking. Attempting to fool a network user into believing that a particular site was reached, when actually the user has been led to access a false site that has been designed to appear authentic, usually for the purpose of gaining valuable information, tricking the user into downloading harmful software, or providing funds to the fraudsters.
Malware	Software that can destroy data, affect computer performance, cause a crash, or even allow spammers to send email through an account.
Phishing	Malicious email messages that ask users to click a link or download a program. Phishing attacks may appear as legitimate emails from trusted third parties.
Spear Phishing	A form of phishing that targets a specific individual, company, or agency, usually relying on an accumulation of information to make subsequent ruses more effective when further probing the target, until a successful security breach finally becomes possible.
Pharming	Arranging for a web's site traffic to be redirected to a different, fraudulent site, either through a vulnerability in an agency's server software or through the use of malware on a user's computer system.
Password Attacks	Third party attempts to crack a user's password and subsequently gain access to a system. Password attacks do not typically require malware, but rather stem from software applications on the attacker's system. These applications may use a variety of methods to gain access, including generating large numbers of generated guesses, or dictionary attacks, in which passwords are systematically tested against all of the words in a dictionary.
Drive-by Downloads	Malware is downloaded unknowingly by the victims when they visit an infected site.
Denial of Service Attacks (DoS)	Attacks that focus on disrupting service to a network in which attackers send high volumes of data until the network becomes overloaded and can no longer function.

Type	Description
Man in the Middle (MITM)	MITM attacks mirror victims and endpoints for online information exchange. In this type of attack, the MITM communicates with the victim who believes is interacting with the legitimate endpoint website. The MITM is also communicating with the actual endpoint website by impersonating the victim. As the process goes through, the MITM obtains entered and received information from both the victim and endpoint.
Malvertising	Malware downloaded to a system when the victim clicks on an affected ad.
Adware	A form of software that displays advertising content in a manner that is potentially unexpected and unwanted by users, which may also include various user-tracking functions (similar to spyware).
Spyware	Software that allows others to gain private information about a user, without that person's knowledge or consent, such as passwords, credit card numbers, social security numbers, or account information.
Advanced Persistent Threat (APT)	An attack in which the attacker gains access to a network and remains undetected. APT attacks are designed to steal data instead of cause damage.
Ransomware	Malware that locks a person's keyboard or computer to prevent them from accessing data until you pay a ransom, usually in Bitcoin. A popular variation of this is ransom cryptware, which corrupts files using a private key that only the attacker possesses.
Virus	A program or code that attaches itself to a legitimate, executable program, and then reproduces itself when that program is run.
Worm	A self-contained program (or set of programs) that can spread copies of itself to other computer systems, usually through network connections of email attachments.

Cyber disruptions may be driven by criminal motives for profit, extortion, or theft, or as deliberate attacks to destroy, damage, or interfere with infrastructure systems. The assessment for the likelihood of an event involving this tactic is moderate, based on a review of threats and trends related to this type of attack methodology both nationally and at the state level. Intelligence also indicates this methodology has been used in limited attacks and attempted attacks both overseas and within the United States with some level of success as a viable tactic.

7.1.2 Cyber Terrorism

The Federal Bureau of Investigation (FBI) defines cyber terrorism as the premeditated, politically motivated, attack against information, computer systems, computer programs, and data which result in violence against non-combatant targets by sub-national groups or clandestine agents. It is a deliberate act of computer-to-computer attack that undermines the confidentiality, integrity, or availability of a computer or computer system or information. The motive behind such disruptions can be driven by religious, political, or other objectives. Like traditional terrorism tactics, cyberterrorism's purpose is to evoke very strong emotional reactions such as anxiety, fear, anger, despair, depression, or even sympathy as a recruitment tool for an organization. However, the mechanism for achieving these goals is through IT and not necessarily a tangible violent or physically disruptive action.

As an organizational objective, cyberterrorism includes specific functions outside of or in addition to a typical cyberattack. Terrorist groups today use the internet daily for recruitment, training, fundraising, communication, or planning. Organizational cyberterrorism can use platforms such as social media, as a tool to spread a message beyond country borders and instigate physical forms of terrorism. Additionally, organizational goals may use systematic attacks as a tool for training new members of a faction in cyber warfare.

Undermining as an objective seeks to achieve the hindrance of normal functioning computer systems, services, or websites. Such methods include defacing, denying, and exposing information. While undermining tactics are typically used due to high dependence on online structures to support vital operational functions, they typically do not result in grave consequences unless undertaken as part of a larger attack.

Three kinds of undermining attacks that can be conducted on computers include attacks of physical means, electronic means, and attacks using malicious code (Waldron 2011). Specifically, these types of attacks include:

- Directing conventional kinetic weapons against computer equipment, a computer facility, or transmission lines to create a physical attack that disrupts the reliability of equipment.
- The power of electromagnetic energy, most commonly in the form of an electromagnetic pulse (EMP), can be used to create an electronic attack (EA) directed against computer equipment or data transmissions. By overheating circuitry or jamming communications, an EA disrupts the reliability of equipment and the integrity of data.
- Malicious code can be used to create a cyberattack, or computer network attack (CNA), directed against computer processing code, instruction logic, or data. The code can generate a stream of malicious network packets that can disrupt data or logic through exploiting vulnerability in computer software, or a weakness in the computer security practices of an organization. This type of cyberattack can disrupt the reliability of equipment, the integrity of data, and the confidentiality of communications (Clay 2008).

The destructive objective for cyberterrorism is what organizations fear most. By computer technology and the internet, terrorists seek to inflict destruction or damage on tangible property or assets, and even death or injury to individuals. There are no cases of pure cyberterrorism as of the date this plan was created.

7.1.3 Space Weather

Space weather (geomagnetic storms) refers to the variable conditions on the sun and in space that can influence the performance of technology used on earth. Extreme space weather could potentially cause damage to critical infrastructure, especially the electric grid. Space weather can produce electromagnetic fields that induce extreme currents in wires, disrupting power lines, and even causing widespread blackouts. Severe space weather also produces solar energetic particles, which can damage satellites used for commercial communications, global positioning, intelligence gathering, and weather forecasting. Geomagnetic storms are disturbances in the geomagnetic field caused by gusts in the solar wind that blows by Earth. Solar Radiation Storms are elevated levels of radiation that occur when the numbers of energetic particles increase. Radio Blackouts are disturbances of the ionosphere caused by x-ray emissions from the Sun (NOAA 2023).

Different types of space weather can affect different technologies on earth. Solar flares can produce strong x-rays that degrade or block high-frequency radio waves used for radio communication during events known as radio blackout storms. Solar Energetic Particles (energetic protons) can penetrate satellite electronics and cause electrical failure. These energetic particles also block radio communications at high latitudes during Solar Radiation Storms. Geomagnetic storms can also modify the signal from radio navigation systems causing degraded accuracy (NOAA 2023). Figure 7-1 shows the voltages that can be induced on the nation’s power grid in the event of a once-in-a-century magnetic super-storm. This figure shows that widespread power grid disruptions or outages would include high-voltage transmission lines throughout the State of Idaho.

Source: (Physics World 2020)

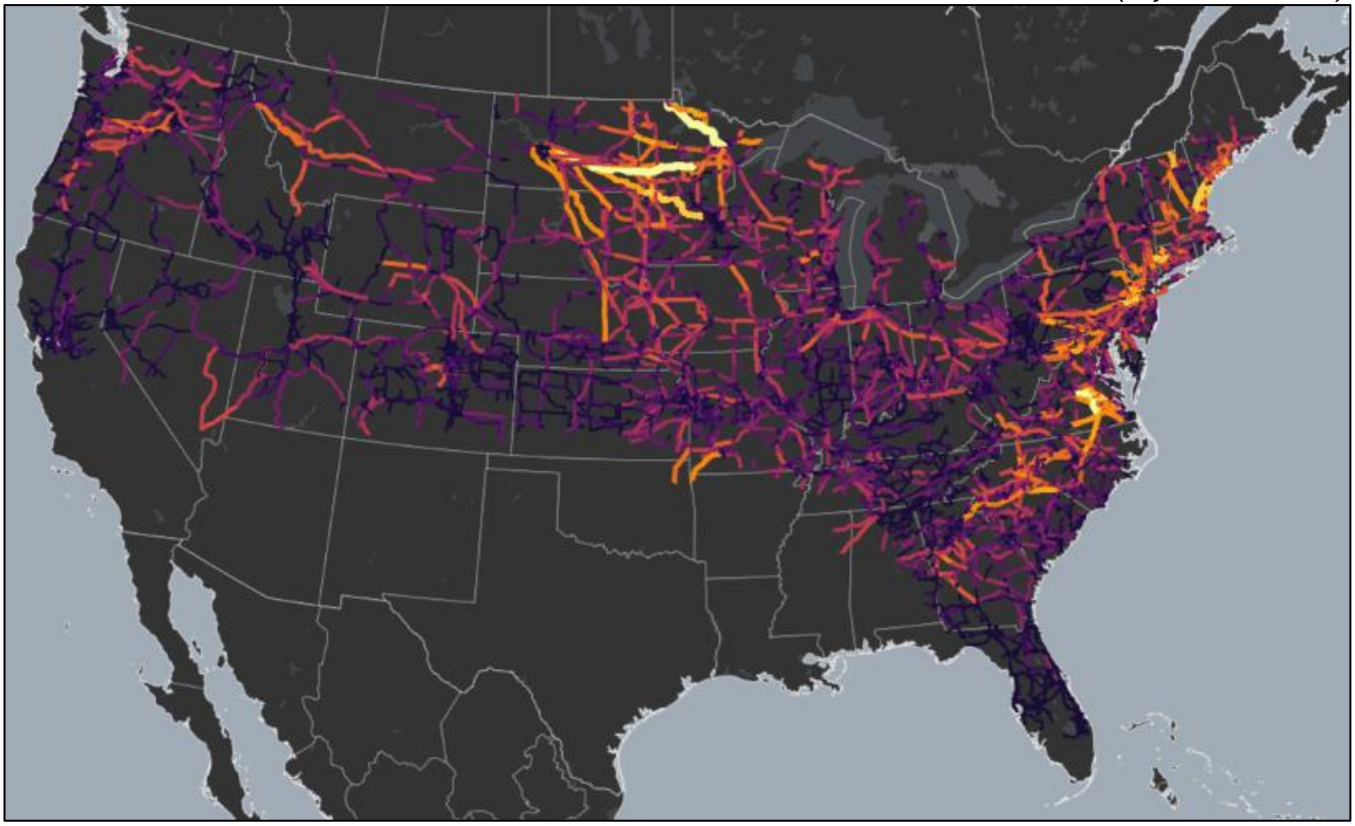


Figure 7-1. Voltages Induced by a 100-Year Super Geomagnetic Storm (Yellow 900 Volts to Dark Violet 10 Volts)

The class of cyber incidents that fit within the term "cyber disruption" can be described through examples such as (NASCIO 2016):

- A cyber-attack on the power grid leading to loss of power to a significant population
- A cyber-attack on water treatment and delivery leading to a loss of water supply to a significant population
- Cyber-attacks on financial management, healthcare providers, transportation systems, education
- A cyber-attack on network capabilities leading to loss of communications which then hampers, interrupts, or prevents the operation of government and requires implementation of a continuity of operations plan
- A hurricane, flood, tornado, earthquake, or other natural disaster that impairs or destroys a key infrastructure asset that then precipitates the loss of connectivity over the internet or internal network
- Natural disaster that impairs or destroys a data center which then precipitates loss of connectivity or loss of data access and requires implementation of a continuity of operations plan
- A natural disaster that is further complicated due to an ensuing cyber-attack
- A solar type of event large enough in size to cause some sort of regional cyber disruption

7.2 HAZARD LOCATION

Cyber disruptions can occur anywhere in Idaho where technological systems exist or are utilized. They can originate from any computer to affect any other computer in the world. If a system is connected to the Internet or operating on a wireless frequency, it is susceptible. Targets of cyber disruptions can be individual computers, networks, organizations, business sectors, or governments. Financial institutions and retailers are often targeted to extract personal and financial data that can be used to steal money from individuals and banks. The most affected sectors are finance, energy and utilities, and defense and aerospace, as well as communication, retail, and health care. Both public and private operations in the State of Idaho are threatened on a near-daily basis by millions of cyberattacks developed to automatically seek technological vulnerabilities.

7.3 PREVIOUS HAZARD OCCURRENCES

7.3.1 Disaster and Emergency Declarations

No FEMA, USDA, or State disaster declarations or proclamations related to cyber threats have been issued relevant to Idaho or any of its counties.

7.3.2 Event History

Table 7-2 lists significant cyber disruption events that impacted the State of Idaho between 2018 and 2022.

Table 7-2. Cyber Disruption in Idaho (2018 to 2022)

Date	Event Type	Counties Affected	Description
August 11, 2021	Malware	Twin Falls	County departments were forced to operate on a limited basis due to internet and computer outages caused by malware. The local court system was also temporarily affected by this attack.
June 4, 2020	Ransomware	Kootenai	The Post Falls Police Department was the target of a ransomware attack that temporarily disrupted computer systems but was noted as being unsuccessful in accessing any sensitive data. Email and digital media were affected in this attack.

7.4 PROBABILITY OF FUTURE HAZARD EVENTS

7.4.1 Overall Probability

Cyber threats are an emerging hazard that has the potential to impact the State's computer infrastructure and the systems and services provided to the public. Concerns about cyber threats are growing throughout Idaho and the United States, and their impacts could have crippling effects.

As is the case for any large government organization, the State of Idaho will continue to be impacted and compelled to respond to cyber disruption events in the future. The nature of these attacks is projected to evolve over time. With the establishment of the Idaho Cybersecurity Taskforce in 2015, strategies and processes to detect vulnerabilities, prevent future attacks, and protect state governmental networks are being developed (State of Idaho 2022). Solar storm activity is expected to occur in the future as well. Solar storms will likely cause one or more serious infrastructure failures in the future, due to the extent of reliance on electronic and satellite systems that are vulnerable to disruptions. In the event of solar storms, NASA's Solar Shield Project shows strong currents and warns power companies to protect their systems.

7.4.2 Climate Change Impacts

Climate change may impact the frequency or severity of cyber-attacks as valuable resources become scarcer. The increased use of computing resources due to a surge in remote work, blockchain mining, and supercomputing also contributes to climate change. People who no longer trust financial institutions due to prominent hacks and leaks are shopping and trading online or putting their money in cryptocurrencies (Brode 2022).

Although cyber disruption is categorized as a human-caused hazard, climate change impacts could have cascading effects potentially causing a cyber disruption. Such instances would be severe storms, as well as flooding associated with potential rain on snow events. If the damage was caused to computer systems or servers, this could cause a cyber disruption for that agency/building.

7.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029.

As populations increase, the impacts on a cyber disruption, such as a utility failure, will increase in terms of impacts as more people will be left vulnerable. Development trends across the State can greatly influence and impact future cyber events. As the State gains more population, the number of connected devices will increase, thus increasing the number of Idaho's citizens potentially impacted.

7.5 IMPACT ANALYSIS

7.5.1 Severity

Cybercrime and Cyber Terrorism

It should be noted there is a difference between a cyber incident and cyber disruption.

- **A cyber incident** would have impacts such as a specific device/system/network; an individual or specific customer base; loss of specific information such as personal identifiable information; limited in time duration (minutes to days); and an objective of containment, restoration, and recovery (NASCIO 2016).

- **A cyber disruption** would have impacts such as regional, national or multi-national profound detrimental effect on life within a region; impaired or destroyed a critical infrastructure asset such as a data center, power generation plant, distribution of electricity, treatment and distribution of water; and cascade, domino effects of disruptions (e.g., loss of electrical distribution leads to halting of water pumps and thus the distribution of water; without water cooling units in large facilities other equipment fails). Cyber disruptions target a population, a region, a critical infrastructure asset, a certain skill, knowledge, data or information asset an entire industry or service or service cluster, an entire jurisdiction, a government function, or a government official or role (NASCIO 2016).

A cyber disruption may initially be identified as a cyber incident depending on the scope. This is also defined by each individual entity, depending on how critical the compromised system or data is.

There is no widely used extent or magnitude ranking for cybercrimes or cyber terrorism at present. The magnitude of extent will vary greatly based on the extent and duration of the impact, and the extent will vary based upon which specific system is affected by an attack, the warning time, and ability to preempt an attack. The University of Maryland developed a Cyber Disruption Index (CDI) to standardize the assessment of cyber disruption events (see Figure 7-2). The index compares the consequences of a cyber event along three dimensions: scope, effect on impacted devices, and duration. These values can be measured after an event or roughly estimated by analysts with general knowledge (University of Maryland 2017).

Source: (University of Maryland 2017)

CDI = Scope x Magnitude x Duration

Scope of the Event	Magnitude of the Event	Duration of the Event
Insignificant number and/or importance of devices (0.2)	Insignificant effect on the productivity of equipment (0.2)	Insignificant (minutes) system down time (0.2)
Minimal number and/or importance of devices (0.4)	Minimal effect on the productivity of equipment (0.4)	Minimal (minutes to hours) system down time (0.4)
Significant number and/or importance of devices (0.6)	Significant effect on the productivity of equipment (0.6)	Significant (hours to days) system down time (0.6)
Massive number and/or importance of devices (0.8)	Massive effect on the productivity of equipment (0.8)	Massive (days to weeks) system down time (0.8)
All devices in a network (1.0)	Complete loss of productivity (1.0)	Total (weeks to indefinite) system down time (1.0)

Figure 7-2. Cyber Disruptive Index

A cyber disruption can affect a variety of sectors with potentially severe consequences. The following areas may be affected by an attack:

- Health and safety of persons in affected areas: No direct loss of life is expected from an attack. Indirect injuries or deaths may result from secondary effects to critical life-sustaining resources such as energy and water.
- Health and safety of response personnel: No direct effects to the health and safety of response personnel are expected; however, critical response systems may be affected.
- Continuity of operations: Severe effects to continuity of operations could result if a cyber-attack reached critical operational systems or systems that were needed to carry out the operation.
- Property, facilities, and infrastructure: Effects can range from annoyance to complete shutdown of critical infrastructures caused by infiltration of supervisory control and data acquisition (SCADA) systems. Secondary effects could disturb public welfare and property by denying services or providing false readings.
- Delivery of services: Cyber-attacks may affect delivery of services if the system was infiltrated and directed to malfunction by self-destructing or overloading.
- Environment: Generally, cyber terrorism has no direct effect on the environment; however, the environment may be affected should a release of a hazardous material occur because of critical infrastructure failure.
- Economic and financial conditions: Because of the heavy reliance on the electronic transfer of economic and commercial information, the economy could be affected by communication difficulties.
- Regulatory and contractual obligations: Cyber-attacks would have no significant effect on regulatory or contractual obligations, other than the possible elimination of electronic records, which would affect both.
- Reputation of the entity: If exposed vulnerabilities were known and not reduced or eliminated before the attack, the entity would suffer major damage to their reputation for not taking action before the incident.

Space Weather

The NOAA space weather scales were introduced to communicate to the general public the current and future space weather conditions and their possible effects on people and systems. The scales correlate space weather events with their likely effects on technological systems. They describe the environmental disturbances for three event types: solar radiation storms (S-scale) (see Table 7-3), radio blackouts (R-scale) (see Table 7-4), and geomagnetic storms (G-scale) (see Table 7-5). The scales have numbered levels, analogous to hurricanes, tornadoes, and earthquakes that convey severity. The scales also list possible effects at each level, show how often such events occur, and give a measure of the intensity of the physical causes. For details regarding the physical measure and average frequency, refer to the NOAA Space Weather Scales website at: http://www.swpc.noaa.gov/noaa-scales-explanation.

Table 7-3. Solar Radiation Storms

Scale	Description	Effect
S5	Extreme	**Biological:** Unavoidable high radiation hazard to astronauts on EVA (extra-vehicular activity); passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. **Satellite operations:** Satellites may be rendered useless, memory impacts can cause loss of control, may cause serious noise in image data, star-trackers may be unable to locate sources; permanent damage to solar panels possible. **Other systems:** Complete blackout of HF (high frequency) communications possible through the polar regions, and position errors make navigation operations extremely difficult.
S4	Severe	**Biological:** Unavoidable radiation hazard to astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. **Satellite operations:** May experience memory device problems and noise on imaging systems; star-tracker problems may cause orientation problems, and solar panel efficiency can be degraded. **Other systems:** Blackout of HF radio communications through the polar regions and increased navigation errors over several days are likely.
S3	Strong	**Biological:** Radiation hazard avoidance recommended for astronauts on EVA; passengers and crew in high-flying aircraft at high latitudes may be exposed to radiation risk. **Satellite operations:** Single-event upsets, noise in imaging systems, and slight reduction of efficiency in solar panel are likely. **Other systems:** Degraded HF radio propagation through the polar regions and navigation position errors likely.
S2	Moderate	**Biological:** Passengers and crew in high-flying aircraft at high latitudes may be exposed to elevated radiation risk. **Satellite operations:** Infrequent single-event upsets possible. **Other systems:** Small effects on HF propagation through the polar regions and navigation at polar cap locations possibly affected.
S1	Minor	**Biological:** None. **Satellite operations:** None. **Other systems:** Minor impacts on HF radio in the polar regions.

Source: (NOAA 2023)

Table 7-4. Radio Blackouts

Scale	Description	Effect
R5	Extreme	**HF Radio:** Complete HF (high frequency) radio blackout on the entire sunlit side of the Earth lasting for a number of hours. This results in no HF radio contact with mariners and en route aviators in this sector. **Navigation:** Low-frequency navigation signals used by maritime and general aviation systems experience outages on the sunlit side of the Earth for many hours, causing loss in positioning. Increased satellite navigation errors in positioning for several hours on the sunlit side of Earth, which may spread into the night side.
R4	Severe	**HF Radio:** HF radio communication blackout on most of the sunlit side of Earth for one to two hours. HF radio contact lost during this time. **Navigation**: Outages of low-frequency navigation signals cause increased error in positioning for one to two hours. Minor disruptions of satellite navigation possible on the sunlit side of Earth.
R3	Strong	**HF Radio:** Wide area blackout of HF radio communication, loss of radio contact for about an hour on sunlit side of Earth. **Navigation:** Low-frequency navigation signals degraded for about an hour.
R2	Moderate	**HF Radio:** Limited blackout of HF radio communication on sunlit side, loss of radio contact for tens of minutes. **Navigation:** Degradation of low-frequency navigation signals for tens of minutes.
R1	Minor	**HF Radio:** Weak or minor degradation of HF radio communication on sunlit side, occasional loss of radio contact. **Navigation:** Low-frequency navigation signals degraded for brief intervals.

Source: (NOAA 2023)

Table 7-5. Geomagnetic Storms

Scale	Description	Effect
G5	Extreme	**Power systems:** Widespread voltage control problems and protective system problems can occur; some grid systems may experience complete collapse or blackouts. Transformers may experience damage. Spacecraft operations: May experience extensive surface charging, problems with orientation, uplink/downlink and tracking satellites. **Other systems:** Pipeline currents can reach hundreds of amps, HF (high frequency) radio propagation may be impossible in many areas for one to two days, satellite navigation may be degraded for days, low-frequency radio navigation can be out for hours, and aurora has been seen as low as Florida and southern Texas (typically 40° geomagnetic lat.).
G4	Severe	**Power systems:** Possible widespread voltage control problems and some protective systems will mistakenly trip out key assets from the grid. Spacecraft operations: May experience surface charging and tracking problems, corrections may be needed for orientation problems. **Other systems:** Induced pipeline currents affect preventive measures, HF radio propagation sporadic, satellite navigation degraded for hours, low-frequency radio navigation disrupted, and aurora has been seen as low as Alabama and northern California (typically 45° geomagnetic lat.).
G3	Strong	**Power systems:** Voltage corrections may be required, false alarms triggered on some protection devices. Spacecraft operations: Surface charging may occur on satellite components, drag may increase on low-Earth-orbit satellites, and corrections may be needed for orientation problems. **Other systems:** Intermittent satellite navigation and low-frequency radio navigation problems may occur, HF radio may be intermittent, and aurora has been seen as low as Illinois and Oregon (typically 50° geomagnetic lat.).
G2	Moderate	**Power systems:** High-latitude power systems may experience voltage alarms, long-duration storms may cause transformer damage. Spacecraft operations: Corrective actions to orientation may be required by ground control; possible changes in drag affect orbit predictions. **Other systems:** HF radio propagation can fade at higher latitudes, and aurora has been seen as low as New York and Idaho (typically 55° geomagnetic lat.).
G1	Minor	**Power systems:** Weak power grid fluctuations can occur. Spacecraft operations: Minor impact on satellite operations possible. **Other systems:** Migratory animals are affected at this and higher levels; aurora is commonly visible at high latitudes (northern Michigan and Maine).

Source: (NOAA 2023)

Electric power, spacecraft, and aviation industries are the main industries whose operations can be adversely impacted by space weather events. The effects of space weather can also be experienced by the growing number of Global Positioning System (GPS) users, such as the oil and gas industry, which relies on GPS data to support offshore drilling operations. Space weather events can lead to major power outages, which has the potential to affect nearly all sectors of society: communications, transportation, banking and finance, commerce, manufacturing, energy, government, education, health care, public safety, emergency services, food and water supply, and sanitation. The severity of the impacts depends on numerous variables, including the duration of the outage (National Academies Press 2009).

7.5.2 Warning Time

Cybercrime and Cyber Terrorism

A cyber disruption can occur with relatively little to no warning. In 2015, the State of Idaho established the Idaho Cybersecurity Taskforce that implements strategies and processes to detect vulnerabilities, prevent future attacks, and protect state governmental networks (State of Idaho 2022). At the federal level, numerous agencies (such as the FBI and Central Intelligence Agency (CIA) are working collaboratively to thwart cybercrimes and cyber terrorism attacks. The warning time depends upon the ability of these agencies to recognize that a threat exists and their ability to stop the attack. Even with these agencies on task to monitor cyber threats, a cyber-disruption can occur with no warning.

Space Weather

Space weather events can be predicted, providing some time to prepare for a potential disturbance. The time from the prediction of a geomagnetic storm to its onset typically varies between 16 and 90 hours, although an event may begin within tens of minutes of an observed sunspot eruption. After a space weather event begins, it may still take hours or days to reach its maximum (U.S. Department of Homeland Security 2019).

NOAA’s Space Weather Prediction Center (SWPC) provides the following alerts, warnings, watches, and forecasts for geomagnetic storms (SWPC - NOAA n.d.):

- A **Geomagnetic Storm Watch** is based on a forecast of an impending geomagnetic storm in one to three days. The lead time is largely determined by the velocity of the driving *coronal mass ejection*. Some of the historically fastest *coronal mass ejections* arrived in well under a day——16- to 18-hour transits have been observed. A watch carries a lower degree of confidence in intensity and in timing than a warning, but it provides longer-range notification.
- A **Geomagnetic Storm Warning** is based on upstream solar wind observations. A warning carries a higher degree of confidence in timing and intensity than a watch but is generally issued only minutes to a couple of hours in advance. SWPC’s space weather forecasters can supply additional comments in a warning and may be able to indicate the specific level of intensity expected.
- A **Geomagnetic Storm Alert** is based on ground-based magnetometer observations and indicates a specific storm threshold being reached. In other words, an alert describes an event already underway.
- A **Geomagnetic Sudden Impulse Expected Warning** is issued when a shock has been observed in the upstream solar wind data. Based on the post-shock velocity, space weather forecasters generate a warning period of when this disturbance is expected at Earth.
- The **Geomagnetic Sudden Impulse Summary** is issued when a shock is observed at Earth, as indicated by the response of ground-based magnetic observatories. This can confirm the arrival of an anticipated coronal mass ejection.

7.5.3 Cascading Impacts

Cyber disruptions have an almost limitless potential to impact all of the human-caused hazards in both numerous and unforeseen ways. Power grid systems are susceptible to cyberattacks and when impacted, could lead to long-term power outages. It has been noted that malicious software could harm critical infrastructure operations, including power systems. Regarding natural hazards, while cyber disruptions cannot directly influence those events, it is possible for related systems to be affected. For instance, any computerized systems that manage flood control systems could potentially be impacted by a cyber-event, thereby possibly causing a flood event. Cyber disruptions could impact the environment in several ways, as affected systems could stop functioning as intended. It is difficult to predict such impacts as the systems that could be possibly involved are so numerous and complex.

Cyber disruption could also be caused by several other hazards. Earthquakes, flooding, and extreme weather such as severe storms could cause any number of cyber disruption issues through availability of the cyber network. If hardware, computer systems, networks, servers, and backups are damaged due to other hazards, it will cause a cyber disruption for that specific area damaged.

7.5.4 Environmental Impacts

Cyber disruptions could impact the environment in several ways, as affected systems could stop functioning as intended. It is difficult to predict such impacts as the systems that could be possibly involved are so numerous and complex. For instance, any computerized systems that manage flood control systems could potentially be impacted by a cyber-event, thereby possibly causing a flood event.

7.5.5 Local Hazard Mitigation Plan Impacts

Ten of the hazard mitigation plans prepared for Idaho’s counties list cyber disruption as a hazard of concern, and two counties rank it as a high-impact hazard:

- Kootenai County
- Blaine County

An additional four counties identified cyber disruption as a medium-impact hazard.

Local plans do not provide data that can be used to summarize statewide exposure and loss potential of people and structures for the cyber threat hazard.

7.6 VULNERABILITY OF PEOPLE AND ASSETS

7.6.1 Total and Socially Vulnerable Populations

The entire population of the State of Idaho and all critical assets operated by a computer system are exposed to cyberattacks. Any areas where technological systems exist or are utilized are vulnerable to cyber disruption. This includes county and municipal buildings and infrastructure. All critical facilities operated by electricity and/or a computer system are vulnerable to cyberattacks. Cyberattacks may affect structures if any critical electronic systems suffer service disruption. For instance, a cyberattack may cripple the electronic system that controls a cooling system or pressure system within critical infrastructure. This may result in physical damage to the structure from components overheating, or an explosion if pressure relief systems are rendered inoperable. Such failures may not be immediately recognizable as cyberattacks, appearing at first to be attributable to mechanical malfunctions.

If an attack targets critical infrastructure (such as the power grid) impacting life support systems in a healthcare facility, the effects on life, health, and safety could be dire. Likewise, if a cyberattack affects the emergency response system, such as by rendering a 911 call center or the radio network inoperable, emergency services at the county and local level could be hindered, which may result in increased injury or loss of life during emergency situations. If a cyber-disruption impacts the power or utility grid, individuals with medical needs would be impacted the most. These populations are most vulnerable because many of the life-saving systems they rely on require power. Power redundancy is recommended for the essential and critical facilities that serve vulnerable populations.

Because the cyber threat hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction. Table 7-6 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 7-6. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

7.6.2 National Risk Index Ratings

The NRI does not include data on hazard events relating to cyber threats for the State of Idaho.

7.6.3 Vulnerability of Facilities, Infrastructure and Community Lifelines

All State-owned or -leased facilities are vulnerable to cyber threats. While the physical structures of the buildings are typically not at risk, information systems and data storage within those buildings are vulnerable. State computer networks may contain sensitive information and data, making them targets for cyber-attacks. Many assets are also essential to daily operations with computer networks to monitor and control functions throughout the State. A large-scale cyber incident could lead to significant economic losses to impacted State departments and agencies, businesses, and other industries. All State-owned or -leased assets are exposed to cyber threat. All community lifelines are vulnerable; and interruption of services may impact facilities that need to be in operation in response to a cyber-attack.

7.6.4 Potential Losses Due to a Hazard Event

Cyber-attacks are not likely to result in any losses associated with damage or impairment to State assets. All losses from this hazard would be associated with impacts on the economy, based on impaired operations due to affected information technology infrastructure.

Economic impacts can be far-reaching if a cyberattack is prolonged for a week or longer. Companies and government services can lose large sums of unrecoverable revenue from site downtime and possible compromise of sensitive confidential data. On average, small instances of data loss (fewer than 100 files) have cost businesses between $18,000 to $35,000, and large-scale incidents have been reported to cost as much as to $15.6 million (Rock 2023). Cyber-incidents could result in the theft or modification of important data—including personal, agency, or corporate information—and the sabotage of critical processes, including the provision of basic services by government or private-sector entities.

The State of Idaho will continue to be impacted by cyberattacks in the future. Computers and networks in organizations of all sizes and industries around the U.S. will continue to suffer intrusion attempts on a daily basis from viruses and malware that are passed through websites and emails. The nature of these attacks is projected to evolve in sophistication over time.

7.7 MITIGATING THE HAZARD

7.7.1 General Mitigation Approaches

Currently, all State executive branch agencies possess internal Information Technology (IT) departments that work and operate independently. House Bill 607 was passed in the 2018 legislative session: "To establish in the Office of the Governor the Office of Information Technology Services. This office will oversee and coordinate implementation of information technology services and cybersecurity policies within the State of Idaho. The existing information technology services functions currently performed by the State's Department of Administration would be transferred to this new office to facilitate consolidation and efficiency of IT service and cyber security efforts across all agencies." Specific to the cyber disruption hazard, the new agency will be charged:

- To oversee implementation of cybersecurity policies to foster risk and cybersecurity management telecommunications and decision-making with both internal and external organizational stakeholders.
- To coordinate and consult with state agencies and officials regarding information security needs.
- To coordinate with state agencies and officials on penetration tests and vulnerability scans of state technology systems to identify steps to mitigate identified risks.
- To coordinate with state agencies and officials to ensure that state agencies implement mandatory education and training of state employees and provide guidance on appropriate levels of training for various classifications of state employees.
- To coordinate with appropriate state agencies to create, coordinate, publish, routinely update, and market a statewide cybersecurity website as an information repository for intelligence sharing and cybersecurity best practices.
- To coordinate public and private entities to develop, create and promote statewide public outreach efforts to protect personal information and sensitive data from cyber threats.
- To promulgate and adopt reasonable rules for effecting the purposes of this act pursuant to the provisions of chapter 52, title 67, Idaho Code.

Idaho state law requires entities to notify affected individuals of a data breach as soon as possible, unless a "good-faith, reasonable, and prompt" investigation reveals that the personal information has not and will not be misused (Idaho Legislature 2022). This law also applies to businesses that maintain personal data for another entity.

Idaho Code 28-51-105, in the Commercial Transactions Code, states the following related to "disclosure of breach of security of computerized personal information by an agency, individual or a commercial entity" (Idaho Legislature 2022).

(1) A city, county or state agency, individual or a commercial entity that conducts business in Idaho and that owns or licenses computerized data that includes personal information about a resident of Idaho shall, when it becomes aware of a breach of the security of the system, conduct in good faith a reasonable and prompt investigation to determine the likelihood that personal information has been or will be misused. If the investigation determines that the misuse of information about an Idaho resident has occurred or is reasonably likely to occur, the agency, individual or the commercial entity shall give notice as soon as possible to the affected Idaho resident. Notice must be made in the most expedient time possible and without unreasonable delay, consistent with the legitimate needs of law enforcement and consistent with any measures necessary to determine the scope of the breach, to identify the individuals affected, and to restore the reasonable integrity of the computerized data system.

When an agency becomes aware of a breach of the security of the system, it shall, within twenty-four (24) hours of such discovery, notify the office of the Idaho attorney general. Nothing contained in this section relieves a state agency's responsibility to report a security breach to the office of the chief information officer within the department of administration, pursuant to the Idaho technology authority policies.

Any governmental employee who intentionally discloses personal information not subject to disclosure otherwise allowed by law is guilty of a misdemeanor and, upon conviction thereof, shall be punished by a fine of not more than two thousand dollars ($2,000), or by imprisonment in the county jail for a period of not more than one (1) year, or both.

(2) An agency, individual or a commercial entity that maintains computerized data that includes personal information that the agency, individual or the commercial entity does not own, or license shall give notice to and cooperate with the owner or licensee of the information of any breach of the security of the system immediately following discovery of a breach if misuse of personal information about an Idaho resident occurred or is reasonably likely to occur. Cooperation includes sharing with the owner or licensee information relevant to the breach.

(3) Notice required by this section may be delayed if a law enforcement agency advises the agency, individual or commercial entity that the notice will impede a criminal investigation. Notice required by this section must be made in good faith, without unreasonable delay and as soon as possible after the law enforcement agency advises the agency, individual or commercial entity that notification will no longer impede the investigation.

7.7.2 Catalog of Potential Mitigation Alternatives

Table 7-7 summarizes potential opportunities to mitigate the cyber threat hazard.

7.7.3 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the cyber threats hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects
- Action 2018-001: Create State Cyber Incident Response plan and integrate planning through TWG

Table 7-7. Potential Opportunities to Mitigate the Cyber Threat Hazard

Community-Scale	Organizational-Scale	Government-Scale
Manipulate the hazard: ➢ None **Reduce exposure and vulnerability:** ➢ Apply all available software updates and upgrade accordingly **Build local capacity:** ➢ None	**Manipulate the hazard:** ➢ None **Reduce exposure and vulnerability:** ➢ Apply all available software updates and upgrade accordingly ➢ Assign privileges based on risk exposure and as required to maintain operations. ➢ Develop system recovery plans ➢ Enforce signed software execution policies ➢ Detect, contain, and remove any malicious presence within the network ➢ Segregate critical networks and services ➢ Prioritize protection for accounts with elevated privileges or remote access and those used on high value assets **Build local capacity:** ➢ Actively manage systems and configurations ➢ Use hardware security features such as unified extensible firmware interface secure boot, trusted platform module, and hardware virtualization ➢ Leverage multi-sourced threat reputation services for files, DNS, URLs, IPs, and email addresses	**Manipulate the hazard:** ➢ None **Reduce exposure and vulnerability:** ➢ Apply all available software updates and upgrade accordingly ➢ Assign privileges based on risk exposure and as required to maintain operations. ➢ Develop system recover plans ➢ Enforce signed software execution policies ➢ Detect, contain, and remove any malicious presence within the network ➢ Segregate critical networks and services ➢ Prioritize protection for accounts with elevated privileges or remote access and those used on high value assets **Build local capacity:** ➢ Actively manage systems and configurations ➢ Use hardware security features such as unified extensible firmware interface secure boot, trusted platform module, and hardware virtualization ➢ Leverage multi-sourced threat reputation services for files, DNS, URLs, IPs, and email addresses ➢ Leverage the capabilities and capacities of the State fusion center

Nature-based opportunities:

➢ There are no identified nature-based solutions to mitigate the impacts from cyber threats.

Chapter 8. Drought

Drought

Drought originates from a deficiency of precipitation over an extended period of time, usually a season or more, resulting in a water shortage for some activity, group, or environmental sector. A condition perceived as drought in a given location is the result of a significant decrease in water supply relative to what is normal in that area.

CHANGES SINCE 2018

+0

Federal Disasters

+59

Significant Drought Events

STATE IMPACT RATING

High (33)

SOCIALLY VULNERABLE POPULATION

21.9%

Of Total Population

384,570

Persons

CLIMATE PROJECTIONS

While extremely unlikely, climate change impacts may act as an aggravating factor for civil disturbance

Climate impacts create the potential for the disadvantaged to riot or protest when the resources they need are unavailable

CANALS

8,278

Miles

COMMUNITY LIFELINES

3,238

Total

Drought may directly or indirectly impact these physical state assets.

State Bridges

State Buildings

State Dams

Miles of State Roads

8. DROUGHT

2023 SHMP Changes

- Drought events that occurred in the State of Idaho from January 1, 2018, through December 31, 2022, were researched for the 2023 SHMP.
- New and updated figures from federal and state agencies were incorporated.
- This section discusses how the drought hazard may impact socially vulnerable populations and community lifelines.
- National Risk Index ratings are included for the counties identified as most vulnerable to the drought hazard.

8.1 HAZARD DESCRIPTION

Drought is an expected phase in the climactic cycle of almost any geographical region, including the State of Idaho. Objective, quantitative definitions for drought exist, but most authorities agree that, because of the many factors contributing to it and because its onset and relief are slow and indistinct, none are entirely satisfactory. According to the National Drought Mitigation Center (NDMC), drought originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. A condition perceived as drought in a given location is the result of a significant decrease in water supply relative to what is normal in that area. To compare drought across regions with different climates, most drought indices rank current conditions based on their departure from what is statistically normal in that area.

8.1.1 Drought Indices

Several indices are used to measure how precipitation rates are different from historical norms. Government officials likely consult multiple indices before making decisions regarding declarations and the availability of funding. It is not uncommon for two different drought indices to vary widely in their depiction of current conditions, this is due to the fact that drought is experienced and defined in numerous ways by the various indices. For example, if some farmers depend on the diversion of stream flow to irrigate crops and other farmers depend only on rainfall to supply water to their crops, their experience of drought could be completely different. The irrigated farms in Idaho depend on longer term water supply conditions especially snowpack accumulation during the winter to maintain stream flows through the summer. The rain-fed farms are influenced much more by shortfalls in summer rainfall.

Palmer Drought Severity Index and Standardized Precipitation Index

The Palmer Drought Severity Index is widely used by the U.S. Department of Agriculture for assessing large areas where crop growth depends upon precipitation. But in the many irrigated areas of Idaho, the water supply is dependent on mountain snowpack. Water supply can therefore depend on conditions that are quite distant from the crop area, and it may be supplemented by reservoir storage. Thus, the Palmer Index values do not accurately reflect water supply for irrigated croplands in Idaho (Idaho Department of Water Resources 2001).

The Standardized Precipitation Index can identify emerging droughts farther in advance than the Palmer Index (National Drought Mitigation Center 2023).

Surface Water Supply Index

The surface water supply index (SWSI) is based on the probability distribution of the sum of reservoir carryover storage plus forecasted spring and summer stream flow. In basins without reservoirs, the natural stream flow provides the irrigation supply, and the index is computer generated using stream flow as the sole input (Idaho Department of Water Resources 2001). NRCS has worked with individual irrigation districts and water masters to determine the SWSI threshold where shortages of the irrigation agriculture water supply start to occur. SWSI is based on frequency analysis and is adapted to a particular river basin. Approximately 25 years of record are required for datasets in the SWSI.

U.S. Drought Monitor

The U.S. Drought Monitor (USDM), established in 1999, is a weekly map of drought conditions produced jointly by the National Oceanic and Atmospheric Administration, the U.S. Department of Agriculture, and the National Drought Mitigation Center at the University of Nebraska-Lincoln (U.S. Drought Monitor 2023). Local NRCS, IDWR, and NWS representatives comprise the Idaho Drought Committee and make recommendations to the U.S. Drought Monitor about drought conditions based on snowpack, runoff, and stream flows. The group provides bi-monthly recommendations during the spring and summer months when drought conditions are possible.

The USDM ranks drought conditions based on their departure from normal. A percentile represents the frequency at which an event is likely to occur. For example, if current conditions are in the 5th percentile, it means such conditions are only likely to be exceeded in dryness in 5 percent of years. Figure 8-1 shows the classification system used in the USDM.

Source: (U.S. Drought Monitor 2023)

Category	Description	Example Percentile Range for Most Indicators	Values for Standard Precipitation Index and Standardized Precipitation-Evapotranspiration Index
None	Normal or wet conditions	31 or above	-0.49 or above
D0	Abnormally Dry	21 to 30	-0.5 to -0.79
D1	Moderate Drought	11 to 20.99	-0.8 to -1.29
D2	Severe Drought	6 to 10.99	-1.3 to -1.59
D3	Extreme Drought	3 to 5.99	-1.6 to -1.99
D4	Exceptional Drought	0 to 2.99	-2.0 or less

Figure 8-1. Classifications Used in U.S. Drought Monitor

Drought Impact Reporter

The National Drought Mitigation Center developed the Drought Impact Reporter in response to the need for a national drought impact database for the United States. The Drought Impact Reporter maps the effects of drought, based on reports from media, observers and other sources. Impacts are an observable loss or change at a specific place and time due to drought. The Drought Impact Reporter is not a comprehensive set of data, but is useful in tracking drought, if submissions are adequate, to aid in better understanding and response to drought impacts. The main emphasis is for drought planning.

8.1.2 Types of Drought Measurement

There are five generally accepted, basic approaches to measuring drought: meteorological, hydrological, agricultural, socioeconomic, and ecological (National Integrated Drought Information System n.d.):

Meteorological Drought

Meteorological drought is usually an expression of precipitation's decline from statistically normal conditions over some period of time. As such, these definitions are not usually region-specific, and are based on a thorough understanding of regional climatology. A definition of drought developed in one part of the world may not apply to another, given the wide range of meteorological definitions. Meteorological measurements are the first indicators of drought. Common meteorological drought indices include the Standardized Precipitation Index (SPI) and Evaporative Demand Drought Index (EDDI). Both are assessed at different timescales. The 12-month time scale is roughly equivalent to water supply conditions that impact irrigated agriculture. Figure 8-2 and Figure 8-3 compare the indices for June 2023 at a 12-month timescale. Note that EDDI, which is developed around evaporative demand (or higher than normal temperatures conditions) indicates much more severe drought than SPI, which only monitors precipitation. Figure 8-4 shows SPI at the shorter 6-month time scale.

Source (NOAA 2023)

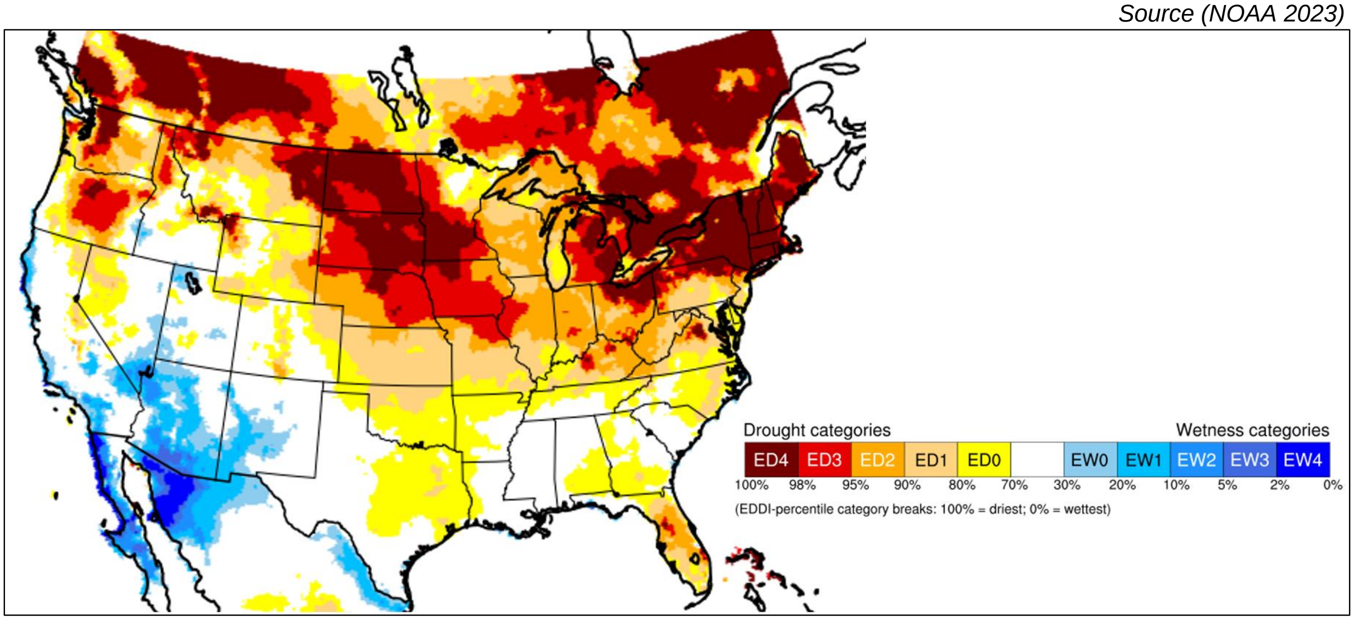


Figure 8-2. June 2023 12-Month Evaporative Demand Drought Index Map of the U.S.

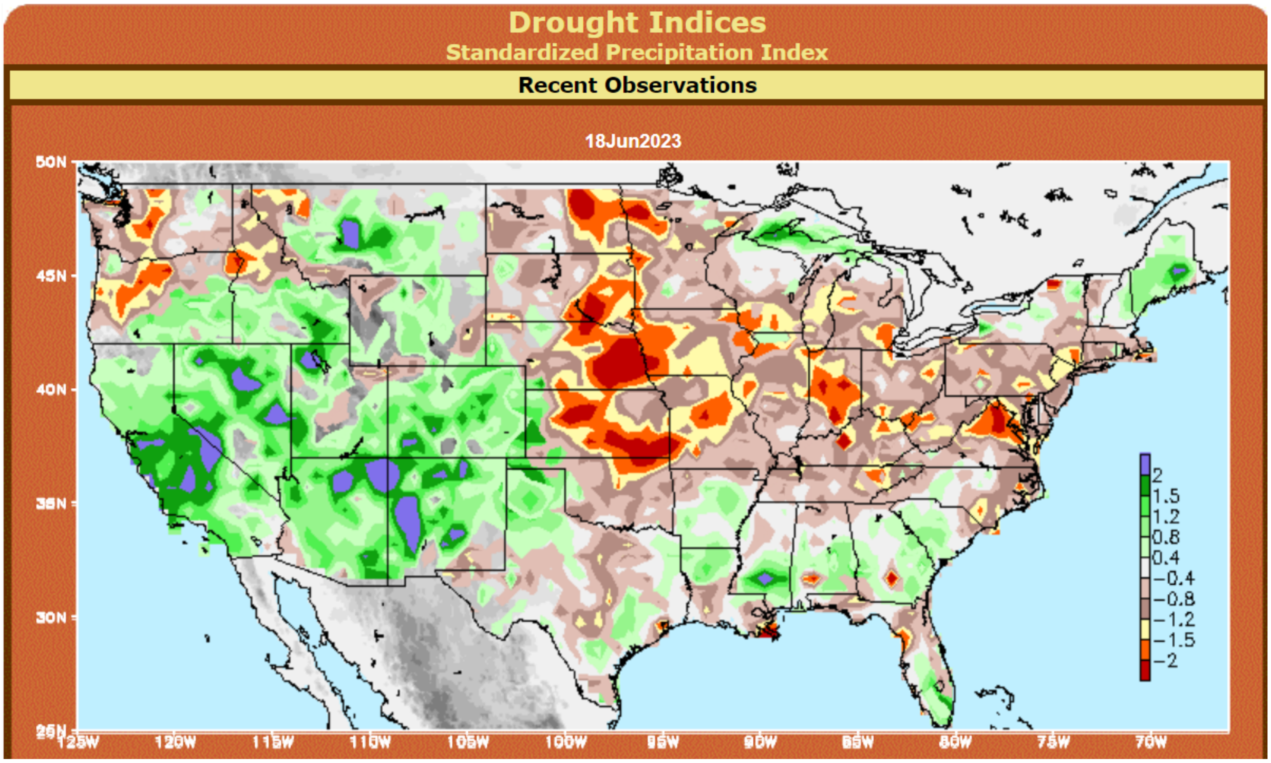


Figure 8-3. 2023 NOAA SPI—12 Month

Source: (NOAA 2023)

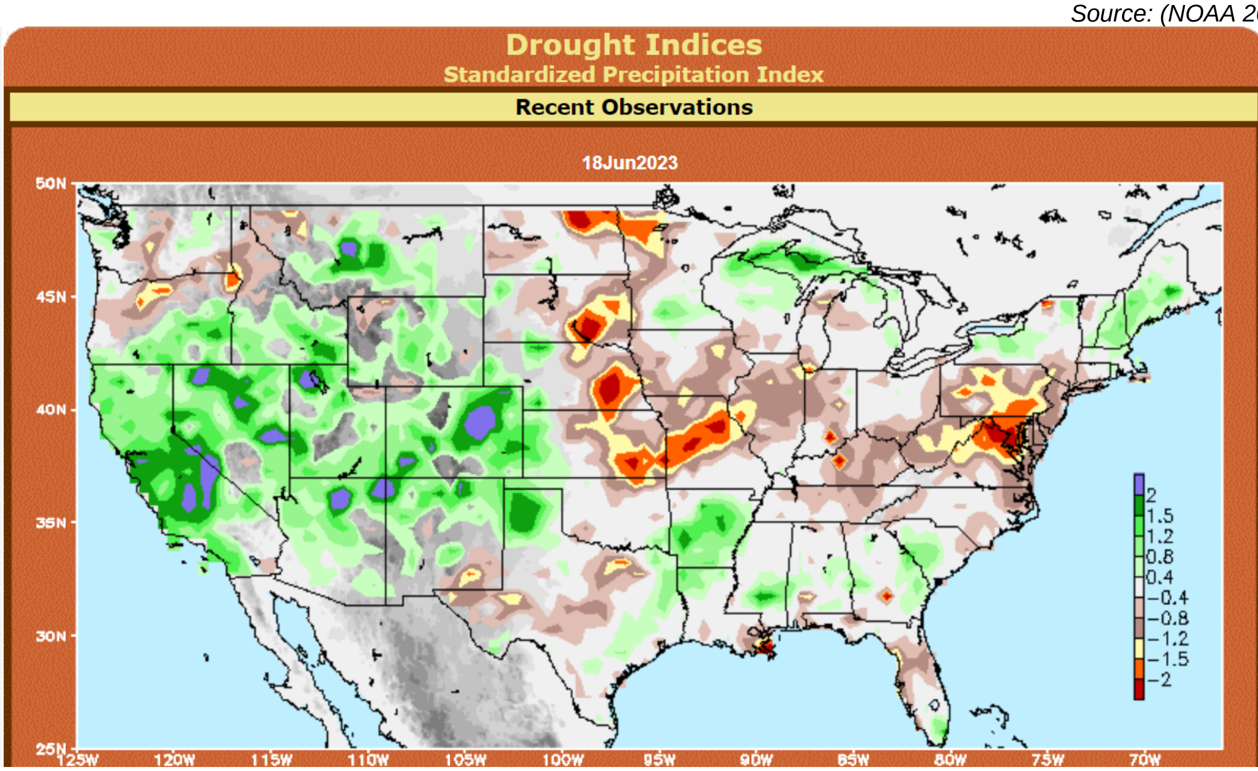


Figure 8-4. 2023 NOAA SPI 6-Month

Agricultural Drought

Agricultural drought occurs when there isn't enough soil moisture to meet the needs of a particular crop at a particular time. Agricultural drought happens after meteorological drought but before hydrological drought. Agriculture is usually one of the first and largest economic sectors to be affected by drought.

The Palmer Drought Severity Index and other soil moisture drought indices are good representatives of drought in non-irrigated agricultural regions. Once soil moisture falls below a certain level plant growth and yield will suffer. If soil moisture is depleted beyond the wilting point, the plant will die. Since the Palmer Drought Severity Index does not account for irrigation, the index has limited function in the irrigated agricultural regions. Storage capacity in reservoirs and stream flow are not a part of this index, therefore the severity of the drought in agricultural regions along the Snake River Plain are less severe than indicated.

Hydrological Drought

Hydrological drought refers to deficiencies in surface and subsurface water supplies. It is measured as stream flow and as lake, reservoir, and groundwater levels. There is a time lag between lack of rain and less water in streams, rivers, lakes, and reservoirs, so hydrological measurements are not the earliest indicators of drought. When precipitation is reduced or deficient over an extended period of time, this shortage will be reflected in declining surface and subsurface water levels. It should be noted that water supply is not only controlled by precipitation (amount, frequency, and intensity), but also by other factors including evaporation (which is increased by higher-than-normal heat and winds), transpiration, and human use.

The main indicators of hydrologic drought used in Idaho are based on the USGS stream gage network (departure from normal, see Figure 8-5), the NRCS snow water equivalent maps (see Figure 8-6) and the NRCS Surface Water Supply Index (SWSI).

Source: (USGS 2023)

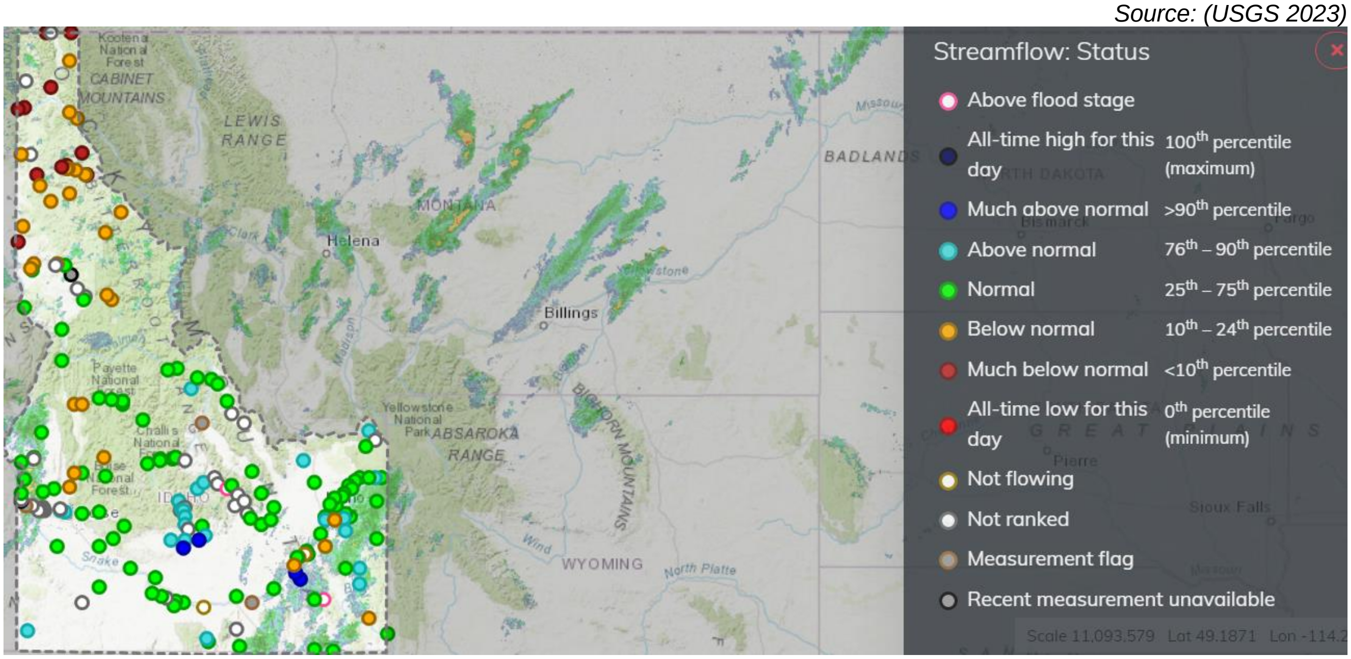


Figure 8-5. 2023 USGS Real-Time Stream flow Monitoring

Source: (Idaho Department of Water Resources 2023)

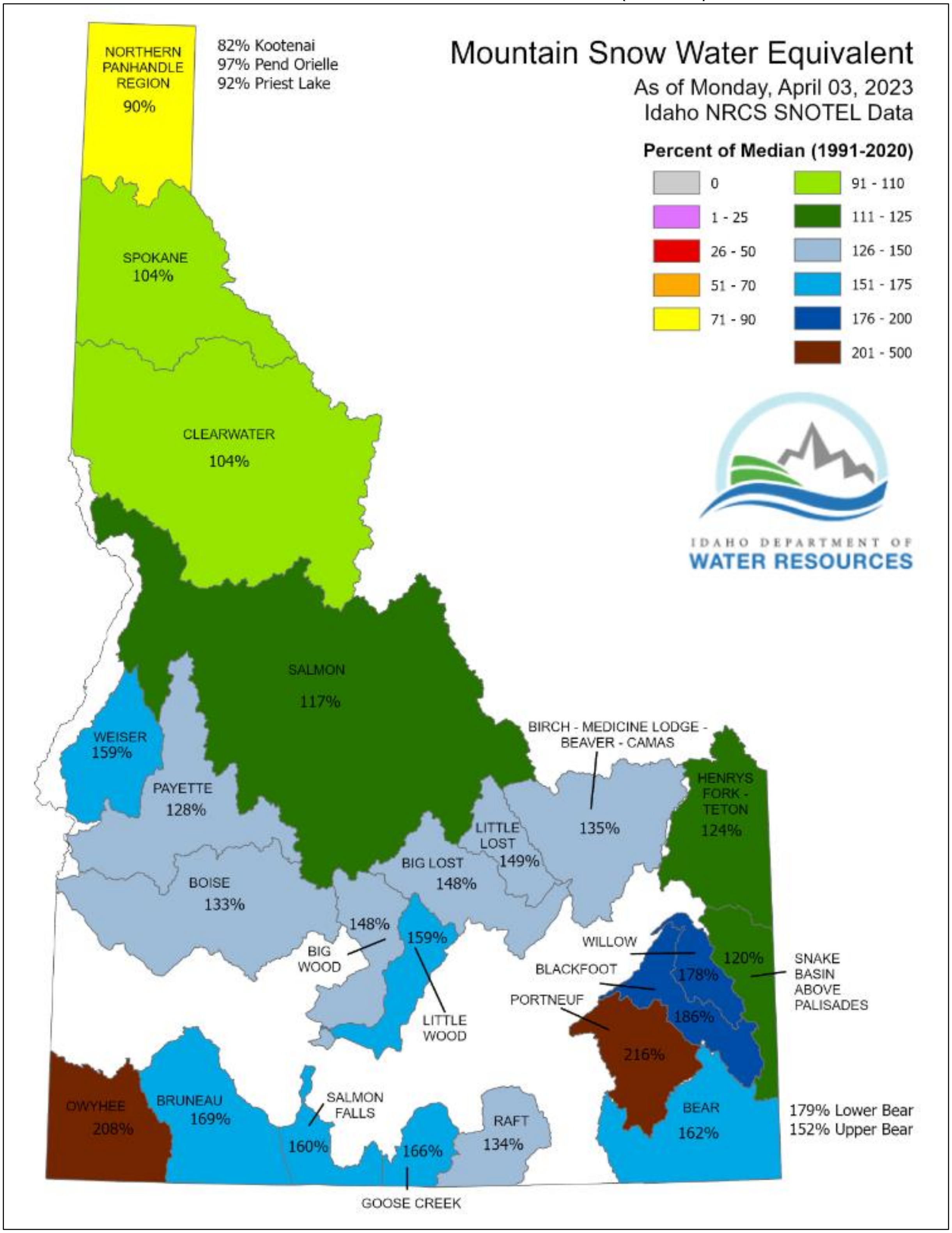


Figure 8-6. Idaho Snow-Water Equivalent for April 2023

Socioeconomic Drought

Socioeconomic drought occurs when physical water shortage starts to affect people, individually and collectively. Or, in more abstract terms, most socioeconomic definitions of drought associate it with the supply and demand of an economic good. It should be noted that water supply is not only controlled by precipitation (amount, frequency, and intensity), but also by other factors including evaporation (which is increased by higher-than-normal heat and winds), transpiration, and human use.

Drought in Idaho is generally associated with a sustained period of low winter snowfall. This results from a temporary, yet significant, change in the large-scale weather patterns in the western U.S. The limited snowpacks result in reduced stream flows and groundwater recharge. Idaho's system of reservoirs and natural storage can buffer the effects of minor events over a few years, but a series of dry winters (or an especially pronounced single low snowfall event) will result in a shortage of available water. Extended periods of above-average temperatures during the spring and summer can increase the impact of low snowpacks.

Ecological Drought

Ecological drought occurs when natural ecosystems are affected by drought. Plants, animals, and ecological systems have adapted to most drought processes, but the severity of a drought may surpass their capacity to adapt and recover. Drought impacts on ecological systems in Idaho may include the following:

- Reduced plant growth over a season or permanently
- Local species reduction or extinction
- Landscape-level transitions, such as forest conversion to non-forested vegetation, which may in turn reduce water retention in soils
- Changed flow regimes in freshwater ecosystems, increased water temperature, and deteriorated water quality, which may result in fish kills, reduced opportunities for recreation, and decreased hydropower production.

8.2 HAZARD LOCATION

Drought can have the broadest effect of all of Idaho's hazards, sometimes affecting all regions of the State simultaneously. Although deaths and injuries are rarely direct results, drought can have significant impacts on the economic, environmental, and social well-being of the State (also see "Environmental Impacts" later in this section). However, the impacts of drought vary widely by region. In northern and central Idaho where ecosystem health, recreation, and forest management dominate water resource management the impacts of drought include poor ski conditions, dry domestic wells, loss of recreational access (Hells Canyon boat ramps and Priest Lake) to lakes and reservoirs, fish kills due to warm stream temperatures, forest and aquatic ecosystem degradation and increased wildfire risk. The largest drought impacts are to agricultural producers, agricultural industries, and aquaculture. While the water supply infrastructure in southern Idaho is among the most robust in the nation with significant crop failure being a low risk, water supply shortages have resulted in significant legal actions and uncertainty that have had significant societal and economic impacts on both the agricultural industries and the businesses and communities built around agriculture. Throughout Idaho drought can have significant impacts on tourism, rangeland management, dryland agriculture, and hydropower production.

Significant variability in Idaho's climate predisposes it to periodic drought. Some areas of the State have a greater potential for drought than others due to limited water resource infrastructure or ecosystem vulnerability. From a water supply vulnerability perspective, the NRCS ranks basins in Idaho by linking the SWSI index to a minimum adequate agricultural supply threshold. Table 8-1 lists the Idaho basins from greatest to least drought vulnerability; the lower the SWSI value the less vulnerable the basin is to water shortages. SWSI is probably the most widely used drought index by surface-water irrigators on the Snake River Plain. Based on water rights and farm locations, most irrigators know which SWSI applies to their water supply. Most irrigators who divert from the mainstream of the Snake River above Milner Dam rely on the Snake (or Heise) SWSI.

Table 8-1. Idaho Surface Water Supply Index (SWSI), May 1, 2023

Basin or Region	SWSI Value [a]	Most Recent Year With Similar SWSI Value	Agricultural Water Supply Shortage May Occur When SWSI is Less Than
Clearwater	-1.5	2013	n/a
Spokane	-0.8	2004	n/a
Snake (Heise)	0.5	2012	- 1.1
Salmon Falls	0.8	2020	- 0.6
Owyhee	0.8	2000	- 0.9
Salmon	1.0	2013	n/a
Payette	1.0	2019	n/a
Teton	1.0	2014	- 3.9
Bear River	1.0	2021	- 3.9
Big Wood	1.3	2018	0.6
Boise	1.5	2012	- 2.7
Weiser	1.8	2010	n/a
Henrys Fork	1.8	2017	- 2.9
Oakley	1.8	2007	0.4
Big Wood above Hailey	2.3	1993	n/a
Little Lost	2.3	1999	1.6
Bruneau	2.5	1997	n/a
Camas Creek nr Blaine	3.0	2006	n/a
Big Lost	3.0	2006	0.1
Salmon Falls above Jackpot	3.3	1998	n/a
Little Wood	4.0	1995	- 1.6

a. See Figure 8-7 for explanation of SWSI values.
Source: (USDA 2023)

Source: (USDA 2023)

```
 -4     -3     -2     -1      0      1      2      3      4
  |------|------|------|------|------|------|------|------|
 99%    87%    75%    63%    50%    37%    25%    13%    1%
 ----------------------------------------------------------
 |Much   | Below      |      Near Normal     | Above  | Much  |
 |Below  | Normal     |      Water Supply    | Normal | Above |
 ----------------------------------------------------------
```

Figure 8-7. SWSI Scale, % Chance of Exceedance, and Interpretation

8.3 PREVIOUS HAZARD OCCURRENCES

The longest drought in Idaho lasted for 11 years (1929-41), despite greater than average stream flows in 1932 and 1938. In northern Idaho, the drought was interrupted by greater than average stream flows from 1932 until 1937, but then resumed until 1946. Southern and central Idaho experienced a mild drought from 1959 to 1961. During the early 1960s, several areas in the State also experienced water shortages. Of all the statewide drought emergency declarations, only one was also a federal disaster—1977, the worst single year on record.

Figure 8-8 represents historical drought occurrences since 1895. The green lines indicate above normal precipitation, while the yellow lines represent below average precipitation. Figure 8-9 shows the percent of Idaho in one of the five U.S. Drought Monitor categories since 2020.

Source: (West Wide Drought Tracker 2023)

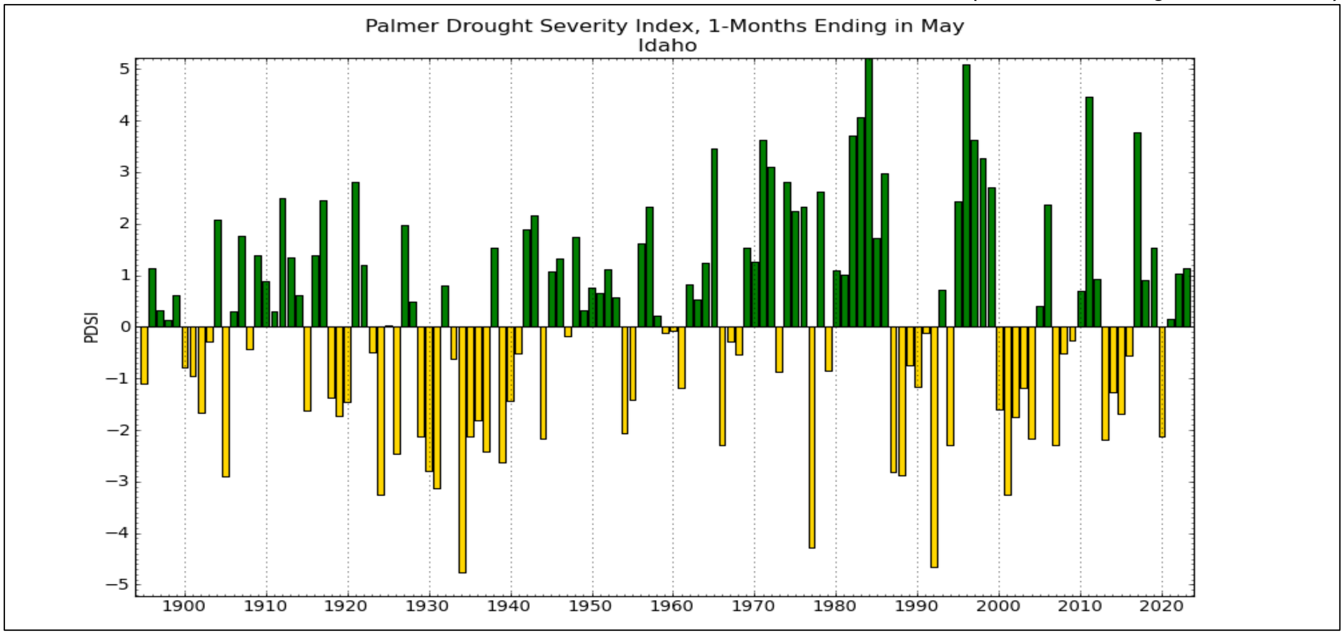


Figure 8-8. Historical Palmer Drought Severity Index in Idaho, 1895 to May 2023

Source: (U.S. Drought Monitor 2023)

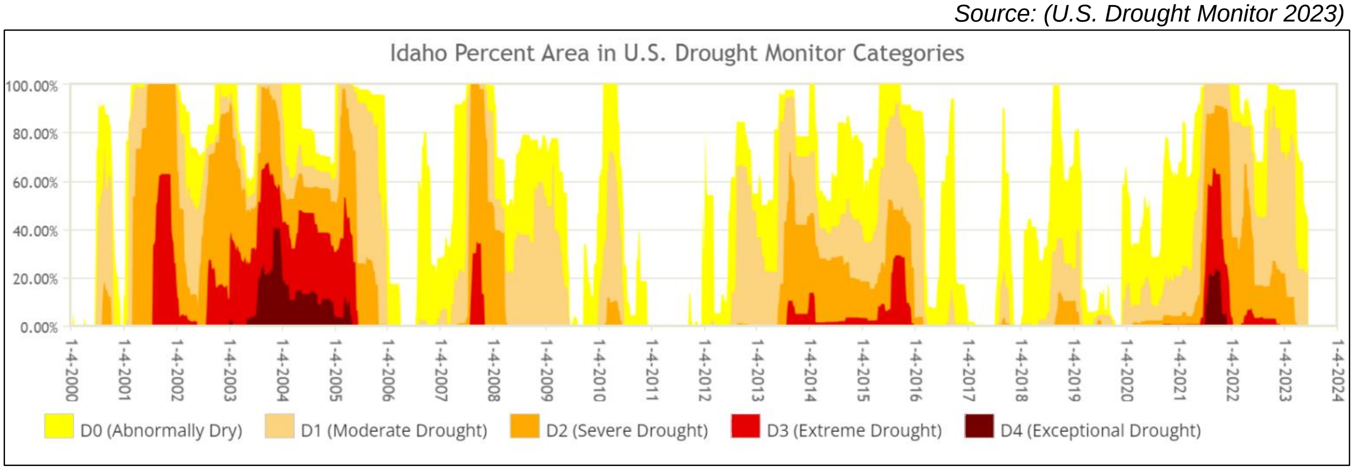


Figure 8-9. Historical Drought Monitor Ratings for Idaho, 2020 to June 2023

Idaho has many aquifers that host the state's groundwater reservoirs. Figure 8-10 shows the top 11 aquifers in the state. The water level in aquifers varies depending on the amount of precipitation recharge seeps into the ground. In drought times with little precipitation for several weeks, months, or years, the availability of groundwater and aquifer water declines. This groundwater in Idaho provides over 92 percent of the State's drinking water supply from public and municipal wells and over six trillion gallons of groundwater are applied annually to almost four million irrigated acres of land (Idaho Geological Survey n.d.). Thus, aquifers and the State's ground-water reservoirs are vulnerable to drought conditions.

Source: (Idaho State University n.d.)

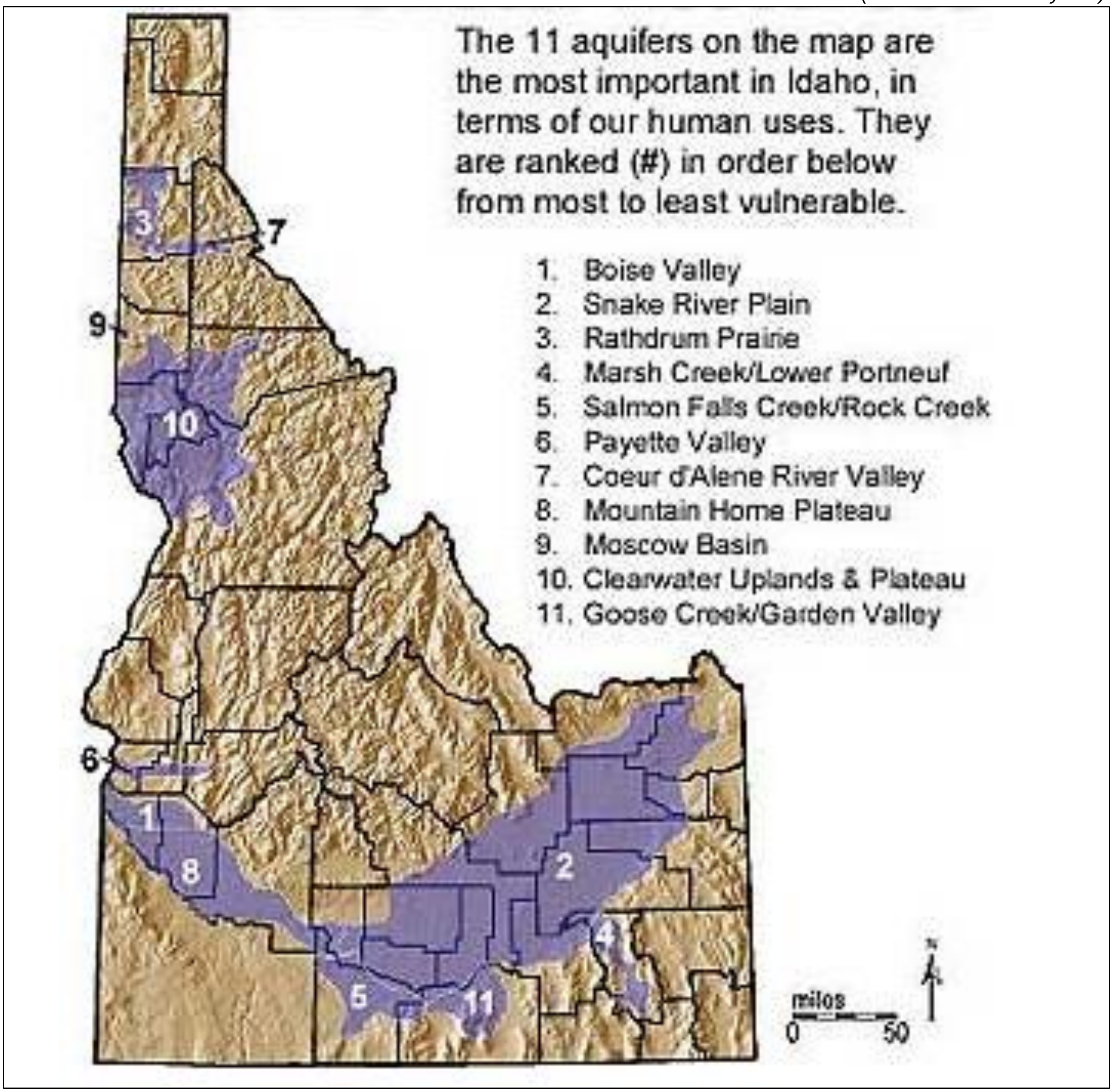


Figure 8-10. Idaho Aquifers

8.3.1 Disaster and Emergency Declarations

The following disaster declarations or emergency proclamations related to drought events have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 1 drought event, classified as drought
- **IDWR/State Drought Declarations, 2018 – 2022:** 22 drought events
- **USDA Agricultural Disaster Declarations, 2018 – 2022**: 68 drought events

Known drought events that have impacted the State of Idaho and resulted in federal disaster or emergency declarations between 2018 and 2022 are identified in Table 8-2. Appendix D lists events prior to 2018. Figure 8-11 and Figure 8-12 show how the State's counties have been affected by these declarations.

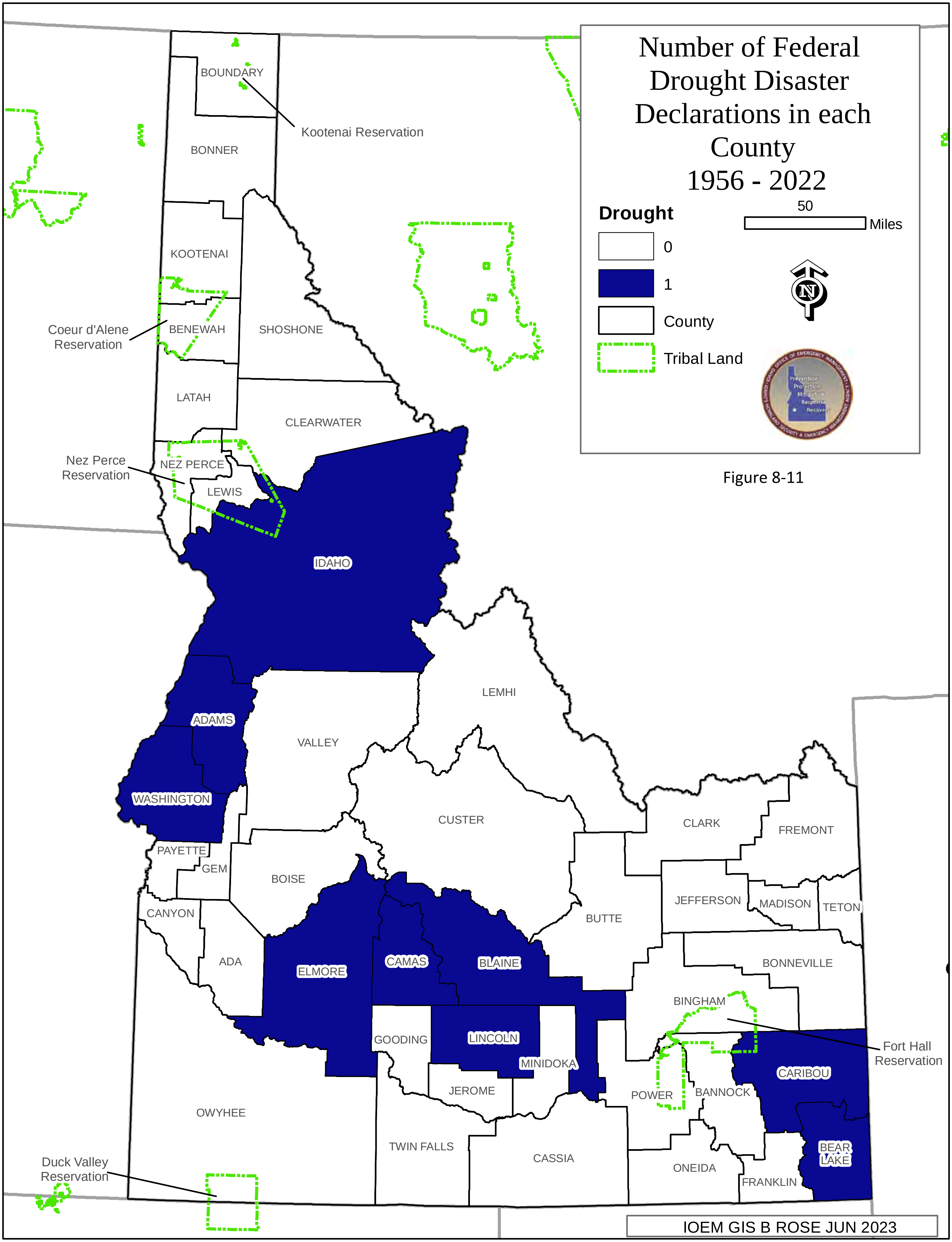
Table 8-2. IDWR/State and USDA Drought Declarations (2018 to 2022)

Year	Approval or Declaration Date	USDA Designation Number	Counties Affected
2022	6/27/2022	S5222	Bear Lake County; Franklin County
2022	6/13/2022	S5215	Boise County; Bonneville County; Gooding County; Jerome County; Lincoln County; Power County; Ada County; Bannock County; Bingham County; Blaine County; Blaine County; Camas County; Caribou County; Cassia County; Custer County; Elmore County; Gem County; Jefferson County; Madison County; Minidoka County; Oneida County; Teton County; Twin Falls County; Valley County
2022	6/3/2022	S5213	Fremont County
2022	5/31/2022	S5205	Jefferson County; Minidoka County; Bingham County; Blaine County; Bonneville County; Butte County; Cassia County; Clark County; Fremont County; Jerome County; Lincoln County; Madison County
2022	5/13/2022	S1592	Bear Lake County; Teton County; Bonneville County; Caribou County; Franklin County; Fremont County; Madison County
2022	5/6/2022	S1586	Adams County; Gem County; Idaho County; Valley County; Washington County
2022	5/2/2022	S5178; S5181; S5184	Blaine County; Butte County; Caribou County; Custer County; Fremont County; Bannock County; Bear Lake County; Bingham County; Boise County; Bonneville County; Camas County; Cassia County; Clark County; Elmore County; Franklin County; Jefferson County; Lemhi County; Lincoln County; Madison County; Minidoka County; Power County; Teton County; Valley County
2022	4/28/2022	N/A	IDWR declared a drought for all counties south of the Salmon River
2022	4/22/2022	S5170; S5175; S5176; S5177	Bannock County; Twin Falls County; Bingham County; Caribou County; Cassia County; Elmore County; Franklin County; Gooding County; Jerome County; Oneida County; Owyhee County; Power County; Nez Perce County; Bear Lake County; Bonneville County
2022	4/18/2022	S5159; S5165; S5167	Franklin County; Oneida County; Bannock County; Bear Lake County; Caribou County; Cassia County; Power County; Adams County; Idaho County; Nez Perce County
2022	4/8/2022	S5149; S5155; S5157	Ada County; Canyon County; Cassia County; Clark County; Elmore County; Idaho County; Owyhee County; Payette County; Washington County; Adams County; Blaine County; Boise County; Butte County; Camas County; Clearwater County; Custer County; Fremont County; Gem County; Gooding County; Jefferson County; Jerome County; Lemhi County; Lewis County; Minidoka County; Nez Perce County; Oneida County; Power County; Twin Falls County; Valley County

Year	Approval or Declaration Date	USDA Designation Number	Counties Affected
2021	9/10/2021	S5074	Ada County; Teton County; Boise County; Bonneville County; Canyon County; Elmore County; Fremont County; Gem County; Madison County; Owyhee County
2021	9/3/2021	S5071	Clearwater County; Idaho County
2021	8/27/2021	S5064	Canyon County; Payette County; Washington County; Ada County; Adams County; Gem County; Owyhee County
2021	8/25/2021	S5055	Bannock County; Bingham County; Blaine County; Bonneville County; Butte County; Caribou County; Jefferson County; Power County
2021	8/18/2021	S5044	Fremont County; Clark County; Jefferson County; Madison County; Teton County
2021	8/11/2021	S5029	Idaho County; Lemhi County
2021	8/4/2021	N/A	IDWR declared a drought for Adams County
2021	7/29/2021	N/A	IDWR declared a drought for Bingham County
2021	7/20/2021	N/A	IDWR declared a drought for Bonneville, Cassia, and Twin Falls Counties
2021	7/26/2021	S5019; S5022	Jerome County; Cassia County; Gooding County; Lincoln County; Minidoka County; Twin Falls County; Bonner County; Boundary County; Clearwater County; Shoshone County
2021	7/16/2021	S5014	Elmore County; Gooding County; Shoshone County; Ada County; Benewah County; Blaine County; Boise County; Bonner County; Camas County; Clearwater County; Custer County; Jerome County; Kootenai County; Latah County; Lincoln County; Owyhee County; Twin Falls County
2021	7/12/2021	S5005; S5007	Bear Lake County; Jefferson County; Minidoka County; Power County; Bannock County; Bingham County; Blaine County; Bonneville County; Butte County; Caribou County; Cassia County; Clark County; Franklin County; Fremont County; Jerome County; Lincoln County; Madison County; Oneida County
2021	7/6/2021	S5000; S5002; S5004	Bonner County; Boundary County; Cassia County; Clearwater County; Idaho County; Lewis County; Adams County; Blaine County; Jerome County; Kootenai County; Latah County; Lemhi County; Minidoka County; Nez Perce County; Oneida County: Power County; Shoshone County; Twin Falls County; Valley County
2021	7/1/2021	N/A	IDWR declared a drought for Bear Lake, Elmore, Lemhi, and Teton and Counties
2021	6/25/2021	S4992; S4993; S4997; S4998	Caribou County; Clark County; Lemhi County; Owyhee County; Twin Falls County; Valley County; Ada County; Adams County; Bannock County; Bear Lake County; Bingham County; Boise County: Bonneville County; Butte County: Canyon County; Cassia County; Custer County; Elmore County: Franklin County; Fremont County; Gem County; Gooding County; Idaho County; Jefferson County; Jerome County; Teton County
2021	6/22/2021	S4985; S4987; S4989	Canyon County; Owyhee County; Payette County; Washington County; Benewah County; Bonner County; Kootenai County; Latah County; Nez Perce County; Bear Lake County; Bonneville County; Caribou County
2021	6/21/2021	N/A	IDWR declared a drought for Valley County
2021	6/14/2021	N/A	IDWR declared a drought for Madison County
2021	6/9/2021	N/A	IDWR declared a drought for Blaine, Lincoln, Gooding, and Jefferson Counties
2021	5/25/2021	N/A	IDWR declared a drought for Clark County
2021	5/21/2021	N/A	IDWR declared a drought for Fremont County
2021	5/19/2021	N/A	IDWR declared a drought for Camas County

Year	Approval or Declaration Date	USDA Designation Number	Counties Affected
2021	5/15/2021	S4981	Adams County; Bannock County; Benewah County; Boise County: Bonneville County; Butte County; Camas County; Franklin County; Gem County; Kootenai County; Latah County; Lincoln County; Nez Perce County; Oneida County; Ada County; Bear Lake County; Bingham County; Blaine County; Bonner County; Canyon County; Caribou County; Cassia County; Clark County; Clearwater County; Custer County; Elmore County; Gooding County; Idaho County; Jefferson County; Jerome County; Lemhi County; Lewis County; Madison County; Minidoka County; Payette County; Power County; Shoshone County; Teton County; Valley County; Washington County
2021	5/5/2021	S4959	Blaine County; Custer County; Bingham County; Boise County; Butte County; Camas County; Cassia County; Elmore County; Lemhi County; Lincoln County; Minidoka County; Power County; Valley County
2021	4/21/2021	N/A	IDWR declared a drought for Butte and Custer Counties
2021	4/19/2021	S4941; S4943	Adams County; Washington County; Bear Lake County; Franklin County; Oneida County
2021	3/5/2021	S4921; S4925	Cassia County; Owyhee County; Twin Falls County; Oneida County
2020	12/17/2020	S4891	Bear Lake County; Bonneville County; Caribou County
2020	11/3/2020	S4860	Adams County; Washington County
2020	10/15/2020	S4833	Canyon County; Owyhee County; Payette County; Washington County
2020	9/29/2020	N/A	IDWR declared a drought for Camas County
2020	9/4/2020	N/A	IDWR declared a drought for Elmore County
2020	8/28/2020	S4745	Bear Lake County; Cassia County; Franklin County; Oneida County
2020	8/26/2020	S4765	Owyhee County
2020	7/2/2020	S4713	Bingham County; Blaine County; Boise County; Butte County; Camas County; Cassia County; Custer County; Elmore County; Gooding County; Lemhi County; Lincoln County; Minidoka County; Power County; Valley County
2020	6/25/2020	S4706	Cassia County; Owyhee County; Twin Falls County
2020	6/16/2020	S4698	Bingham County; Blaine County; Butte County; Clark County; Custer County; Jefferson County; Lemhi County
2020	6/5/2020	N/A	IDWR declared a drought for Blaine County
2020	5/26/2020	N/A	IDWR declared a drought for Lincoln County
2020	4/29/2020	N/A	IDWR declared a drought for Butte and Custer Counties
2019	11/4/2019	S4569	Cassia County; Oneida County
2019	5/30/2019	S4482	Ada County; Adams County; Canyon County; Elmore County; Gem County; Owyhee County; Payette County; Twin Falls County; Washington County
2019	3/22/2019	S4470	Cassia County; Owyhee County; Twin Falls County
2018	11/7/2018	S4427; S4433; S4434	Ada County; Canyon County: Gem County; Owyhee County; Payette County; Washington County; Cassia County; Twin Falls County
2018	10/17/2018	S4416	Adams County; Gem County; Payette County; Washington County
2018	10/4/2018	S4411	Bonner County; Boundary Cunty; Shoshone County
2018	10/2/2018	S4409	Bear Lake; Cassia County; Franklin County; Oneida County
2018	8/1/2018	S4359	Adams County; Canyon County; Owyhee County; Payette County; Washington County

Sources: USDA 2023; IDWR 2023



Number of Federal Drought Disaster Declarations in each County 1956 - 2022
Drought
0
1
County
Tribal Land
50
Miles
N
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
ADAMS
VALLEY
LEMHI
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
Fort Hall Reservation
MINIDOKA
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023

Figure 8-11

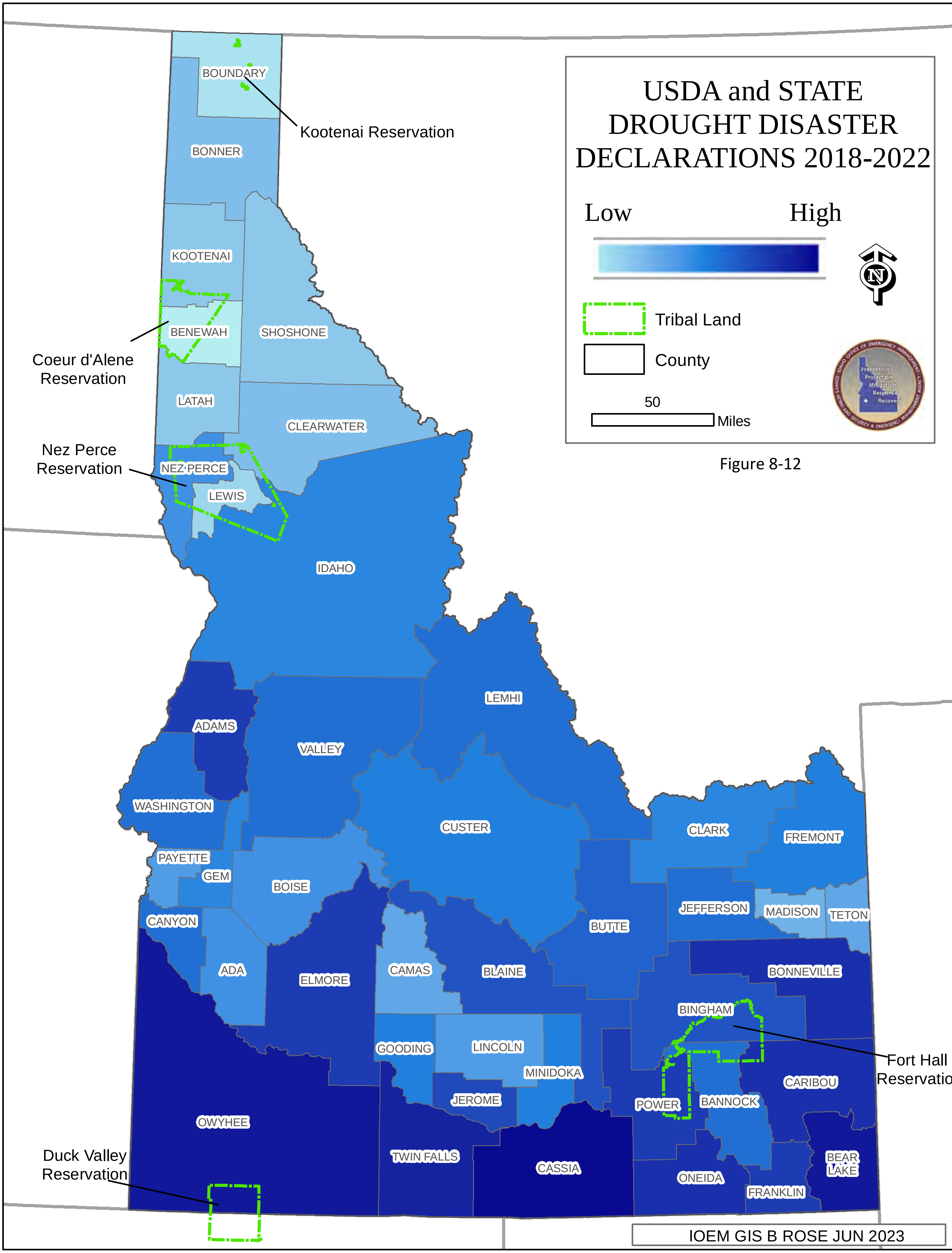

USDA and STATE DROUGHT DISASTER DECLARATIONS 2018-2022
Low
High
Tribal Land
County
50
Miles
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
BENEWAH
Coeur d'Alene Reservation
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
Fort Hall Reservation
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023

Figure 8-12

8.3.2 Event History

Many sources provided historical information regarding previous occurrences and losses associated with drought events throughout the State of Idaho. For the 2023 SHMP update, drought events were summarized between January 1, 2018, and December 31, 2022, using data from FEMA, the USDA and IDWR. With drought documentation for Idaho being so extensive, not all sources have been identified or researched. Therefore, Table 8-2 may not include all events that have occurred in the State over the past five years.

8.4 PROBABILITY OF FUTURE HAZARD EVENTS

Despite its long agricultural history, Idaho is correctly classified as an arid area with periods of drought. Although defined as "abnormally" dry weather, drought is a normal part of Idaho's climate and can be expected to reoccur periodically. Since the 1920s, and possibly before, the State has dealt with drought conditions for at least one year each decade and usually for more prolonged periods.

8.4.1 Overall Probability

Based on the historical record of state drought declarations, where county declarations occurred in 16 of the 23 years between 2000 and 2022, Idaho can expect a drought of varied severity to occur at least every two years in the future with the possibility of an increase in frequency due to the impacts from climate change.

8.4.2 Climate Change Impacts

Providing projections of future climate change for a specific region is challenging. Shorter term projections are more closely tied to existing trends, making longer term projections even more challenging. The further out a prediction reaches the more subject to changing dynamics it becomes. Climate change is already impacting water resources, and resource managers have observed the following:

- Historical hydrologic patterns can no longer be solely relied upon to forecast the water future
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply and quality, flood management, and ecosystem functions
- Extreme climatic events will become more frequent, necessitating improvement in flood protection, drought preparedness, and emergency response

The climate of Idaho is changing. Over the past 100 years, most of the State has warmed one to two degrees (°F). In the coming years, it is predicted that streams will be warmer, populations of several fish species will decline, wildfires will become more common, deserts may expand, and water may be less available for irrigation (Environmental Protection Agency 2016).

In addition to a warming climate, Idaho has been impacted by El Niño and La Niña. El Niño is a weather pattern that is characterized by unusually warm ocean temperatures along the equator in the Pacific Ocean and has important consequences for weather and climate over the United States. El Niño in general acts to tilt the odds toward wetter and cooler than average conditions across much of the south, and towards drier and warmer conditions in many of the northern regions. El Niño typically brings above normal temperatures and less precipitation to Idaho, impacting the state's water supply (NOAA n.d.). Drier weather can also lead to an increase in the number of wildfires (NOAA 2022).

Research at the University of Idaho sought to identify indicators of climate change in the State of Idaho. Indicators provide useful information about what is occurring in complex systems. The following information is extracted and summarized from the website providing information on their findings that affect drought:

- **Temperature and Growing Season**—By analyzing climate data across Idaho, scientists found that the growing season in Idaho has increased by an average of 13 days since early in the 20th century. On average, the last spring frost occurs eight days earlier and the first fall frost is five days later.
- **Snowpack**—Scientists in Idaho have been measuring snowpack levels in the state since 1937. These annual measurements provide clear evidence that snowpack has been declining in the state over the past 50 years.
- **Stream flow**—Measurements of stream flow across the state indicate that spring runoff is occurring earlier and that the total annual volume of flow has decreased. These observations are based on records from 1950 to 2005.
- **Stream Temperature**—Average stream temperatures in the state may be increasing. Annual average temperatures in the North Clearwater River have increased by just over 1ºF over a 36-year period.
- **Salmon Migration**—Sockeye salmon migration has been occurring earlier in the spring. Thirty years' worth of data suggests that salmon are returning to freshwater streams about one day earlier per decade.

Idaho experiences a large seasonal temperature difference, with cold winters and warm summers. The wide ranges in elevations seen throughout the state also contribute to differing precipitation levels of snow and rain. Low elevations in southern Idaho are shielded by mountains which reduce the amount of moisture that is found in that area and resulting in lower precipitation levels. Higher elevations of northern and central Idaho can receive up to 4 times the amount of precipitation than the south. Precipitation generally falls during the cool season in November to May, and Idaho is reliant on mountain snowpack for water storage.

The temperatures in Idaho have risen almost 2 degrees °F since the beginning of the 20th century, causing less precipitation to fall as snow and more to fall as rain. Higher spring temperatures also result in earlier melting of snowpacks. This reduction in snowpack can have a negative impact for the summer months by increasing the state's susceptibility to drought (NCEI 2022).

Climate modeling indicates that there will be a change in the maximum consecutive number of days that the state will go without precipitation. This change in the length of dry periods between precipitation events is an indicator of projected drought conditions. Figure 8-13 shows the change in the number of modeled historical maximum consecutive days without precipitation compared to the mid-century RCP4.5 projection. The RCP4.5 scenario represents a projected peak of greenhouse gas emissions around 2040, then a decline assuming that implemented policies achieve the goal of limiting emissions.

8.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

Source: (Climate Risk and Resilience Portal 2023)

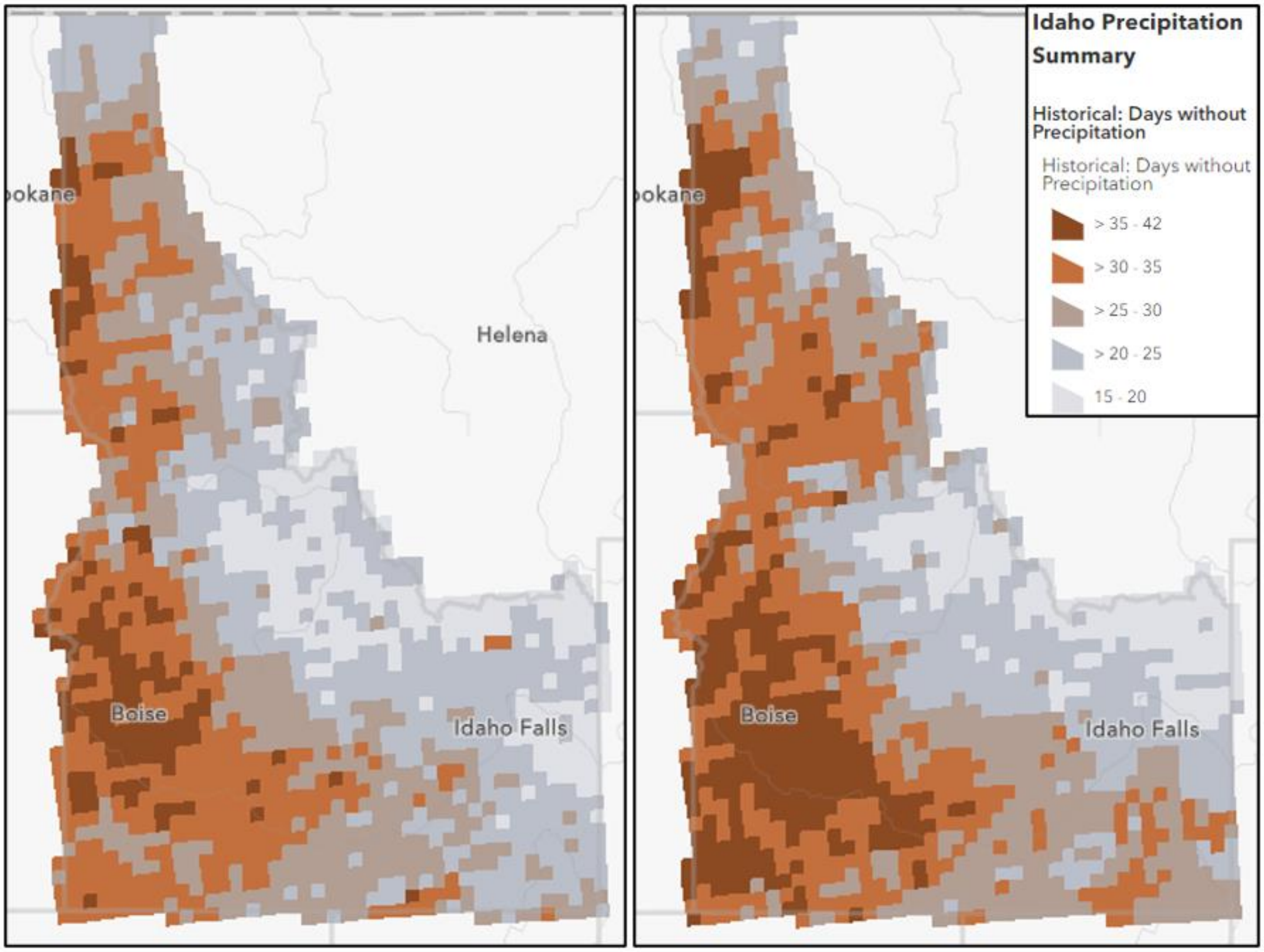


Figure 8-13. Days Without Precipitation – Historical Model (left), RCP4.5 Mid-Century Projection of Increased Days Without Precipitation (right)

The U.S. EPA’s Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change’s (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029.

Drought affects the entire State, but particularly southeastern Idaho and the upper portions of the Snake River Plain. Larger populations will increase stress on water supplies, which will be exacerbated during a drought. Another impact to consider is how drought could negatively affect the State’s agricultural economy. Drought can also lead to reduced quality of living conditions and poverty. Mitigating the effects of drought is a significant consideration in planning for future water use.

Drought conditions and development are interrelated—as water is drawn down from increased rates of use, drought can occur more readily than from lack of precipitation alone. A substantial impact from drought in Idaho is stress on the utilities that rely on hydroelectric power, which could result in increases in power costs to citizens. Planning for power sources is an important part of development. Idaho Power controls 17 hydroelectric facilities along the Snake River and its tributaries. The Hells Canyon Complex consists of the Brownlee, Oxbow, and Hells Canyon dams and their facilities, and annually generates 30 percent of the total energy generated (Idaho Power). Droughts can result in decreases in water flow, which will effectively reduce total amount of energy that can be produced and induce stress upon the energy grid.

8.5 IMPACT ANALYSIS

8.5.1 Severity

The severity of a drought depends on the degree of moisture deficiency, the duration, and the size and location of the affected area. The longer the duration of the drought and the larger the area impacted, the more severe the potential impacts. Droughts are not usually associated with direct impacts on people or property, but they can have significant impacts on agriculture, which can impact people indirectly. When measuring the severity of droughts, analysts typically look at economic impacts on a planning area.

The Idaho Drought Plan 2001 lists potential economic, environmental, and social impacts from drought. A drought can result in farmers not being able to plant crops or the loss from crop production, loss from dairy and livestock production. This results in loss of work for farm workers and those in related food processing jobs. Other water-dependent industries are commonly forced to shut down all or a portion of their facilities, resulting in further layoffs. A drought can spell disaster for recreational companies that use water (e.g., swimming pools, water parks, and river rafting companies) and for landscape and nursery businesses because people will not invest in new plants if water is not available to sustain them. Also, people could pay more for water if utilities increase their rates.

Another entity that feels the severity of drought is the junior water rights holders. With the senior and junior water rights holders, it can be an extreme difference in the amount of water allocated to them in drought times. This example pertains and occurs with all senior and junior water right holders throughout the State who vary between private individuals (such as farmers and ranchers) to organizations that are water right holders. If there is not enough water available to satisfy all of the water rights, then the oldest, or senior, water rights are satisfied first (Idaho Department of Water Resources 2022).

Drought Impact Reporter

The Drought Impact Reporter contains information on impacts from droughts that affected Idaho between January 1, 2018, and December 31, 2022. Forty-six of the 48 impacts were obtained from media reports (National Drought Mitigation Center 2023). Some impacts spanned more than one category as listed below:

- Water Supply and Quality—35 impacts
- Agriculture—33 impacts
- Relief, Response and Restrictions—31 impacts
- Plants and Wildlife—19 impacts

- Tourism and Recreation—6 impacts
- Fire—3 impacts
- Business and Industry; Society and Public Health—1 impact each

Figure 8-14 is a statewide map showing the 48 drought-related impacts by county over the past five years. As shown, the counties of Blaine, Lincoln, Camas, and Gooding have the highest reported drought impacts. Looking at the entire state, the south-central counties have historically had the most drought-related impacts in Idaho.

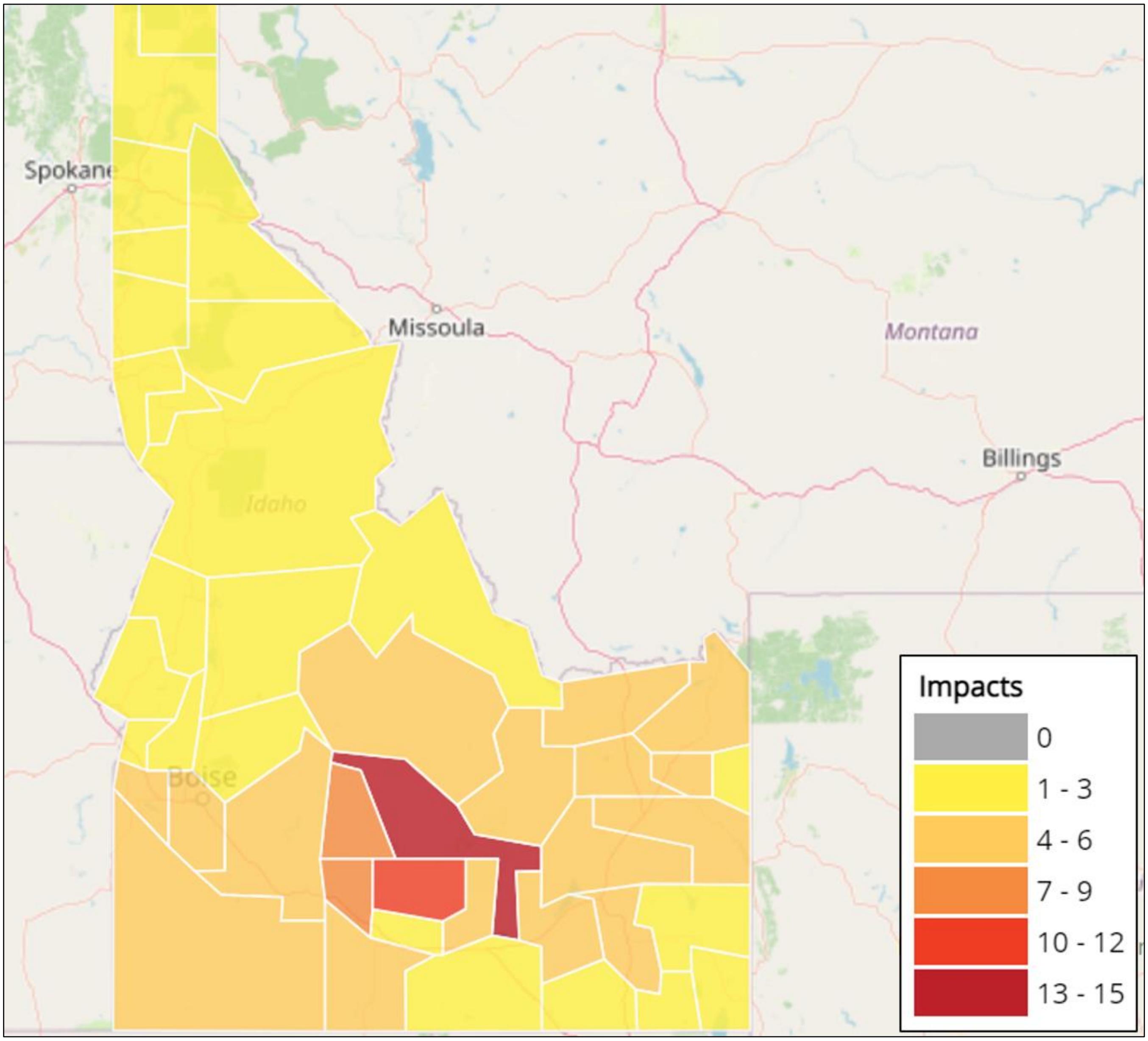


Figure 8-14. Idaho Drought Impacts from Drought Impacts Reporter

Surface Water Supply Index

SWSI is primarily an irrigated agricultural drought index that was developed to track mountain snowpack for agricultural users in downstream locations. For example, the Heise SWSI is used by most irrigators who divert from the Snake River within the Eastern Snake River Plain. SWSI was not designed to represent drought conditions in mountain environments but might be applied to mountainous regions for other risk.

In Idaho, SWSI values range from –4.1 (extremely dry) to +4.1 (extremely wet), with zero representing average water supply conditions. When the SWSI value is less than –1.2, water supply shortages may be expected.

8.5.2 Warning Time

Droughts are climatic patterns that occur over long periods of time. Only generalized warning can take place due to the numerous variables that scientists have not pieced together well enough to make accurate and precise predictions.

8.5.3 Cascading Impacts

Droughts can have a large influence on the risks posed by other hazards faced by the State. Locations impacted by drought can have an increased susceptibility to flash flooding, as soils impacted by drought cannot absorb water as efficiently.

The secondary hazard most commonly associated with drought is wildfire. A prolonged lack of precipitation dries out vegetation, reducing fuel greenness, snowpack and moisture, thus increasing availability to burn. Extensive drought increases the potential for large wildfires. Drought can also reduce tree health and survival. In dense forest areas, these impacts allow bark beetles to thrive. While the bark beetle is a natural disturbance agent and outbreaks are not uncommon, in recent years, unprecedented outbreaks have been occurring across western North America (Journal of Forestry 2022).

Wildfires can damage or destroy power lines causing outages and reduce water pressure. Reduced freshwater availability will complicate firefighting efforts in urban and suburban areas where chemical retardants and backfires, standard wildfire tactics, are not suitable. The risk of lightning initiating a wildfire event is also increased during dry times.

In addition, drought has impacted Idaho fisheries and anglers all over the state. For example, in 2001, the watersheds received less than 60 percent of normal snowpack and a number of fishing waters were negatively impacted. The Idaho Department of Fish and Game had to modify fishery management by not stocking streams that would likely go dry; allow anglers to harvest more fish before they perished from lack of water on certain streams and reservoirs; and inaccessibility to boat ramps as water levels recede in some waters (Idaho Fish and Game 2001).

Idaho’s reliance on hydropower for irrigation and air conditioning will be impacted by drought conditions. Limited water availability will constrain certain hydropower plant operations and will reduce the resilience of the entire power grid. Low snowpack years will complicate and exacerbate complex water rights agreements thereby affecting river flows and hydropower reservoirs replenishment. Extended periods of drought could also lead to reductions in food and water availability, a situation that would increase the chance of civil disturbances, from a human-caused hazard viewpoint.

8.5.4 Environmental Impacts

The impacts to vegetation and wildlife can include death from dehydration and the spread of invasive species or disease because of stressed conditions. Invasive species pose problems for the ecosystems in which they are introduced. Like many hazards that affect Idaho's environment, invasive species have both direct and indirect impacts. If introduced to Idaho, quagga mussels, for example, would collapse the microscopic food supply that is vital to the existing fisheries. Further, the mussels attach to water intake pipes and screens used for drinking water and industrial plants. Not only would these pests cause environmental problems, but they would also cause secondary economic impacts to communities.

Drought could jeopardize the existence of rare species and/or vegetative communities. Both the state salmon population and sage grouse population/habitat are greatly threatened by drought. Idaho Power Company and others involved in Salmon recovery are seeing reduced returns that they believe correlate with the extreme drought that affected northern Idaho, Oregon, and Washington in 2015. The native species themselves are adapted to drought, but invasive species, increased fire potential, and other hazards exacerbated by drought could definitely have severe impacts on the health and recovery of endangered species. Invasive species can sometimes take advantage of drought conditions to displace native species.

Environmental impacts are also likely at the interface of the human and natural world. The loss of crops or livestock due to drought can have far-reaching economic effects (detailed more under "Vulnerability"). Wind and water erosion can alter the visual landscape, and dust can damage property. Water-based recreational resources are affected by drought conditions. Indirect impacts from drought arise from wildfire, which may have additional effects on the landscape and sensitive resources such as historic or archeological sites; wildfire is discussed in another section of this Plan.

8.5.5 Local Hazard Mitigation Plan Impacts

Twenty-one of the hazard mitigation plans prepared for Idaho's counties list drought as a hazard of concern, and seven counties rank it as a high-impact hazard:

- Bingham
- Blaine
- Camas
- Clark
- Jerome
- Oneida
- Twin Falls

An additional nine counties identified drought as a medium-impact hazard.

Table 8-3 summarizes potential losses to vulnerable structures due to drought, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 8-3. Drought Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

Estimated Total Population Exposed	1,425,220
Estimated Number of Structures at Risk	None identified
Estimated Value of Structures at Risk	$214,192,878,678

8.6 VULNERABILITY OF PEOPLE AND ASSETS

8.6.1 Total and Socially Vulnerable Populations

Directly or indirectly, the entire population of the State of Idaho is vulnerable to drought events. Drought can affect people's health and safety as well as other impacts. Health problems related to low water flows, poor water quality, or dust could arise. Additional possible impacts include recreational risks; air quality reduction; diminished living conditions related to compromised, local hydroelectric power sources; compromised food and nutrition; and increased incidence of illness and disease. How and to what degree drought affects the state's population does vary.

Because the drought hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction. Table 8-4 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 8-4. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

Overall, there are primarily three drought impact sectors that are critical to the health and welfare of the state's population in terms of social, economic, and environmental aspects. These impacts include: the Water Supply Sector; the Agriculture and Commerce Sector; and the Environment, Public Health, and Safety Sector. These sectors are not mutually exclusive, and as such, impacts in one sector may result in secondary or cumulative impacts in other sectors. The following describes these sectors:

Water Supply Sector

The water supply sector includes public and private urban and rural drinking water systems and agriculture water systems. There are several agencies involved in water management for the State of Idaho. The Statewide Groundwater Quality Monitoring program is tasked with monitoring groundwater levels and quality, to ensure the overall safety for use and identify potential quality problems before they arise. The State of Idaho also relies upon snowpacks which hold and release much of the state's freshwater back into the stream systems each year. Decrease in snowpack leads to a decrease in overall freshwater supplies added annually to the streams as meltwater.

Agricultural and Commerce Sector

The Agriculture and Commerce Sector experiences severe negative drought impacts due to dependence upon both surface water, groundwater, and precipitation. Rainfall shortage-induced impacts are often exacerbated by the limits placed on groundwater pumping during drought periods. A persistent shortage of rainfall and the resultant lack of soil moisture can result in reduced ground cover and lower agricultural yields. Reduced ground cover and pasture can result in the reduction of livestock herd sizes and is also associated with an increased rate of erosion. Drought impacts to the agriculture sector are highly dependent on whether the crops are irrigated since unirrigated pasture, or other fields are most vulnerable to droughts. Irrigated agricultural areas become more vulnerable when water supplies become more threatened.

Environment, Public Health, and Safety Sector

The Environment, Public Health, and Safety Sector mainly focuses on the increased incidence of wildfires due to drought conditions. Wildfires are described in Chapter 17. However, there are environmental impacts of drought conditions that are also an important component of this sector. Stressed water supplies exacerbate already vulnerable ecosystems and can result in impacts to wildlife habitats, water quality, land quality, and biodiversity and can contribute to erosion.

8.6.2 National Risk Index Ratings

According to the NRI, 17 of the state's 44 counties have NRI identified drought risk rated as relatively low. The risk rankings for the highest ranked counties are shown in Table 8-5.

Table 8-5. Drought

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Bingham County	$204,096	Relatively Moderate	Relatively Moderate	1.26	$266,140	79.03
Minidoka County	$173,519	Relatively High	Very Low	1.39	$225,683	77.02
Power County	$136,485	Relatively High	Very Low	1.52	$207,744	75.88
Cassia County	$170,302	Relatively Moderate	Relatively Low	1.14	$199,966	75.08
Twin Falls County	$110,821	Relatively Moderate	Relatively Moderate	1.21	$133,657	70.09
Jefferson County	$105,768	Very Low	Relatively Moderate	1.15	$131,712	69.90
Jerome County	$88,914	Relatively High	Very Low	1.32	$128,347	69.48
Canyon County	$67,920	Relatively High	Relatively Moderate	1.18	$80,607	62.51
Gooding County	$56,063	Very High	Very Low	1.23	$70,076	60.86

8.6.3 Vulnerability of Facilities, Infrastructure and Community Lifelines

For drought, the entire State is exposed and vulnerable. Drought events generally do not impact buildings. No structures are anticipated to be directly affected by a drought, and all are expected to be operational during a drought event. However, water-dependent community lifelines and critical facilities may be impacted. Under extreme drought conditions, where local water supplies are depleted and water utilities are unable to supply adequate water pressure, fire stations and healthcare facilities could be impacted. Healthcare facilities, including hospitals, clinics, and nursing homes, rely on water for heating, cooling, and ventilation systems as well as for equipment sterilization, sanitation, water-based patient treatments, fire suppression, and hazardous materials decontamination.

8.6.4 Potential Losses Due to a Hazard Event

Drought can impact the economy, including loss of business function and damage and loss of inventory. Economic impacts may include the following:

- Losses from crop, livestock, timber, and aquaculture production and associated businesses

- Losses from recreation providers and associated businesses
- Increased costs resulting from increased energy demand and from shortages caused by reduced hydroelectric generation capacity
- Revenue losses for federal, state, and local governments from a reduced tax base and for financial institutions from defaults and postponed payments
- Long-term loss of economic growth and development

Even though the majority of businesses will still be operational, they may be impacted aesthetically. These aesthetic impacts are most significant to the recreation and tourism industry. Industries that rely on water for business may be impacted the hardest (e.g., agriculture/aquaculture). The State determined the loss value of state-owned and state-leased potable water facilities, inclusive of pump house/stations, water tanks, water treatment facilities, and well houses, using FEMA's BCA tool is $114 per person per day. Table 8-6 reports potential losses to critical facilities and community lifelines from drought for up to one week.

Table 8-6. Potential Losses to State-Owned/ Leased Potable Water Facilities from Drought

Number of state owned/leased potable water facilities	Value of potable water service (per person per day)	1 Day	2 Days	3 Days	4 Days	5 Days	6 Days	1 Week
135	$114	$15,390	$30,780	$46,170	$61,560	$76,950	$92,340	$107,730

8.7 MITIGATING THE HAZARD

8.7.1 Mitigation Rationale

As detailed above, drought is a major natural hazard in the State with respect to its economic impact and land area extent. With respect to the number of deaths, drought is not a major hazard. Mitigation for this hazard focuses on sustainable practices and ecosystem management that are integral to a cohesive strategy to protect critical infrastructure and key resources. The National Drought Mitigation Center http://drought.unl.edu/ provides drought education materials on prevention through water conservation, water recycling, protecting water supplies, and storage. Because the Idaho Drought Plan falls under the Idaho Department of Water Resources (IDWR), reliance is given to that agency for both response and mitigation planning. Drought tends to be a hazard that develops slowly and can last anywhere from weeks to multiple years. Every drought poses its own unique set of challenges and impacts.

Policy Framework

Mitigation of drought is established, generally, in the Idaho Disaster Preparedness Act of 1975 as amended (Idaho State Code Chapter 10, Title 46) and, more specifically, in the Governor's Executive Order, 2000-04. The Executive Order also assigns the following responsibilities:

- Department of Agriculture—Primary support agency for mitigation activities pertaining to agricultural issues.
- Department of Commerce—Primary support agency for mitigation activities pertaining to economic injury/losses that result from disasters.
- Department of Water Resources—Develops drought mitigation programs in concert with IOEM.

The Idaho Drought Plan provides historical information, guidance, and a framework for managing water shortage situations in Idaho. The plan describes technical issues and documents activities accomplished during recent water shortages. It is a resource and educational tool to be used during future water shortages.

The Idaho State Water Plan, prepared by the Idaho Water Resource Board with assistance from IDWR, establishes statewide water policy and component plans for individual basins or other geographic designations. These plans may be reviewed and re-evaluated on a periodic basis and may address drought issues if warranted.

The issue of whether to formally declare a drought statewide is both controversial and important. Most public agencies approach formal declaration with caution. Formal designations may not bring additional Federal support or minimize economic impacts and they can have a serious economic impact on tourism, agriculture, financing and many other related industries. Unless a water shortage situation is of extreme magnitude, the safest approach is to let county and local governments determine their own response. There is an existing and effective network of public agencies, water system managers, and experts who can assess their particular needs. If necessary, additional technical assistance can be provided by the Idaho Water Supply Committee.

Existing Mitigation Planning Programs

A robust drought mitigation strategy typically includes:

- Maintaining monitoring programs
- Developing institutions or organizations to communication the hazard to both the public and to governmental entities responsible for drought mitigation and declarations
- Reducing the vulnerability of society to the risks of drought by improving resource sustainability

The State of Idaho began implementation of the statewide Drought Plan in 2001 and is continuing to improve its drought mitigation strategies in all three aspects. The first section of this chapter describes existing and developing drought monitoring programs and institutions that the state of Idaho utilizes to disseminate drought information at regional, state, and national levels. The remaining sections describe projects to reduce societal risk to drought through increasing the sustainability of the resources.

Drought Monitoring

The Idaho Drought Plan, last revised in 2001, established the Idaho Water Supply Committee. The Idaho Water Supply Committee is a state-based organization led by the Idaho Department of Water Resources (IDWR) which meets on a monthly basis from January through April. The Idaho Water Supply Committee is composed of state, federal, and private entities. The meetings are open to the public and are a forum for experts across the state to collaborate and discuss water supply concerns. Topics of discussion include the mountain snowpack, stream flow forecasts, projected irrigation supply, reservoir operations, and weather forecasts.

A sub-committee of the Idaho Water Supply Committee coordinates drought categorization with the United States Drought Monitor (USDM). The sub-committee includes representatives from the National Weather Service, the National Resource Conservation Service, USGS, Bureau of Reclamation, canal companies, irrigation districts, and IDWR. The sub-committee discusses localized drought conditions and submits recommendations to the USDM on the drought classification across the state. The drought classification defined by the USDM triggers an automatic Secretarial Disaster Declaration by the United States Department of Agriculture when the USDM drought classification is a “Severe Drought” for eight consecutive weeks (USDA 2017). The Secretarial Drought designation allows farmers to apply for emergency loans and other emergency assistance programs. At the regional level, IDWR has begun coordinating with the National Integrated Drought Information System to develop a Drought Early-Warning System for the Pacific Northwest (National Integrated Drought Information System n.d.).

State Government

Drought-related resource management is intimately intertwined with general water supply management. Consequently, drought mitigation is to a large degree an extension of normal water management procedures.

The Idaho Department of Water Resources serves as the lead State agency in coordinating drought-related activities. IDWR has two major responsibilities related to drought:

- Administration of all water rights.
- Inventory, monitoring, and planning of the State's water resources.

IDWR analyzes water supply data early in the water year to determine the probability of shortages. If a drought becomes likely, the interagency Water Supply Committee, chaired by IDWR, coordinates the State's drought-related activities. Idaho's Water Supply Committee was created as an action element of the Idaho Drought Plan first prepared in 1990, when Idaho was in a period of sustained drought. The committee, composed of State, Federal, and private agency representatives, performs a number of tasks:

- Compiles drought-related data
- Coordinates State agency actions
- Provides public information
- Promotes water and energy conservation

At the end of the 1992 water year, IDWR offered financial assistance in the form of one-time cost-share grants to assist regional entities in establishing winter cloud seeding projects. Projects were initiated in the Upper Snake, Bear, and Boise River basins during the winter of 1992-93. Subsequently, the legislature gave IDWR authority to coordinate weather modification projects designed to increase water supplies. The legislature also approved funding for IDWR to provide financial assistance to local or regional entities that are funding winter-season weather modification programs.

The Water Quality Division of the Department of Environmental Quality has oversight for the safety of drinking water, groundwater protection, non-point and point source pollution, and municipal facilities construction. By maintaining the public water supply in good quality, shortages are mitigated. The Division contracts with the seven health districts for oversight of small community and non-community drinking water systems, addressing source protection and safe delivery for more than 2,080 community and non-community water systems statewide. The Division also administers State and Federal construction grants programs intended to provide financial assistance to Idaho communities needing new wastewater treatment systems or improvements to existing systems in order to protect public health and comply with water quality standards.

In 2010, IDWR partnered with the NDMC and the USDA Risk Management Agency (RMA) to sponsor a workshop on the Vegetation Drought Response Index and the more experimental product, Vegetation Outlook. The workshop helped inform the agricultural community about new means to prevent losses from drought.

Federal Government

The Bureau of Reclamation modifies its resource management and technical functions to reduce the adverse impacts of periodic water shortages. Drought mitigation is possible through four mechanisms:

- Project Sizing – Projects are designed to limit the impact of water shortages. Centralized facilities with overly large, complex distribution systems are vulnerable to hazards on several levels. Consideration should be given to emerging sustainable water technologies geared towards smaller-scale, distributed infrastructure systems that integrate decentralized systems with traditional, centralized conveyance and treatment networks.
- Water Conservation and Efficiency Improvement – Conservation and efficiency measures are incorporated into new projects and retrofitted into older projects; assistance is available to other agencies.
- Technical Assistance in Water Conservation Planning – Technical assistance is provided for the development and implementation of water conservation plans.
- Project (Dam) Operations – Projects are operated, to the extent feasible and permitted by law, to use the water resource in an efficient manner.

The NRCS monitors and reports the snowpack in the western United States. This information is used to make volumetric stream flow forecasts for major rivers in the State (in conjunction with the NWS). This early warning allows for water-use adjustments and possible avoidance of a drought situation. The Water Resources Division of the USGS also collects, interprets, and disseminates hydrologic information.

NOAA, with the U.S. Department of Agriculture and the NDMC in Lincoln, Nebraska, issues a weekly drought assessment called the U.S. Drought Monitor and a monthly assessment called the U.S. Seasonal Drought Outlook.

The Idaho branch of USDA’s NRCS is working with IDWR and IOEM on drought monitoring and proactively predicting drought. It is also working with the USDA’s Risk Management Agency to improve crop insurance participation in order to reduce costs.

8.7.2 General Mitigation Approaches

Hazard Management

Hazard management of drought involves the long-term reduction of the probable gap between water supply and demand. Supply can be addressed through the development of storage and delivery capacity (construction of reservoirs and associated facilities), improved operation of existing facilities, and weather modification. Demand can be addressed through various forms of conservation.

Weather modification is designed to increase the amounts of moisture realized from storms. Any weather modification program with the goal of increasing basin-wide winter snowpacks should be a multiyear commitment. Analyses indicate that a 5- to 20-percent seasonal precipitation increase can be achieved for climatic situations such as those in Idaho.

Water conservation efforts may include:

- Administering conjunctive use of surface and groundwater
- Implementing water quality management and wastewater reuse

- Reducing water conveyance losses
- Reducing consumptive use by changing the type of water application system, incremental pricing for water use, lower-flow appliances, capturing and reusing rainwater for non-potable uses
- Restore ecosystems as a means to reduce risk and protect natural resources, i.e., returning fire to the ecosystem so that forest health is restored and aquifer replenishment is enhanced

Preparedness measures should include preparatory measures and policies that may help communities and infrastructure assets and systems cope with the impacts. Drought contingency planning can also ensure continuity of public services and quality of life.

Aquifer Recharge Programs

Current Aquifer Recharge Program

Following the completion of the comprehensive aquifer management plan for the Snake River in 2009, the Governor and Idaho legislature tasked the Idaho Water Resource Board (IWRB) with developing an aquifer recharge program capable of recharging an average of 250,000 acre-feet/year by 2024. The IWRB has committed over $14 million in capital improvements from 2013 to 2018. By 2024, it is estimated that the IWRB will invest over $40 million for capital improvements.

The IWRB has recharge water rights with priority dates ranging from 1980 and 1998. These recharge rights are junior to most irrigation water rights, so they are usually utilized between the irrigation seasons. In addition, the water available for the IWRB to conduct recharge is significantly different above and below Minidoka Dam due to senior power and reservoir storage water rights. Below Minidoka Dam, water is usually available all winter long; however, above Minidoka Dam water is only available for recharge approximately fifty percent of the time. In drought years, the maximum water supply available for recharge is estimated to be 150,000 acre-feet.

In Search of Sustainability—A Comprehensive Aquifer Management Plan for the East Snake Plain Aquifer

Hazard management of drought also involves the long-term reduction of the gap between water supply and demand. On the Eastern Snake Plain Aquifer, the imbalance in aquifer inflows and outflows is exacerbated in times of drought. A decline in aquifer storage corresponds to a decline in discharge from the aquifer to the Snake River. The East Snake Plain Aquifer and the Snake River are major water resources utilized in southern Idaho. In order to address the water supply and demand imbalance, the IWRB developed a comprehensive aquifer management plan for the Eastern Snake Plain Aquifer in 2009 (Idaho Department of Water Resources 2009). The goal of the aquifer management plan was to achieve an incremental positive change in the aquifer budget of 600,000 acre-feet by 2030 by decreasing extractions from the aquifer and increasing recharge. The five main methods to adjust the water-budget in the plan are as follows:

- Groundwater to surface water conversions (100,000 acre-feet/year)
- Managed Aquifer Recharge (150,000 acre-feet/year)
- Voluntary Demand Reduction (250,000 to 350,000 acre-feet/year)
- Weather Modification (cloud-seeding: 50,000 acre-feet)
- Minimize Loss of Incidental Recharge

A Voluntary Agreement to Reduce Groundwater Pumping

The State of Idaho has also encouraged a voluntary agreement to reduce groundwater pumping from the Eastern Snake Plain Aquifer. Senior surface water irrigators and junior groundwater users reached an agreement in 2015 to reduce consumptive use of groundwater on the Eastern Snake Plain Aquifer by 240,000 acre-feet annually. The reduction in consumptive use can be a reduction of groundwater pumping or through managed recharge to mitigate the pumping. The agreement is the result of l decade of litigation between the surface water irrigators who claimed injury by the groundwater pumpers to their surface water supplies on the Snake River.

Sustainability of Idaho's Water Resources – Promote and Finance Projects that will Ensure Sustainability of Water Sources into the Future

The 2016 Legislature passed Senate Concurrent Resolution 137 requesting the IWRB identify and implement stabilization and sustainability projects to stabilize and enhance groundwater supplies throughout Idaho. Groundwater supplies have been declining in areas throughout the state, and these declines result in reduced water supplies unable to sustain surface and groundwater uses. These reduced water supplies cause contentious, costly, and time-consuming litigation. The legislature encouraged the IWRB to undertake a proactive approach to reversing these declines to prevent economic impacts that would inevitability arise if groundwater levels continue to decline. In 2017, the IWRB added a Sustainability policy to section 8A of the State Water Plan that reads, "Sustainability is the active stewardship of Idaho's water resources to satisfy current uses and assure future uses of this renewable resource in accordance with state law and policy."

A Collaborative Weather Modification Program

Since adoption of the comprehensive aquifer management program, the Idaho Water Resource Board (IDWR) has teamed up with Idaho Power Company to support a collaborative weather modification/cloud-seeding effort. Idaho Power Company runs the cloud-seeding program with financial support from the Idaho Water Resource Board (IDWR). Idaho Power Company currently conducts cloud seeding in the Central Mountains and the upper Snake River basin. The power company estimates that cloud seeding programs provide 600,000 acre-feet of additional water in the Payette, Boise and Wood River basins and over 400,000 acre-feet of additional water each year in the upper Snake River basin (Idaho Power 2023). Cloud-seeding/weather modification is a drought mitigation strategy only when it provides more water during times of shortage.

Additional Projects Adding Resilience to Idaho Water Resources

Other major efforts currently carried out by the state to protect water supplies and water quality include the Mountain Home Air Force Base Water Sustainability Project, the Upper Salmon River Basin Program, and aquifer studies in the Boise and Lewiston basins. The Mountain Home Air Force Base Water Sustainability project aims to provide a sustainable surface water supply while relieving demand on the aquifer. The groundwater use by the airbase and its neighbors is currently unsustainable. The Upper Salmon Basin Project is seeking ways to augment stream flows for anadromous fish. The Boise and Lewiston aquifer studies are developing tools to better understand the current state of the resources.

Landscape Health

Idaho Rangeland Drought Task Group

Wildfire and drought cause shortages of forage and displace ranchers who depend on rangelands. The Idaho Cattle Association, Idaho Wool Growers Association, Idaho State Department of Agriculture, Idaho Farm Bureau, Idaho Department of Lands, Bureau of Land Management, Natural Resources Conservation Service, and other state and federal agencies initiated the Idaho Rangeland Drought Task Group (IRDTG) in 2002. The group improves coordination to reduce potential drought-related conflicts and hardships by informing producers of available drought assistance from federal, state, and other agencies. The IRDTG works collaboratively with livestock producers to address drought conditions throughout Idaho and help manage changes that may be necessary to ensure healthy, functional rangelands. The intent of the IRDTG is to present potential alternatives to producers and facilitate coordination between state and federal land management agencies.

Cover Crop Pasture Exchange

The IRDTG proposed the facilitation of a cover crop grazing exchange as a way to help producers impacted by drought and wildfire. The IRDTG is continually encouraging farmers who may be willing to grow forage cover crops, potentially due to inadequate water supplies from drought conditions to grow other crops. The forage cover crop acreage can then be made available for livestock grazing to ranchers in need of immediate forage due to drought conditions or wildfire. The forage cover crops will not only help protect the farmer’s fields from erosion but also provide vital livestock forage for fellow producers. For more information on cover crops, forage producers can contact their local Natural Resources Conservation Service (NRCS) Office.

Information/Outreach and Public Education

Drought-related educational efforts geared towards conservation both increase the effective water supply (by reducing demand) and build “drought resistance” by demonstrating how to withstand the effects of a prolonged drought. Drought-education materials should be designed to help residents and businesses learn methods of water conservation and instill these methods in their everyday lifestyles.

Early information is vitally important to the agricultural community, allowing farmers to make important seed ordering and planting decisions.

Drought Early Warning System (DEWS)

A Drought Early Warning System (DEWS) utilizes new and existing networks of federal, tribal, state, local and academic partners to make climate and drought science accessible and useful for decision makers; and to improve the capacity of stakeholders to monitor, forecast, plan for, and cope with the impacts of drought. Drought and its impacts vary from region to region. The development and implementation of regional DEWS allows for responsiveness to particular geographic and hydrologic circumstances, as well as value-added information needs specific to stakeholders in the respective areas (National Integrated Drought Information System n.d.).

8.7.3 Catalog of Potential Mitigation Alternatives

Table 8-7 summarizes potential opportunities to mitigate the drought hazard.

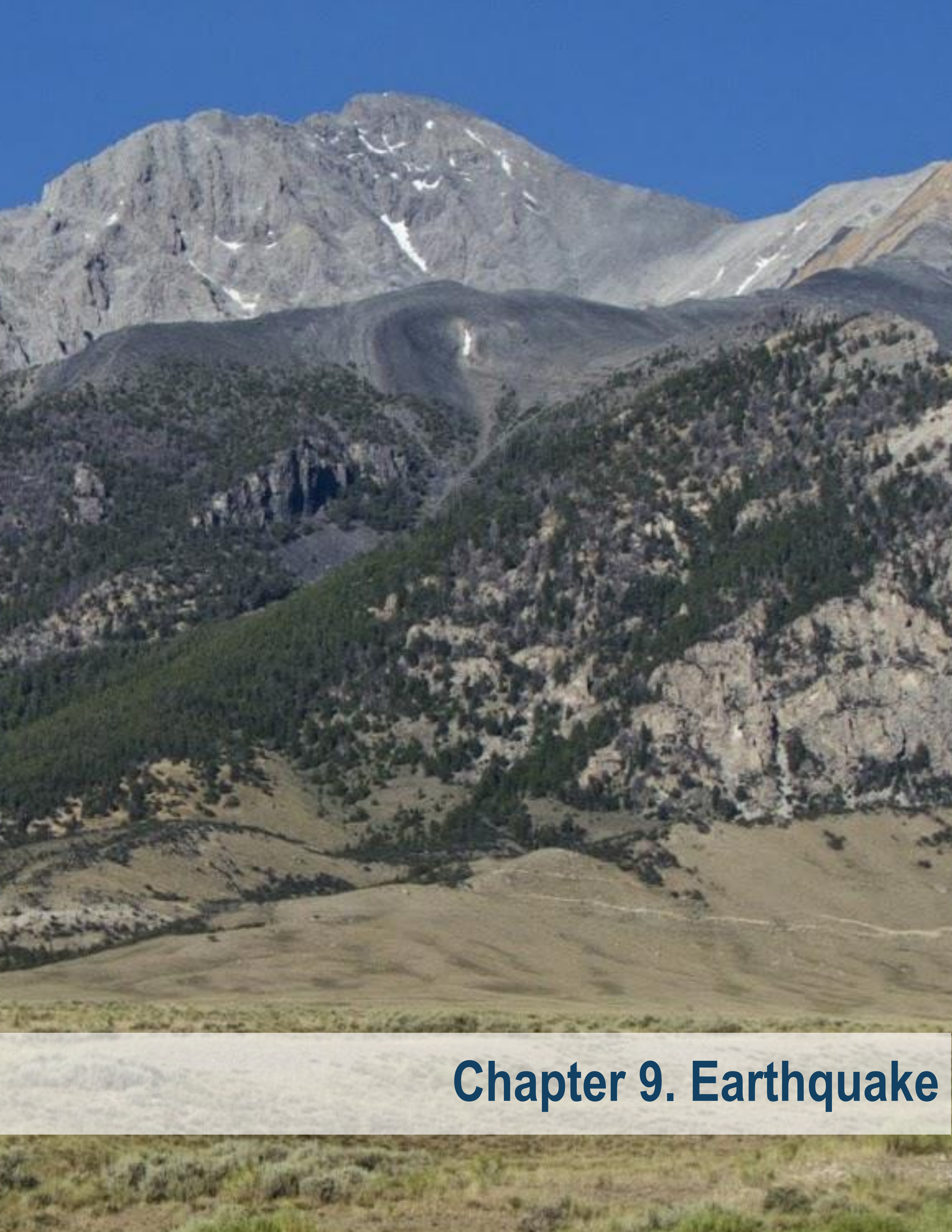
Table 8-7. Potential Opportunities to Mitigate the Drought Hazard

Community-Scale	Organizational-Scale	Government-Scale
Manipulate the hazard: ➢ Recycle gray water **Reduce exposure and vulnerability:** ➢ Drought-resistant landscapes ➢ Reduce water system losses ➢ Modify plumbing systems through water saving kits ➢ For homes with on-site water systems, increase storage, utilize rainwater catchment ➢ Increased access to water testing **Build local capacity:** ➢ Practice active water conservation	**Manipulate the hazard:** ➢ Recycle gray water **Reduce exposure and vulnerability:** ➢ Drought-resistant landscapes ➢ Reduce water system losses ➢ Support alternative irrigation techniques to reduce water use and use climate-sensitive water supplies ➢ For businesses with on-site water systems, increase storage, utilize rainwater catchment ➢ For corporate-owned farms, reduce over-pumping/over-reliance on groundwater and identify methods to reduce overall water use **Build local capacity:** ➢ Practice active water conservation ➢ Participate in the Integrated Regional Water Management program	**Manipulate the hazard:** ➢ Groundwater recharge through stormwater management ➢ Develop a water recycling program ➢ Increase "above-the-dam" regional natural water storage systems. ➢ Maintain and improve Delta levees. **Reduce exposure and vulnerability:** ➢ Identify and create groundwater backup sources ➢ Water use conflict regulations ➢ Reduce water system losses ➢ Distribute water saving kits ➢ Increase conventional storage that is filled during high-flow periods ➢ Create water storage space to capitalize on big storms when they occur and store water for dry periods ➢ Capture stormwater and desalinate ocean water and salty water in groundwater basins ➢ Expand average annual groundwater recharge ➢ Rehabilitate dams to regain storage capacity ➢ Mutual aid / financial support for farmworkers or disadvantaged-population-owned farms that must fallow their land. ➢ Regularly maintain and improve Delta levees. **Build local capacity:** ➢ Public education and intentional community engagement on drought mitigation plans ➢ Identify alternative water supplies for times of drought, mutual aid agreements with alternative suppliers ➢ Work with Tribal Nations to regain water access/rights and increase water sources managed by tribal nations (to redress historical and current harms, and reduce over-pumping and syphoning/channeling of water) ➢ Develop drought contingency plans ➢ Develop criteria triggers for drought-related actions ➢ Improve accuracy of water supply forecasts ➢ Modify rate structure to influence active water conservation techniques ➢ Consider the probable impacts of climate change on the risk associated with the drought hazard ➢ Support, participate in and advocate for funding for the Integrated Regional Water Management program ➢ Support, encourage, and implement multi-benefit nature-based recharge projects such as off-channel wetlands that provide habitat and groundwater filtration and infiltration ➢ Improve data collection and modernize forecasts for a changed climate ➢ Continue to support the Delta Levees Program to mitigate impacts on water supply ➢ Improve sub-seasonal to seasonal precipitation forecasting to support actions such as Forecast-Informed Reservoir Operations and Flood-MAR.
Nature-based opportunities: ➢ Promote and use reclaimed water supplies ➢ Increase capacity for stored surface water to create habitats and ecosystems for aquatic species. ➢ Promote and use active groundwater recharge		

8.7.4 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the drought hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-002: Develop a statewide approach to modeling and mapping projected future conditions
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects
- Action 2018-006: Create all-hazards publications for public education



Chapter 9. Earthquake

Earthquake

Earthquakes usually occur without warning and their effects can impact areas of great distance from the epicenter. Earthquakes orginating in Idaho are typically a result of movement of the Earth's crust in the Basin and Range region or may be associated with volcanic activity in the Yellowstone region.

CHANGES SINCE 2018

+0

Federal Disasters

+27

Earthquake Events
4.0M+

STATE IMPACT RATING

Medium (18)

SOCIALLY VULNERABLE POPULATION

0.2%

Of Total Population

85

Persons

CLIMATE PROJECTIONS

Melting glaciers and the resulting weight shift may induce seismic activity

During times of drought, pumping groundwater from underground aquafers can impact patterns of stress loads on the Earth's crust

CANALS

779

Miles

COMMUNITY LIFELINES

198

Total

295

State Buildings

142

State Bridges

64

State Dams

654

Miles of State Roads

9. EARTHQUAKE

2023 SHMP Changes

- Earthquakes that occurred in the State of Idaho from January 1, 2018, through December 31, 2022, were researched for the 2023 SHMP.
- New and updated figures from federal and state agencies were incorporated.
- This section discusses how the earthquake hazard may impact socially vulnerable populations and community lifelines.
- National Risk Index ratings are included for the counties identified as most vulnerable to the earthquake hazard.

9.1 HAZARD DESCRIPTION

An earthquake occurs when the ground shakes because rock beneath the Earth's surface suddenly breaks and shifts. The location of an earthquake is commonly described by its focal depth and the geographic position of its epicenter. The focal depth of an earthquake is the depth from the Earth's surface to the region where an earthquake's energy originates, also called the focus or hypocenter. The epicenter of an earthquake is the point on the Earth's surface directly above the hypocenter (USGS 2023). Earthquakes usually occur without warning and their effects can impact areas of great distance from the epicenter (USGS 2023).

Idaho's earthquakes result from three causes:

- Plate tectonics
- Crustal stretching
- Hotspot/volcanic activity

The surface of the earth (the crust) is made up of large masses, referred to as tectonic plates. Many of the world's earthquakes result from forces along the margins of these tectonic plates. These earthquakes occur when pressure resulting from these forces is released in a sudden burst of motion. Such earthquakes are produced in coastal California, Oregon, and Washington. The largest of these distant events may be felt in Idaho.

However, most earthquakes in Idaho have origins (the epicenter) far from plate boundaries. Much of the earth's crust in southern and central Idaho has undergone tremendous stretching, resulting in parallel, linear mountains and valleys. This region is called the Basin and Range and extends into the adjoining States of Montana, Utah, Wyoming, and Nevada. Basin and Range stretching is continuing today. Earthquakes from these crustal movements can also cause severe ground shaking in Idaho.

Finally, Idaho earthquakes may be associated with magmatic activity. This activity is associated with the "Yellowstone Hotspot." The hotspot is a conduit carrying molten rock (magma) from deep within the earth into the crust. Pressures within the hotspot zone lead to earthquakes. Although there are currently no surface releases of magma through volcanoes or volcanic vents, the hotspot is very seismically active. Dozens of small earthquakes are recorded in the Yellowstone region each month.

9.1.1 Earthquake Mechanics

Regardless of the source of the earthquake, the associated energy travels in waves radiating outward from the point of release. When these waves travel along the surface, the ground shakes and rolls, fractures form, and water waves may be generated. Earthquakes generally last a matter of seconds, but the waves will travel around the world in a matter of minutes and may cause damage elsewhere.

Breaks in the crust associated with seismic activity are known as “faults” and are classified as either active or inactive. Faults may be expressed on the surface by sharp cliffs or scarps or may be buried below surface deposits. A majority of earthquakes occur on faults that form the boundaries of earth’s tectonic plates. Tectonic forces within the western part of the North American plate combine with high heat flow from the underlying mantle to stretch the crust in a northeast-southwest direction. In response to the stretching, the rigid crust breaks and shifts along the faults. This fault movement produces earthquakes.

“Foreshocks” may occur months or minutes before the actual onset of an earthquake. Although smaller than the main shock, some foreshocks are large, damaging earthquakes. “Aftershocks,” which range from minor to major, may occur for months after the main earthquake. In some cases, strong aftershocks may cause significant additional damage, especially if the initial earthquake affected emergency management and response functions or weakened structures.

9.1.2 Types of Damage

While damage can occur by movement at the fault, most damage from earthquake events is the result of shaking. Shaking also produces a number of phenomena that can generate additional damage. The following sections describe the various types of damage that an earthquake can cause.

Shaking

In minor events, objects fall from shelves and dishes are rattled. In major events, large structures may be torn apart by the forces of the seismic waves. In all but the largest quakes, structural damage is generally limited to older structures that are poorly maintained, constructed, or designed. Unreinforced masonry buildings and wood frame homes not anchored to their foundations are typical victims. In areas of severe seismic shaking hazard, Intensity VII or higher can be experienced even on solid bedrock. In these areas, older buildings especially are at significant risk. Loose or poorly secured objects also pose a significant hazard when they are loosened or dropped by shaking. These “nonstructural falling hazard” objects include bookcases, heavy wall hangings, and building facades. Home water heaters pose a special risk, due to their tendency to start fires when they topple over and rupture gas lines. Crumbling chimneys may also be responsible for injuries and property damage. Dam and bridge failures are significant risks during stronger earthquake events and may result in considerable property damage and loss of life.

Ground Displacement

Often, the most dramatic evidence of an earthquake is the displacement of the ground along a fault line. The Borah Peak event created a surface fault nearly 22 miles long and generated a scarp face up to 9 feet high in certain locations. Utility lines and roads may be disrupted, but damage directly attributable to ground displacement is generally limited. In rare instances, structures located directly on the fault line may be destroyed by the displacement.

Landslides and Avalanches

Even small earthquake events can cause landslides (see Figure 9-1). Rock falls are common as unstable material on steep slopes is shaken loose, but significant landslides or even debris flows can be generated if conditions are ripe. Roads may be blocked by landslide activity, hampering response and recovery operations. Avalanches are possible when the snowpack is sufficient.

Photo by Tyler Beyer/AP

Figure 9-1. Magnitude 6.5 Earthquake Caused a Rockslide on Highway 21 Near Lowman on March 31, 2020

Liquefaction and Subsidence

Soils may liquefy and/or subside when impacted by seismic waves. Fill and previously saturated soils are especially at risk. The failure of the soils can lead to widespread structural damage. The oscillation and failure of the soils may result in increased water flow and/or failure of wells, as the subsurface flows are disrupted and sometimes permanently altered. Increased flows may be dramatic, resulting in geyser-like waterspouts and/or flash floods. Similarly, septic systems may be damaged, creating both inconvenience and health concerns.

Seiches

Seismic waves may rock an enclosed body of water (e.g., a lake or reservoir), creating an oscillating wave referred to as a “seiche.” Although not a common cause of damage in past Idaho earthquakes, there is a potential for large, forceful waves similar to a tsunami (tidal wave) to be generated on the large lakes of the state. Such a wave would be a hazard to shoreline development and pose a significant risk on dam-created reservoirs. A seiche could either overtop or damage a dam, leading to flash flooding downstream.

Further, such events may create the right conditions for a hydrothermal explosion. Yellowstone National Park and the adjacent Snake River plain have experienced 18 large hydrothermal explosions over the past 14,000 years, according to the United States Geological Survey (USGS). This is the most frequent type of explosion in the park. Three areas in Yellowstone; Mary Bay, Turbid Lake, and Indian Pond were apparently formed by large hydrothermal explosions. Mary Bay is nearly one mile across.

9.2 HAZARD LOCATION

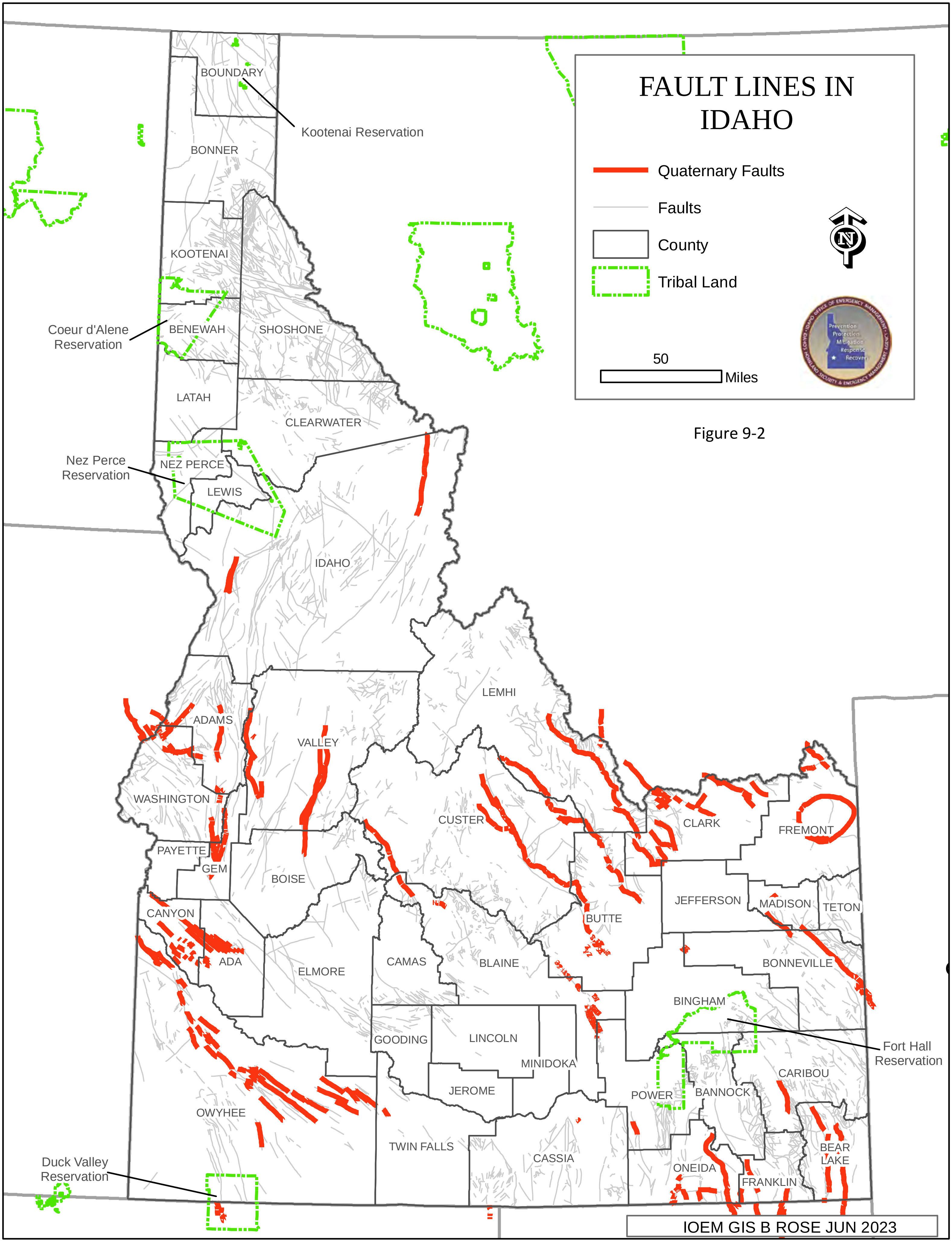
Idaho has active faults that have produced a number of historic earthquakes (see Figure 9-2). These faults are classified as normal faults and were produced by Basin and Range stretching. The faults extend into the crust at dips of about 60 to 70 degrees. Earthquakes along the faults occur at depths of less than 35 kilometers. Seismologists term these shallow earthquakes.

As indicated in the previous sections, just as there are multiple sources of seismic activity in Idaho, the location of seismic activity varies as well. Idaho is not located on a plate boundary, but many faults found within the State can produce large earthquakes. Many earthquakes occur along faults; however, Idaho has a considerable number of unmapped faults and many small to moderate earthquakes do not occur on faults. Most earthquakes in Idaho occur along a belt of seismicity called the ‘Intermountain Seismic Belt’ that extends from the northwest corner of Montana, along the Idaho-Wyoming border, through Utah, and into southern Nevada. Along most of the belt’s length, it straddles the boundary between the extending Basin and Range Province to the west and more stable parts of North America to the east.

The important fact regarding Idaho seismicity is that most Idaho earthquakes are not associated with known faults. This is easily seen when plots of recorded seismicity are compared with fault maps. Many, if not most, Idaho earthquakes are not on mapped faults. One explanation for this is Idaho’s poor seismic monitoring. A low density of seismic monitoring stations, as exists in Idaho, would result in inherently poor earthquake location precision. Another possibility is that a number of unknown faults exist and that small earthquakes are occurring away from faults. However, large earthquakes generally occur on large, well-known faults.

In Idaho, the Yellowstone Hotspot has interacted with the Basin and Range to create a more complicated pattern of earthquakes and mountain building called the Yellowstone Tectonic Parabola. The Yellowstone Tectonic Parabola is a region of earthquakes, active faulting, and topographic uplift surrounding the eastern Snake River Plain. This plain was formed as the North American continent passed over a stationary plume or “hotspot” of hot rock rising from the earth’s mantle. The pattern of earthquake activity in eastern and central Idaho seems to be related to interactions between the hotspot and Basin and Range extension. As a result, a major branch of the Intermountain Seismic Belt extends from the Yellowstone area westward across central Idaho. This zone includes at least eight major active faults and has been the site of many earthquake swarms and seismic events. Geological and seismological studies show that earthquakes are likely to happen in any of several active zones in Idaho and adjacent states (Idaho Geological Survey 2023). Large, damaging earthquakes are most likely to occur in the mountainous regions of eastern and central Idaho, north and south of the Snake River Plain; however, all parts of the State have at least a moderate threat from earthquakes.

Geologists divide the region into five tectonic belts based on historical earthquake activity and the age and amount of movement on prehistoric faults. Within the Snake River Plain, earthquake activity is very low. Earthquake activity increases and faults become younger away from the plain, culminating in a band of youthful, active faults that forms the tectonic parabola on the east. Faulting and earthquakes in western and northern Idaho are not well-explained by the Yellowstone tectonic parabola model.



FAULT LINES IN IDAHO
Quaternary Faults
Faults
County
Tribal Land
50
Miles
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
CAMAS
BLAINE
BONNEVILLE
ELMORE
BINGHAM
GOODING
LINCOLN
MINIDOKA
Fort Hall Reservation
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023

Figure 9-2

The extent and magnitude of earthquakes are measured in two ways:

- Magnitude (as measured by the Richter Scale) – measures the energy that is released
- Intensity (as measured by the Modified Mercalli Intensity Scale [MM]) – measures physical effects

Seismic waves are the vibrations from earthquakes that travel through the Earth and are recorded on instruments called seismographs. The magnitude or extent of an earthquake is a measured value of the earthquake size, or amplitude of the seismic waves, using a seismograph. The Richter magnitude scale (Richter scale) was developed in 1932 as a mathematical device to compare the sizes of earthquakes. The Richter scale is the most widely known scale that measures the magnitude of earthquakes. It has no upper limit and is not used to express damage. An earthquake in a densely populated area, which results in many deaths and considerable damage, may have the same magnitude and shock in a remote area that did not experience any damage. Table 9-1 presents the Richter scale magnitudes and corresponding earthquake effects.

Table 9-1. Richter Magnitude Scale

Richter Magnitude	Earthquake Effects
2.5 or less	Usually not felt, but can be recorded by seismograph
2.5 to 5.4	Often felt, but causes only minor damage
5.5 to 6.0	Slight damage to buildings and other structures
6.1 to 6.9	May cause a lot of damage in very populated areas
7.0 to 7.9	Major earthquake; serious damage
8.0 or greater	Great earthquake; can totally destroy communities near the epicenter

Magnitude is calculated by seismologists from seismograph readings and is most useful to scientists comparing the power of earthquakes. Magnitude is often described using the Richter scale. An earthquake of Magnitude 2.5 or less is usually not felt. Dishes rattling occurs at Magnitude 3.0, and magnitudes greater than 6.5 are devastating events when the earthquake strikes in or near a populated area.

The moment magnitude scale (MMS; denoted as Mw or M) is now more widely used by seismologists to measure the size of earthquakes. The scale was developed in the 1970s to succeed the 1930s-era Richter magnitude scale (ML). Even though the formulas are different, the new scale retains a continuum of magnitude values similar to that defined by the older one. Under suitable assumptions, as with the Richter magnitude scale, an increase of one step on this logarithmic scale corresponds to a 101.5 (about 32) times increase in the amount of energy released, and an increase of two steps corresponds to 103 (1,000) times increase in energy. Thus, an earthquake of Mw of 7.0 releases about 32 times as much energy as one of 6.0 and nearly 1,000 times that of 5.0. (USGS 2023). The moment magnitude is based on the seismic moment of the earthquake, which is equal to the shear modulus of the rock near the fault multiplied by the average amount of slip on the fault and the size of the area that slipped (USGS 2023). Since January 2002, the MMS has been the scale used by the United States Geological Survey to calculate and report magnitudes for all modern large earthquakes.

The intensity of an earthquake is based on the observed effects of ground shaking on people, buildings, and natural features, and varies with location. The Modified Mercalli Intensity Scale is a subjective description of the physical effects of the shaking, based on observations at the event site. The damage from earthquake shaking is affected by several factors, such as distance from the epicenter and local geology and soils. On the Modified Mercalli Intensity Scale, a value of I is the least intense motion, and XII is the greatest ground shaking. Unlike magnitude, intensity can vary from place to place and is evaluated from people's reactions to events and the visible damage to man-made structures.

The Modified Mercalli scale expresses intensity of an earthquake; the scale is a subjective measure that describes how strong a shock was felt at a particular location. The Modified Mercalli scale expresses the intensity of an earthquake's effects in a given locality in values ranging from I to XII. Table 9-2 summarizes earthquake intensity as expressed by the Modified Mercalli scale.

Table 9-2. Modified Mercalli Intensity and Peak Ground Acceleration Equivalents

Modified Mercalli Scale	Perceived Shaking	Potential Structure Damage		Estimated PGA[a] (%g)
		Resistant Buildings	Vulnerable Buildings	
I	Not Felt	None	None	<0.17%
II-III	Weak	None	None	0.17% – 1.4%
IV	Light	None	None	1.4% – 3.9%
V	Moderate	Very Light	Light	3.9% – 9.2%
VI	Strong	Light	Moderate	9.2% – 18%
VII	Very Strong	Moderate	Moderate/Heavy	18% – 34%
VIII	Severe	Moderate/Heavy	Heavy	34% – 65%
IX	Violent	Heavy	Very Heavy	65% – 124%
X – XII	Extreme	Very Heavy	Very Heavy	>124%

a. PGA measured in percent of g, where g is the acceleration of gravity
Sources: USGS, 2008; USGS, 2010

Another way to measure intensity is through ground acceleration. This is expressed as either "peak ground acceleration" (PGA) or "spectral acceleration" (SA) expressed relative to the acceleration of gravity (g) and determined by seismographic instruments. While Mercalli (MM) and PGA intensities are arrived at differently, they correlate reasonably well. SA is the basis for the vulnerability. What is important here is that ground and spectral accelerations are quantitative measures, while MM is qualitative. Engineers and others interested in designing earthquake-resistant structures need quantitative information, but a great deal of useful data can quickly be gathered by untrained people with the qualitative MM scale. Both PGA and SA have units of acceleration of gravity (or percent of acceleration of gravity).

According to USGS Earthquake Hazards Program, PGA maps (also known as earthquake hazard maps) are used as planning tools when designing buildings, bridges, highways, and utilities so that they can withstand shaking associated with earthquake events. These maps are also used as planning tools for the development of building codes that establish construction requirements appropriate to preserve public safety. The USGS PGA maps show a certain probability (2 percent for 10 percent) of being exceeded in a 50-year period. The PGA is measured in numbers of g's (the acceleration associated with gravity). Figure 9-3 shows the PGAs with a 10-percent exceedance in 50 years for Idaho. Northwestern and southwestern Idaho is in a low hazard area, while central and southeastern Idaho is in a medium to high-hazard area. Figure 9-4 correlates PGA and MM.

Geologic evidence shows that movement on the faults in and around Idaho can cause earthquakes of magnitude 6.5 to 7.5, with potentially catastrophic effects.

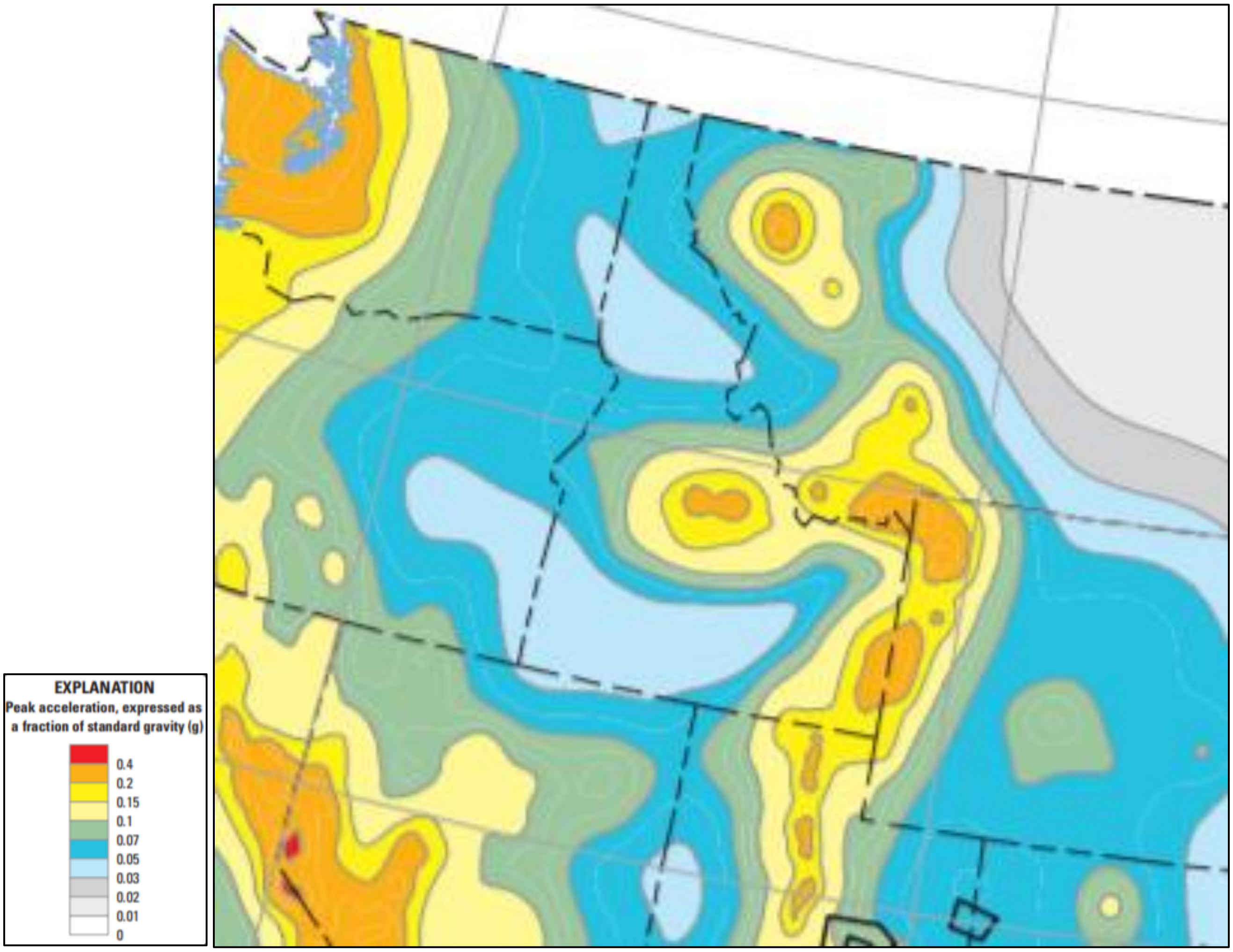


Figure 9-3. 2014 Seismic Hazard Map, PGA with 10% Probability of Exceedance in 50 Years

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
PEAK VEL.(cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II–III	IV	V	VI	VII	VIII	IX	X+

Figure 9-4. Correlation between Ground Acceleration and Intensity

9.3 PREVIOUS HAZARD OCCURRENCES

The State of Idaho is one of the most active states in terms of the number of earthquakes experienced each year. Historical records demonstrate that earthquakes can occur throughout Idaho. Most earthquakes felt by Idaho residents have occurred within the Yellowstone Tectonic Parabola. Idaho experiences hundreds of earthquakes every year, but most are too small to feel. On average Idaho experiences shaking strong enough to damage chimneys every 10 years and a more significant event about every 20 years. Two of the largest historic earthquakes in the continental United States occurred in Idaho or within a few miles of the state border in 1983 and 1959. These events were magnitude 6.9 and 7.3, respectively, and caused fatalities and destruction to buildings, roads and other structures.

According to USGS, over 2,000 earthquakes greater than magnitude 1.0 have been recorded in the State of Idaho since 1994 (USGS 2023).

Many sources provided earthquake information regarding previous occurrences and losses associated with earthquake events throughout the State of Idaho. For the 2023 Plan update, earthquake events were summarized between January 1, 2018, and December 31, 2022.

9.3.1 Disaster and Emergency Declarations

Known earthquake events that have impacted the State of Idaho and resulted in federal disaster or emergency declarations between 2018 and 2022 are identified in Table 9-3. Appendix D lists events prior to 2018. The following disaster declarations or emergency proclamations related to earthquake events have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 1 earthquake-related event, classified as earthquake.
- **Idaho State Emergency Proclamations, 2018 – 2022**: 1 earthquake-related event, classified as Challis Earthquake.
- No USDA disaster declarations or proclamations related to earthquake events have been issued relevant to Idaho or any of its counties.

Table 9-3. Earthquake Federal and State Declarations (2018 to 2022)

Incident Type	Declared Type	Date Declared	Federal Declaration Number	State Declaration Number	Counties Affected
Earthquake	Challis Earthquake	4/1/2020	N/A	ID-02-2020	Custer County

Source: FEMA 2023

Figure 9-5 shows the distribution of these declarations across the state.

9.3.2 Event History

Idaho experiences small earthquakes frequently, most of which are not felt and do not cause damage, but since 2018, Idaho experienced 27 earthquakes with a 4.0 magnitude or greater, mostly in the central part of the state (Table 9-4).

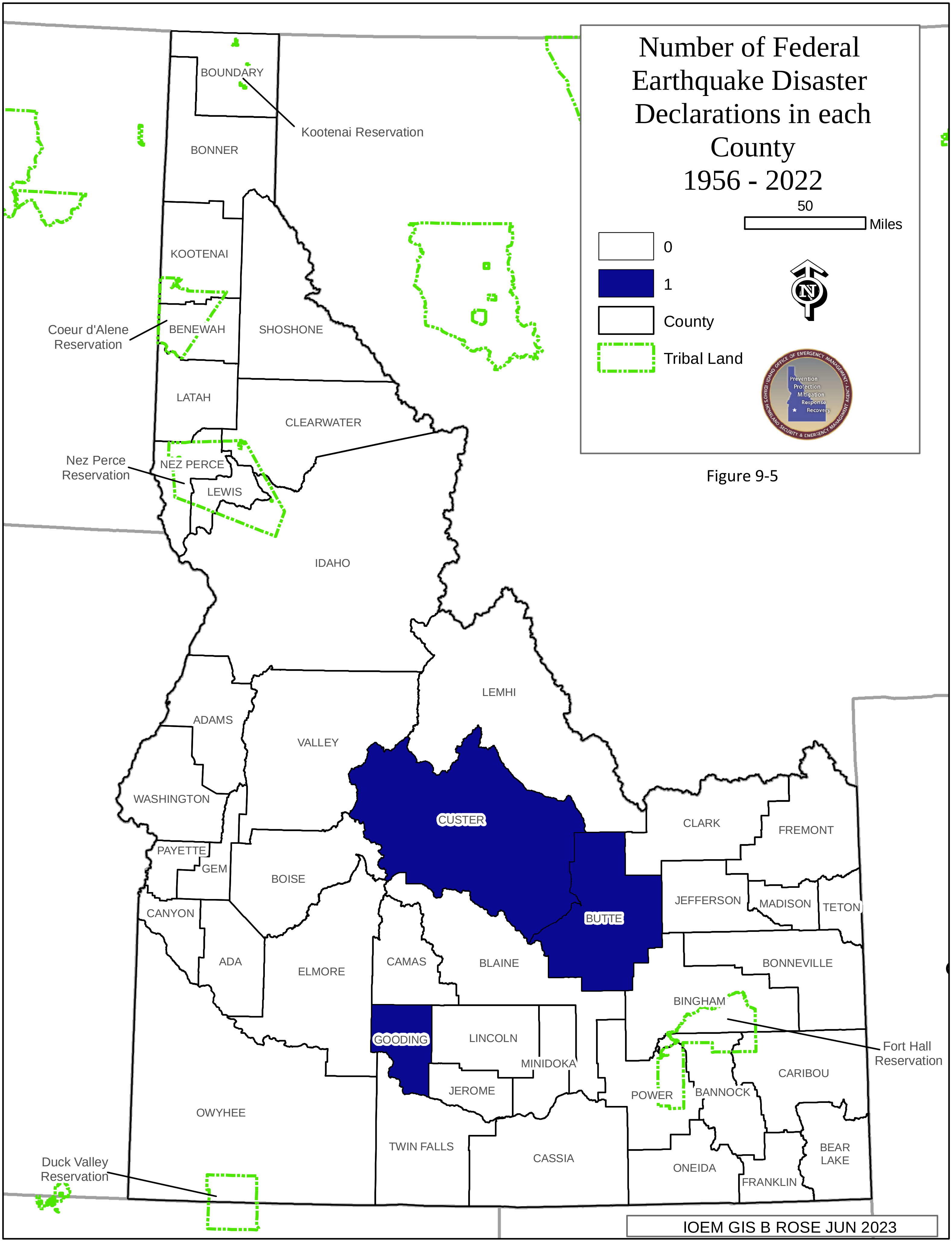

Number of Federal Earthquake Disaster Declarations in each County
1956 - 2022
50
Miles
0
1
County
Tribal Land
Prevention
Protection
Mitigation
Response
Recovery
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
Fort Hall Reservation
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
Duck Valley Reservation
FRANKLIN
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Figure 9-5

Table 9-4. Earthquake Events in Idaho with a Magnitude of 4.0 or Greater, 2018 to 2022

Date	Magnitude	Epicenter Location	Description
January 26, 2018	4.4	5 km NNW of Georgetown, Idaho	USGS reported that 688 people felt the earthquake throughout the southeastern part of Idaho and surrounding states
November 20, 2018	4.1	21 km SE of Stites, Idaho	USGS reported that 96 people felt the earthquake throughout the northern part of Idaho
March 31, 2020	6.5	Stanley, Idaho	USGS reported that 23,510 people felt the earthquake throughout Idaho and seven surrounding states. The earthquake caused significant cracking in structures in Custer County. Landslides that crossed state highways and small avalanches were triggered by the earthquake. A state disaster declaration (ID-02-2020) was issued in response to the event.
April 1, 2020	4.8	21 km WNW of Stanley, Idaho	USGS reported that 533 people felt the earthquake throughout the state
April 1, 2020	4.4	23 km NW of Stanley, Idaho	USGS reported that 33 people felt the earthquake throughout the southern part of Idaho
April 1, 2020	4	18 km NW of Stanley, Idaho	USGS reported that 20 people felt the earthquake throughout the southern part of Idaho
April 3, 2020	4	20 km NW of Stanley, Idaho	USGS reported that 313 people felt the earthquake throughout the southern part of Idaho
April 11, 2020	4.1	20 km NW of Stanley, Idaho	USGS reported that 27 people felt the earthquake throughout the southern part of Idaho
April 21, 2020	4.1	29 km NW of Stanley, Idaho	USGS reported that 91 people felt the earthquake throughout the southern part of Idaho
May 14, 2020	4.4	31 km NW of Stanley, Idaho	USGS reported that 345 people felt the earthquake throughout the southern part of Idaho
May 21, 2020	4.4	26 km NW of Stanley, Idaho	USGS reported that 174people felt the earthquake throughout the southern part of Idaho
June 9, 2020	4.2	11 km NW of Stanley, Idaho	USGS reported that 87 people felt the earthquake throughout the southern part of Idaho
June 14, 2020	4.2	10 km NW of Stanley, Idaho	USGS reported that 141 people felt the earthquake throughout the southern part of Idaho
June 25, 2020	4.6	27 km NW of Stanley, Idaho	USGS reported that 1,752 people felt the earthquake throughout the southern, eastern, and central part of Idaho.
July 10, 2020	4.1	18 km SW of Stanley, Idaho	USGS reported that 37 people felt the earthquake throughout the southern part of Idaho
August 8, 2020	4.2	13 km WSW of Stanley, Idaho	USGS reported that 228 people felt the earthquake throughout the southern and central part of Idaho
September 8, 2020	4	39 km NNW of Stanley, Idaho	USGS reported that 19 people felt the earthquake throughout the southern part of Idaho
September 8, 2020	4.4	39 km NNW of Stanley, Idaho	USGS reported that 101 people felt the earthquake throughout the southern and central part of Idaho
November 6, 2020	4	27 km WNW of Stanley, Idaho	USGS reported that 12 people felt the earthquake throughout the southern part of Idaho
November 13, 2020	4.1	26 km NW of Stanley, Idaho	USGS reported that 58 people felt the earthquake throughout the southern part of Idaho
November 15, 2020	4.1	16 km NNW of Stanley, Idaho	USGS reported that 76 people felt the earthquake throughout the southern part of Idaho
November 25, 2020	4.1	14 km NW of Stanley, Idaho	USGS reported that 22 people felt the earthquake throughout the southern part of Idaho

Date	Magnitude	Epicenter Location	Description
January 3, 2021	4.2	10 km NNW of Georgetown, Idaho	USGS reported that 115 people felt the earthquake throughout the southern part of Idaho
September 19, 2021	4	19 km NW of Stanley, Idaho	USGS reported that 95 people felt the earthquake throughout the southern part of Idaho
October 2, 2021	4	12 km NW of Stanley, Idaho	USGS reported that 19 people felt the earthquake throughout the southern part of Idaho
November 12, 2021	4	23 km WNW of Stanley, Idaho	USGS reported that 11people felt the earthquake throughout the southern part of Idaho
November 23, 2021	4	16 km SW of Stanley, Idaho	USGS reported that 30 people felt the earthquake throughout the southern part of Idaho

Source: (USGS 2023)

9.4 PROBABILITY OF FUTURE HAZARD EVENTS

9.4.1 Overall Probability

Thousands of earthquakes have been recorded in the State of Idaho. Currently, there are no realistic methods to predict earthquakes. According to the Idaho State seismologist, no studies, past or present, could create anything more than the general probabilities currently available. The past rate of occurrence is a modest predictor of future occurrence. One possible exception would be increased volcanic activity related to the Yellowstone hotspot. If that occurs, seismic activity would also be likely to increase. Nonetheless, the assessment of seismic risk is significantly impaired by the following:

- A lack of fault characterization data for Idaho's mapped faults
- Limited mapping of National Earthquake Hazards Reduction Program (NEHRP) soils and liquefaction susceptibility
- Extremely limited seismic monitoring throughout Idaho.

For the purpose of this Plan update, the probability of future occurrences is defined by the number of events over a specified period of time. Between 1950 and 2022, there have been 2,541 earthquakes magnitude 3 or greater (often felt but causing minor damage) with epicenters in or near Idaho. Based on this data, Idaho may experience an average of 35 earthquakes (magnitude 3 or greater) each year. The number of small earthquakes (magnitude less than 3) is greatly under-reported in Idaho because of limited seismic monitoring.

According to FEMA and the State, Idaho experienced two earthquake events between 1956 and 2022 that resulted in disaster declarations. Based on historical events, the State can expect to experience a major earthquake event that leads to a disaster declaration once every three decades.

9.4.2 Climate Change Impacts

The potential impacts of climate change on earthquake probability are still being studied. Some scientists feel that melting glaciers could induce tectonic activity. As ice melts and water runs off, tremendous amounts of weight are shifted on the Earth's crust. Newly freed crust could cause seismic plates to slip and stimulate volcanic activity. Additionally, changes in the Earth's crust from periods of drought can be significant. Similarly, pumping of groundwater from underground aquafers for human use, which is exacerbated during times of drought, has been shown to impact patterns of stress loads by "unweighting" the Earth's crust (NASA 2019).

Secondary impacts of earthquakes could be magnified by future climate change. Soils saturated by repetitive storms could experience liquefaction during seismic activity because of the increased saturation. Dams storing increased volumes of water could fail during seismic events.

9.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development.
- Projected changes in population.
- Other identified conditions as relevant and appropriate.

The U.S. EPA’s Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change’s (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. This SHMP used the ICLUS modeling (Scenario SSP2 + RCP4.5) to prepare statewide and county-specific estimates for Idaho land use in 2020 and 2030.

Appendix E lists the estimated land-use area (square miles) located in the identified earthquake hazard zones and projected area for 2030 by jurisdiction. Changes to land use and housing density may increase the number of vulnerable populations and developments to a hazard event. Earthquakes may occur anywhere in the State; therefore any growth in population and housing density will increase the State’s risk to impacts from a seismic event.

Statewide there is a projected increase of approximately 1,576 square miles to be developed in the earthquake hazard area by 2023, with the greatest additions in Bonneville County; this coincides with the increase in higher housing densities, which will place a greater number of people in the hazard area. Some counties in the southeast, such as Bear Lake, Caribou, and Franklin, also have high growth rates and face significant seismic threat. In such areas, it can be predicted that an increased amount of housing stock and developed area will be at risk. However, seismic codes may mitigate the potential losses of life, injuries, and property damage.

9.5 IMPACT ANALYSIS

9.5.1 Severity

The severity of an earthquake can be expressed in terms of intensity or magnitude. Intensity represents the observed effects of ground shaking on people, buildings and natural features. Magnitude is related to the amount of seismic energy released at the hypocenter of an earthquake. It is determined by the amplitude of the earthquake waves recorded on instruments. Whereas intensity varies depending on location with respect to the earthquake epicenter, magnitude is represented by a single, instrumentally determined value for each earthquake event. The severity of an earthquake event can be measured in the following terms:

- How hard did the ground shake?

- How did the ground move? (Horizontally or vertically)
- How stable was the soil?
- What is the fragility of the built environment in the area of impact?

The severity of a seismic event is directly correlated to the stability of the ground close to the event’s epicenter. The difference in severity between intensity ranges can be immense. A poorly built structure on a stable site in Boise is far more likely to survive a large earthquake than a well-built structure on an unstable site. Thorough geotechnical site evaluations should be the rule of thumb for new construction in the planning area until creditable soils mapping becomes available.

Factors Contributing to Damage

The damage associated with each earthquake is subject to four primary variables:

- The nature of the seismic activity
- The composition of the underlying geology and soils
- The level and quality of development of the area struck by the earthquake
- The time of day

Seismic Activity

The properties of earthquakes vary greatly from event to event. Some seismic activity is localized (a small point of energy release), while other activity is widespread (e.g., a long section of fault rupturing at once). Earthquakes can be very brief (only a few seconds) or last for a minute or more. The depth of release and type of seismic waves generated also play roles in the nature and location of damage; shallow quakes will hit the area close to the epicenter harder but tend to be felt across a smaller region than deep earthquakes.

Geology and Soils

The surface geology and soils of an area influence the propagation (conduction) of seismic waves and how strongly the energy is felt. Generally, stable areas (e.g., solid bedrock) experience less destructive shaking than unstable areas (e.g., fill soils). The siting of a community or even individual buildings plays a strong role in the nature and extent of damage from an event.

Development

A small earthquake in the center of a major city can have far greater consequences than a major event in a sparsely populated place. The two major Idaho earthquakes, Hebgen Lake (1959) and Borah Peak (1983), were very strong but occurred in isolated areas with small populations. The damage, compared to that of earthquakes of similar magnitude in heavily populated areas, was relatively light.

Time of Day

The time of day that an event occurs controls the distribution of the population in an affected area. On workdays, the majority of the community will transition between work or school and home, so the time of day will affect the location of the population. The relative seismic vulnerability of each location can strongly influence the loss of life and injury resulting from an event.

9.5.2 Warning Time

There is currently no reliable way to predict the day or month that an earthquake will occur at any given location. An Earthquake Early Warning System is being developed by the USGS for the west coast of the United States. This system uses existing seismic networks to detect moderate to large earthquakes very rapidly so that a warning can be sent before destructive seismic waves arrive at locations outside the area where the earthquake begins. These warnings will allow people to take protective action and can also trigger automatic responses to safeguard critical infrastructure (USGS 2019).

9.5.3 Cascading Impacts

Earthquakes do have the ability to initiate and impact a number of other hazards, both natural and human caused. Avalanches and landslides are two hazards that can be initiated by a seismic event. Dams, levees, and canals are also at risk of damage that could be caused by an earthquake or the resulting seiches. This damage has the possibility of causing the structures to fail, thereby producing a dam/levee/canal failure hazard event. Uplift and displacement from a major seismic event could also result in the re-routing of existing streams, the result of which could be flooding. The damage that could result from an earthquake would certainly have an opportunity to initiate fires. Fires can result from gas lines or power lines that are broken or downed during the earthquake. It may be difficult to control a fire, particularly if the water lines feeding fire hydrants are also broken.

From a human-caused perspective, a worst-case earthquake scenario could spawn any of the hazards discussed in this plan. A less intense seismic release could still disrupt power and communication systems, possibly leading to smaller scale energy shortages or cyber disruptions. Additionally, earthquakes may lead to energy outages. The major causes of outages during earthquakes are the failures of circuit breakers, transformer bushings and disconnect switches at the substations. Lack of power can affect pipelines supplying fuels and natural gas, as well as other products. Delivery of water can also be interrupted by an earthquake (U.S. Chamber of Commerce Foundation 2012).

Quickly and successfully eliminating waste and debris after an earthquake will lower the amount of resulting disease and contamination to the environment. The failure of dams, levees, and canals after an earthquake could cause a rapid and possibly catastrophic flood event.

9.5.4 Environmental Impacts

Earthquakes environmental impacts may include but are not limited to:

- Induced flooding or landslides
- Poor water quality
- Damage to vegetation
- Breakage in sewage or toxic material containments

Secondary impacts can include train derailments, roadway damage, spillage of hazardous materials (hazmat), and utility interruption. Quickly and successfully eliminating waste and debris after an earthquake will lower the amount of resulting disease and contamination to the environment. The failure of dams, levees, and canals after an earthquake could cause a rapid and possibly catastrophic flood event.

In mountainous regions, earthquakes and aftershocks can cause landslides and land deformation and result in infrastructure damage. Microwave communication towers could be knocked out of alignment. In areas of human development, damaged infrastructure such as sewage systems and pipelines can result in large releases of harmful substances into the environment.

9.5.5 Local Hazard Mitigation Plan Impacts

Forty-one of the hazard mitigation plans prepared for Idaho's counties list earthquake as a hazard of concern, and 10 counties rank it as a high-impact hazard:

- Boundary
- Butte
- Camas
- Canyon
- Fremont
- Kootenai
- Oneida
- Power
- Shoshone
- Valley

An additional 18 counties identified earthquake as a medium-impact hazard.

Table 9-5 summarizes potential losses to vulnerable structures due to earthquake, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 9-5. Earthquake Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

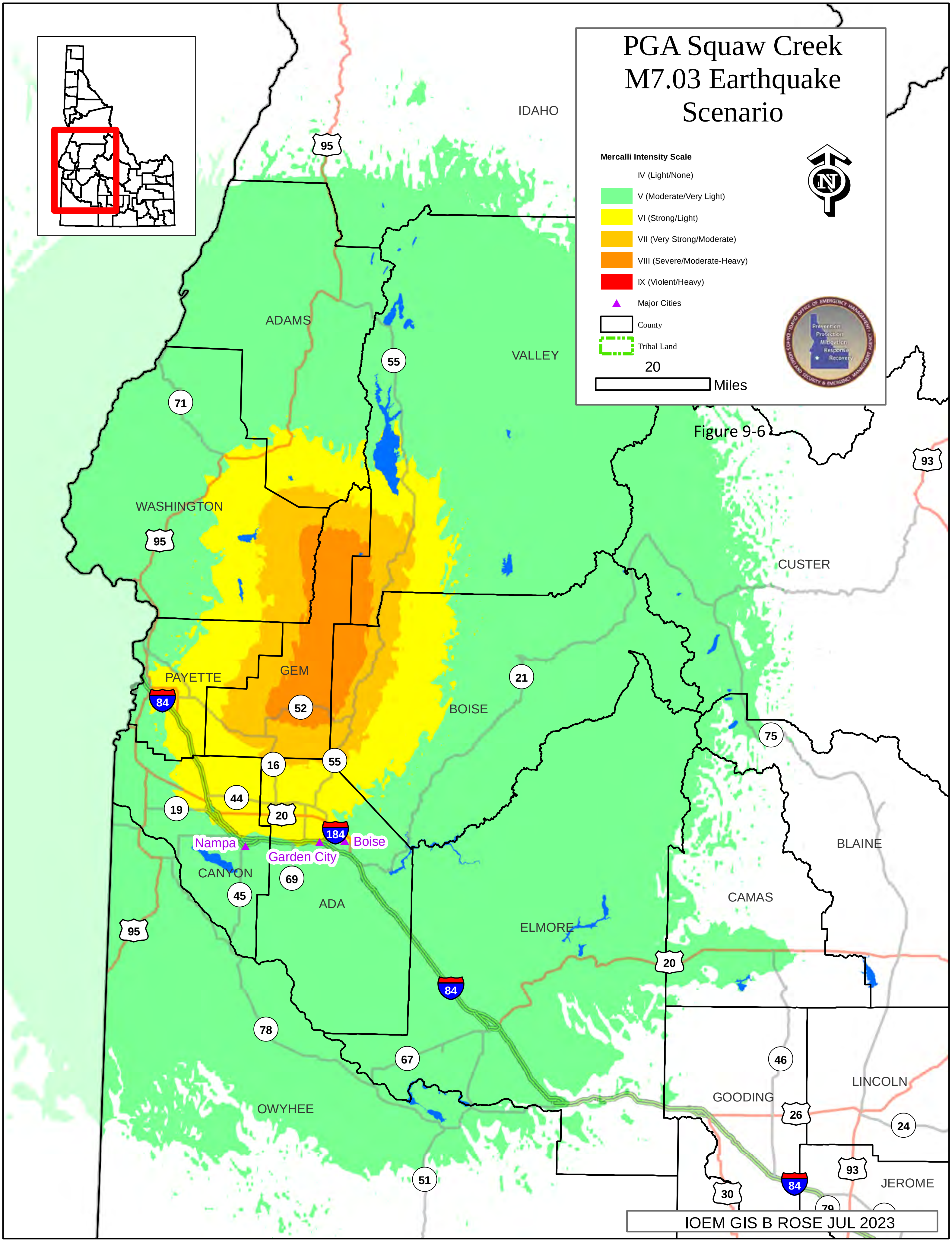
Estimated Total Population Exposed	1,776,666
Estimated Number of Structures at Risk	482,518
Estimated Value of Structures at Risk	$214,192,878,678

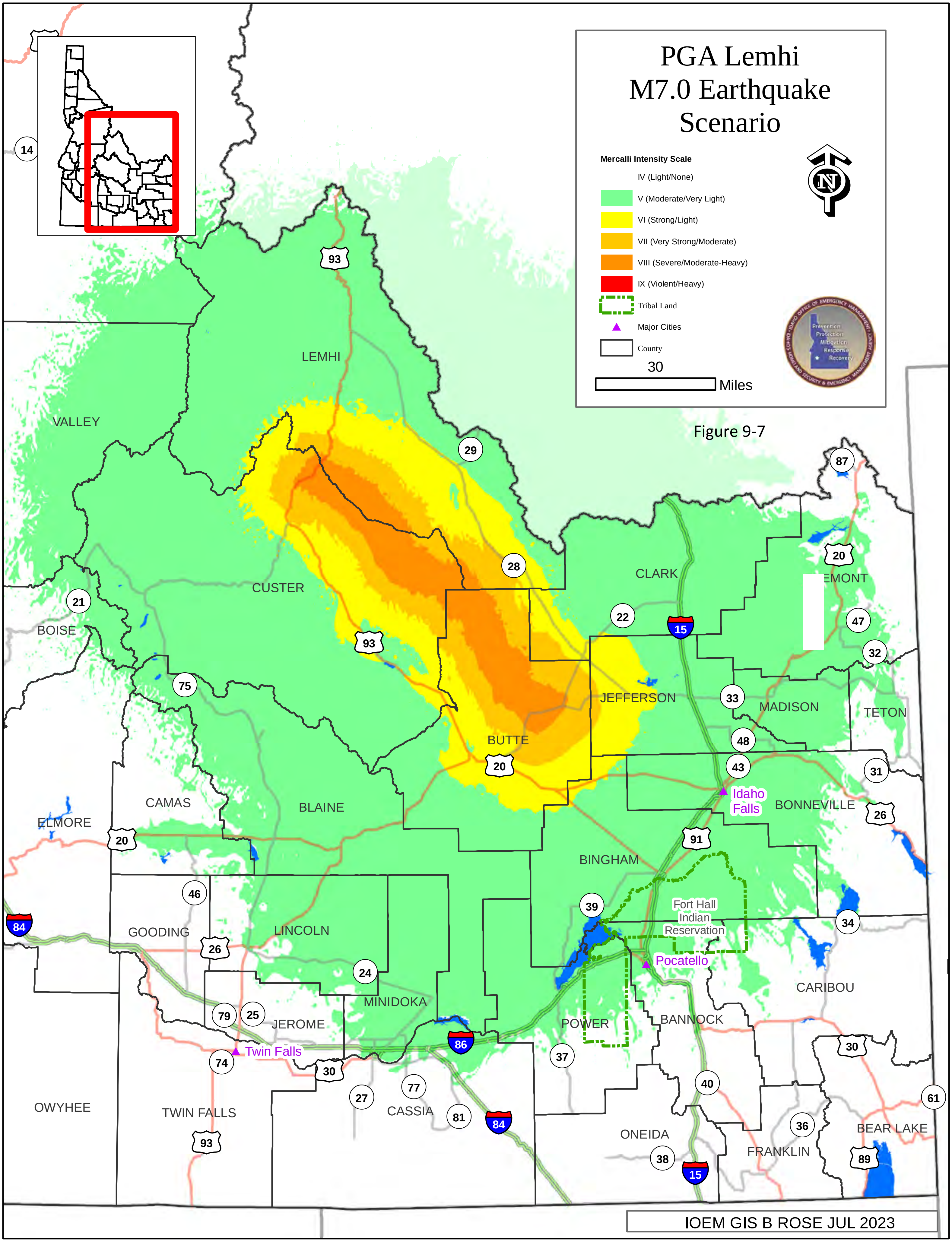
9.6 VULNERABILITY OF PEOPLE AND ASSETS

A GIS analysis was performed to evaluate the number of people and assets within the defined hazard area for earthquake. For this analysis, the hazard area was defined as portions of the state rated as high, very high, or highest in the Seismic Hazard Long-Term Model developed by the USGS (USGS 2019). A separate analysis using the Hazus model was performed to estimate potential losses over the entire state for the four earthquake scenarios used in this SHMP:

- Three USGS ShakeMap scenarios—Squaw Creek M7.0, Lemhi M7.0, and Eastern Bear Lake M7.3
- The historical M6.9 Borah Peak event (from October 1983).

ShakeMap scenarios are shown in Figure 9-6 through Figure 9-9, and results are summarized below.


PGA Squaw Creek M7.03 Earthquake Scenario
Mercalli Intensity Scale
IV (Light/None)
V (Moderate/Very Light)
VI (Strong/Light)
VII (Very Strong/Moderate)
VIII (Severe/Moderate-Heavy)
IX (Violent/Heavy)
Major Cities
County
Tribal Land
20
Miles
Figure 9-6
IDAHO
ADAMS
VALLEY
WASHINGTON
CUSTER
PAYETTE
GEM
BOISE
CANYON
ADA
ELMORE
CAMAS
BLAINE
OWYHEE
GOODING
LINCOLN
JEROME
Nampa
Garden City
Boise
IOEM GIS B ROSE JUL 2023



PGA Lemhi M7.0 Earthquake Scenario
Mercalli Intensity Scale
IV (Light/None)
V (Moderate/Very Light)
VI (Strong/Light)
VII (Very Strong/Moderate)
VIII (Severe/Moderate-Heavy)
IX (Violent/Heavy)
Tribal Land
Major Cities
County
30
Miles
LEMHI
VALLEY
CUSTER
BOISE
CLARK
JEFFERSON
MADISON
TETON
BUTTE
CAMAS
BLAINE
ELMORE
BONNEVILLE
BINGHAM
Idaho Falls
Fort Hall Indian Reservation
Pocatello
GOODING
LINCOLN
MINIDOKA
JEROME
POWER
BANNOCK
CARIBOU
Twin Falls
OWYHEE
TWIN FALLS
CASSIA
ONEIDA
FRANKLIN
BEAR LAKE
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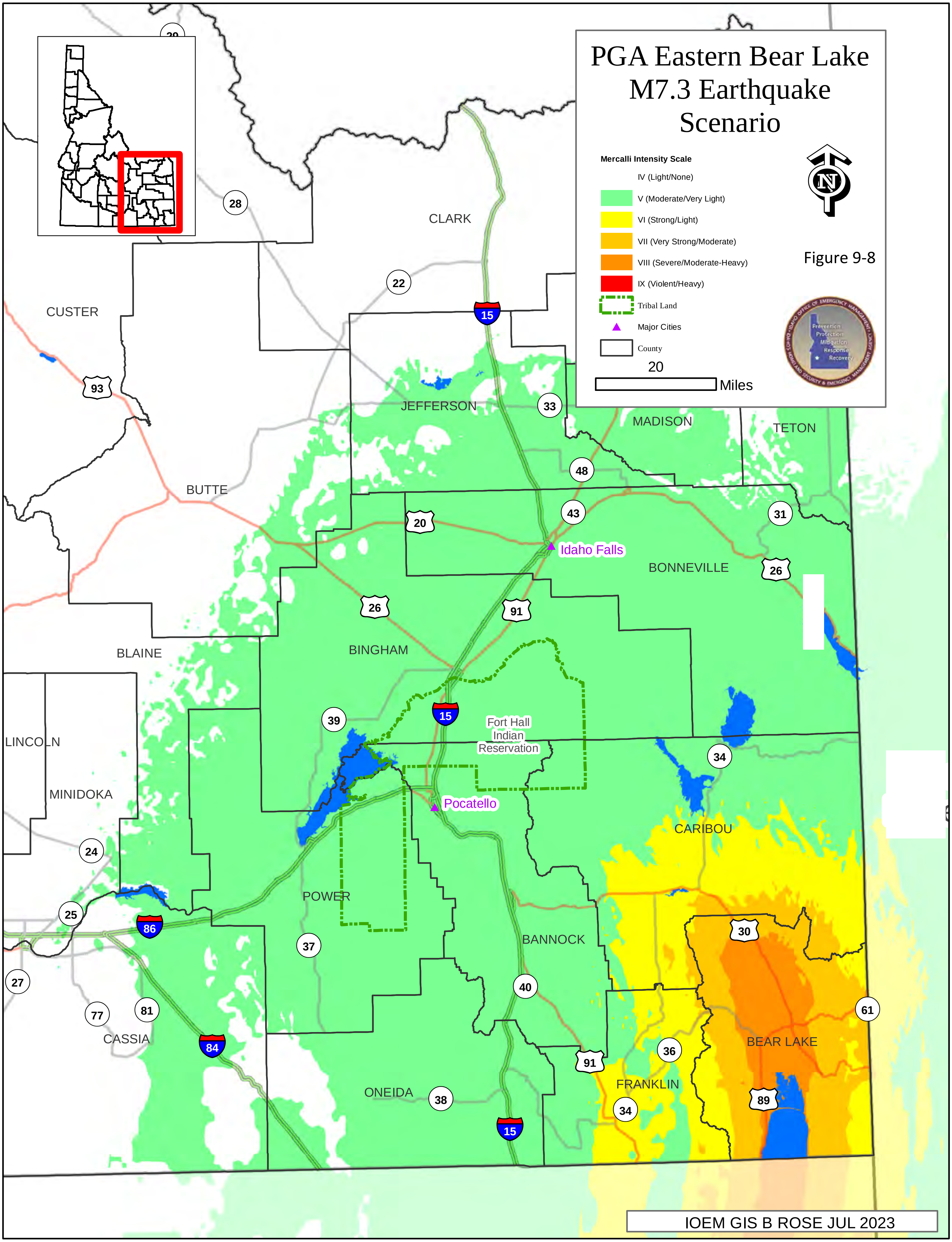
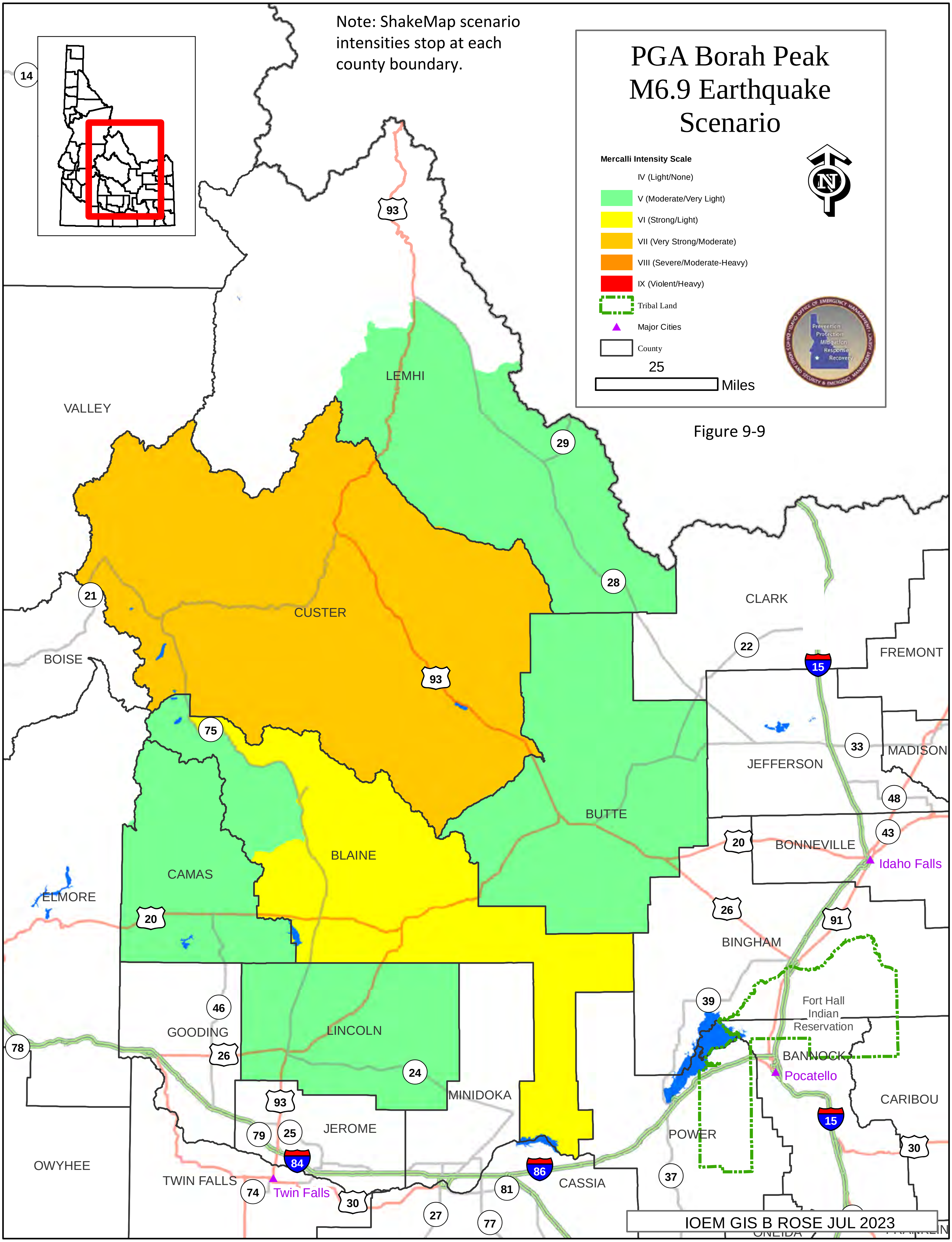
Figure 9-7



PGA Eastern Bear Lake M7.3 Earthquake Scenario
Mercalli Intensity Scale
IV (Light/None)
V (Moderate/Very Light)
VI (Strong/Light)
VII (Very Strong/Moderate)
VIII (Severe/Moderate-Heavy)
IX (Violent/Heavy)
Tribal Land
Major Cities
County
20
Miles
Figure 9-8
CLARK
CUSTER
JEFFERSON
MADISON
TETON
BUTTE
BONNEVILLE
Idaho Falls
BINGHAM
BLAINE
LINCOLN
MINIDOKA
Fort Hall Indian Reservation
Pocatello
CARIBOU
POWER
BANNOCK
CASSIA
BEAR LAKE
FRANKLIN
ONEIDA
IOEM GIS B ROSE JUL 2023



Note: ShakeMap scenario intensities stop at each county boundary.
PGA Borah Peak M6.9 Earthquake Scenario
Mercalli Intensity Scale
IV (Light/None)
V (Moderate/Very Light)
VI (Strong/Light)
VII (Very Strong/Moderate)
VIII (Severe/Moderate-Heavy)
IX (Violent/Heavy)
Tribal Land
Major Cities
County
25
Miles
Figure 9-9
LEMHI
VALLEY
CUSTER
BOISE
CLARK
FREMONT
JEFFERSON
MADISON
BUTTE
BONNEVILLE
Idaho Falls
BLAINE
CAMAS
ELMORE
BINGHAM
Fort Hall Indian Reservation
BANNOCK
Pocatello
CARIBOU
GOODING
LINCOLN
MINIDOKA
JEROME
POWER
OWYHEE
TWIN FALLS
Twin Falls
CASSIA
IOEM GIS B ROSE JUL 2023

9.6.1 Total and Socially Vulnerable Populations

The degree of exposure is dependent on many factors, including the age and type of construction people live in, the soil types their homes are located on, and the intensity of the earthquake. Whether directly or indirectly impacted, residents may be faced with business closures, road closures that could isolate population, and loss of function of critical facilities and utilities.

Socially vulnerable populations include the very young, the elderly, and those experiencing poverty. These socially vulnerable populations are most susceptible based on many factors, including their physical and financial ability to react or respond during a hazard and the ability to be self-sustaining for prolonged periods of time after an incident because of limited ability to stockpile supplies. Socially vulnerable populations may live in structures that do not conform to seismic building codes; therefore, homes will sustain more damage during an event.

Residents may be displaced or require temporary or long-term shelter because of an earthquake event. The number of people requiring shelter is generally less than the number displaced, as some displaced persons use hotels or stay with family or friends following a disaster event.

Table 9-6 summarizes vulnerable and total population in the hazard area. Appendix E as results for all counties.

Table 9-6. Population Within the Earthquake Hazard Area

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	35,107	1. Franklin (13,421)	2. Bear Lake (6,054)	3. Caribou (5,766)
Vulnerable Population in the Hazard Area	85	1. Clark (85) [only county with vulnerable population in the hazard area]		
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	0.2%	1. Clark (100%) [only county with vulnerable population in the hazard area]		

9.6.2 National Risk Index Ratings

According to the NRI, 19 of the state’s 44 counties have NRI-identified earthquake risk, rated from relatively moderate to relatively low. The risk rankings for the highest ranked counties are shown in Table 9-7.

Table 9-7. NRI Ratings for Earthquake in Highest-Ranked Idaho Counties

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Ada County	$6,512,651	Very Low	Very High	0.84	$6,491,782	93.73
Bonneville County	$5,595,155	Relatively Moderate	Very High	1.06	$6,315,511	93.54
Canyon County	$2,436,941	Relatively High	Relatively Moderate	1.18	$3,048,561	89.69
Bannock County	$1,516,736	Relatively High	Relatively Moderate	1.10	$1,803,400	85.58
Bingham County	$1,425,271	Relatively Moderate	Relatively Moderate	1.26	$1,801,650	85.52

9.6.3 State-Owned or -Leased Facilities

Table 9-8 summarizes the number and estimated replacement cost value of all State-owned or -leased facilities in the defined hazard area. Table 9-9 shows the number of State agencies and counties that have State-owned or -leased facilities in the hazard area. Table 9-10 lists the top three state agencies and counties with State-owned or -leased facilities in the hazard area, by number of facilities and by total estimated replacement cost value. Detailed results for all counties and state agencies are provided in Appendix E.

Table 9-8. Total State Facilities Within the Earthquake Hazard Area

	Facilities in the Hazard Area		
	State-Owned	State-Leased	Total
Number of Facilities in the Hazard Area	249	46	**295**
Total Estimated Replacement Cost Value	$298,161,350	$113,668,771	**$411,830,121**

Table 9-9. State Facilities Within the Earthquake Hazard Area by State Agency and County

	Total Number of State Agencies with Facilities in the Hazard Area	Total Number of Counties with Facilities in the Hazard Area
State-Owned	10	11
State-Leased	13	8
Total[a]	20	11

a. Total number of agencies or counties with vulnerable facilities may not be equal to the sum of those with state-owned facilities and those with state-lease facilities, as some agencies and counties have both state-owned facilities and state-leased facilities.

Table 9-10. Top Three State Agencies and Counties with State Facilities Within the Earthquake Hazard Area

	Greatest Number of Facilities in Hazard Area				Greatest Replacement Cost Value in Hazard Area			
	State Agencies		Counties		State Agencies		Counties	
	Name	Facilities	Name	Facilities	Name	Value	Name	Value
1.	Dept. of Fish & Game	105	Custer	94	Dept. of Parks & Recreation	$182.6 million	Bear Lake	$118.6 million
2.	Dept. of Parks & Recreation	66	Bear Lake	56	Dept. of Fish & Game	$63.8 million	Custer	$97.9 million
3.	Dept. of Transportation	40	Fremont	46	State Liquor Division	$30.4 million	Fremont	$71.6 million

9.6.4 Highways, Bridges, Dams, and Canals

Table 9-11 summarizes the miles of highway and number of bridges and dams within the defined hazard area statewide, as well as the counties with the greatest number of each. Detailed results for all counties are provided in Appendix E.

Table 9-11. State Highways, Bridges, and Dams Within the Earthquake Hazard Area

	Statewide Total	Highest-Ranked Counties		
Miles of Highway	654	1. Custer (178.2)	2. Bear Lake (98.5)	3. Franklin (90.6)
Number of Bridges	142	1. Custer (47)	2. Caribou (22)	3. Bear Lake (21)
Number of State-Regulated Dams	64	1. Franklin (20)	2. Caribou (15)	3. Custer (12)
Miles of Canals	779	1. Franklin (200)	2. Bear Lake (195)	3. Caribou (121)

9.6.5 Buildable Lands

Table 9-12 summarizes the amount of buildable land within the defined hazard area for 2020. Appendix E provides details on buildable land and ICLUS land use in the hazard area for all counties for 2020 and 2030.

Table 9-12. Buildable Lands Within the Earthquake Hazard Area, 2020

	Statewide Total	Highest-Ranked Counties		
Buildable Land in the Hazard Area (acres)	26,795	1. Franklin (8,096)	2. Bear Lake (5,493)	3. Custer (4,902)
Hazard Area Buildable Land as % of Total County or State Buildable Land	4.2%	1. Bear Lake (100%)	2. Caribou (97.0%)	3. Custer (94.5%)

9.6.6 Community Lifelines

Table 9-13 summarizes the number of community lifelines by type within the defined hazard area. Detailed results for all counties are provided in Appendix E.

Table 9-13. Community Lifelines Within the Earthquake Hazard Area

	Number of Lifelines Within the Hazard Area			
	Statewide	Highest-Ranked Counties		
Energy	78	1. Caribou (32)	2. Custer (12)	3. Franklin, Fremont (10 each)
Food, Water, Shelter	2	1. Caribou, Franklin (1 each)		
Health & Medical	4	1. Caribou, Franklin, Custer, Bear Lake (1 each)		
Safety & Security	76	1. Bear Lake (23)	2. Custer (16)	3. Franklin (15)
Transportation	38	1. Bear Lake (18)	2. Caribou (10)	3. Franklin (6)
Total	**198**	**1. Caribou (54)**	**2. Bear Lake (51)**	**3. Franklin (33)**

9.6.7 Potential Losses Due to a Hazard Event

Hazus provided estimates of the dollar loss values due to damage from earthquake to State-owned or -leased facilities. For community lifelines, Hazus estimated loss as a percentage of total value of structures for each lifeline category. Results are summarized in Table 9-14 through Table 9-16. Detailed results for all counties are provided in Appendix E.

Table 9-14. Statewide Loss Estimates Due to Earthquake for State-Owned or -Leased Facilities

	Estimated Loss Due to Earthquake	% of Total Facility Value
Squaw Creek M7.0 Scenario	$114,077,582	0.8%
Lemhi M7.0 Scenario	$6,538,225	<0.1%
Eastern Bear Lake M7.3 Scenario	$37,301,910	0.3%
Borah Peak M6.9 Scenario	$6,306,959	<0.1%

Table 9-15. Loss Estimates Due to Earthquake for State-Owned or -Leased Facilities, by Agency and County

	Agencies With Any Estimated Loss		Counties With Any Estimated Loss	
	Total Number	Top 3	Total Number	Top 3
Squaw Creek M7.0 Scenario	96	1. Boise State Univ. ($67.0 million) 2. Dept. of Administration ($9.2 million) 3. Dept. of Parks & Recreation ($5.1 million)	19	1. Ada ($102.8 million) 2. Gem ($5.6 million) 3. Canyon ($2.9 million)
Lemhi M7.0 Scenario	52	1. Dept. of Fish & Game ($2.38 million) 2. Division of Military ($1.26 million) 3. Idaho Public Television ($1.18 million)	28	1. Lemhi ($3.00 million) 2. Custer ($2.45 million) 3. Bonneville ($370,000)
Eastern Bear Lake M7.3 Scenario	49	1. Dept. of Parks & Recreation ($23.58 million) 2. State Liquor Division ($2.46 million) 3. Idaho Public Television ($2.20 million)	17	1. Bear Lake ($35.18 million) 2. Caribou ($990,000) 3. Franklin ($450,000)
Borah Peak M6.9 Scenario	38	1. Idaho State University ($2.02 million) 2. Division of Military ($1.88 million) 3. Idaho Public Television ($1.40 million)	40	1. Custer ($5.45 million) 2. Lemhi ($280,000) 3. Blaine ($270,000)

Table 9-16. Estimated Loss Percentage Due to Earthquake for Community Lifelines

	Estimated Loss as % of Total Value of Structures					
	Energy	Food, Water, Shelter	Health & Medical	Safety & Security	Transportation	Total
Squaw Creek M7.0 Scenario						
Statewide	0.7%	0.9%	0.4%	0.5%	0.1%	0.5%
Top Counties	1. Gem (40.8%) 2. Boise (11.0%) 3. Valley (4.7%)	1. Ada (7.2%) 2. Canyon (3.1%) 3. Payette (1.7%)	1. Gem (10.1%) 2. Ada (1.0%) 3. Payette (0.6%)	1. Gem (23.1%) 2. Valley (1.7%) 3. Boise (1.5%)	1. Gem (2.8%) 2. Boise (0.3%) 3. Valle (0.2%)	1. Gem (21.2%) 2. Boise (2.6%) 3. Valley (2.5%)
Lemhi M7.0 Scenario						
Statewide	0.4%	<0.1%	<0.1%	0.1%	<0.1%	0.2%
Top Counties	1. Butte (14.9%) 2. Clark (2.2%) 3. Custer (1.6%)	1. Bonneville (0.3%) 2. Bingham (0.2%) 3. Madison (0.1%)	1. Butte (0.4%) 2. Lemhi (0.2%) 3. Bingham, Bonneville & Jefferson (0.1%)	1. Butte (4.8%) 2. Lemhi (3.2%) 3. Custer (1.1%)	1. Butte (0.4%)	1. Butte (11.5%) 2. Lemhi (1.7%) 3. Custer (1.2%)
Eastern Bear Lake M7.3 Scenario						
Statewide	0.5%	0.9%	0.3%	0.8%	0.2%	0.6%
Top Counties	1. Bear Lake (46.3%) 2. Caribou (2.6%) 3. Franklin (1.2%)	1. Caribou (16.6%) 2. Franklin (5.3%) 3. Bannock, Bingham & Bonneville (0.1%)	1. Bear Lake (34.6%) 2.Caribou (2.3%) 3. Franklin (0.7%)	1. Bear Lake (53.4%) 2. Caribou (2.0%) 3. Franklin (0.7%)	1. Bear Lake (6.7%) 2. Caribou (2.3%) 3. Franklin (0.8%)	1. Bear Lake (35.3%) 2. Caribou (2.3%) 3. Franklin (0.8%)
Borah Peak M6.9 Scenario						
Statewide	0.2%	0.5%	<0.1%	<0.1%	0.0%	0.1%
Top Counties	1. Custer (3.6%) 2. Blaine (2.0%) 3. Butte (0.9%)	1. Blaine (2.9%) 2. Gooding & Jerome (0.5%)	1. Blaine (0.2%) 2. Butte (0.1%)	1. Custer (3.7%) 2. Blaine (0.2%) 3. Butte, Camas & Lemhi (0.1%)	n/a	1. Custer (3.5%) 2. Blaine (0.9%) 3. Butte (0.6%)

9.7 MITIGATING THE HAZARD

9.7.1 General Mitigation Approaches

Mitigation Rationale

While few local plans prioritize earthquake as a major hazard, the significant economic impact of an earthquake makes mitigation a priority. The 6.9-magnitude scenario in Idaho Falls, for example, resulted in $1.5 billion in damages, which would be truly catastrophic. A considerable number of public and private commercial buildings are pre-code structures, constructed of both reinforced and unreinforced masonry. Much of Idaho’s housing stock in suburban and rural communities was built prior to the 1970s, before building codes were in force. Additionally, rural Idaho communities do not have the resources to respond to widespread damage that might be caused by a catastrophic earthquake. Earthquakes are one of the State’s least predictable and most poorly understood hazards.

Information/Outreach and Public Education

Much mitigation work, such as home retrofitting and non-structural falling hazard reduction, is dependent on the actions of property owners and residents. Hazard awareness and education programs must lay the groundwork of knowledge that leads to this work.

As available, IOEM funds cooperative projects with the Idaho Geological Survey (IGS). These projects have included summer field workshops for Idaho’s earth science teachers, the development of NEHRP soil classification and liquefaction susceptibility maps, and the development of public education materials on geologic hazards. This outreach has been funded using a variety of grant programs, including the Earthquake Hazard Reduction Grant, Emergency Management Performance Grant, and Pre-disaster Mitigation Planning funds. Earth science teacher workshops have been held annually since 1993, facilitated by the IGS. The focus of the workshops was on the science of natural hazards, hazard mitigation strategies, disaster preparedness for schools, and the enhancement of science teaching resulting in improved study of seismic safety in schools, and the next generation of decision makers in Idaho growing up better educated to seismic risks and other natural hazards. Other public outreach has been the booklet mentioned above, “Putting Down Roots in Earthquake Country.” It was published using mitigation grant monies by IOEM, with considerable input and valuable advice from the IGS, and was widely distributed in eastern Idaho. The booklet was especially well received by educators in many parts of the State and will continue to be distributed at every opportunity, through every possible venue. Public outreach and education will continue as funds are available.

Infrastructure

New public facilities and other infrastructure must be built to earthquake-resistant standards. The large stock of buildings constructed before 1992 is more problematic. Changes in occupancy, such as occur when old buildings are converted to restaurants, shops, and apartments, provide opportunities for seismic retrofits. Extensive work is expensive, though, and hard to justify to building owners. Lifelines and critical facilities should not be concentrated in high-risk areas. Mitigation projects will be identified in separate categories, as follows: public infrastructure; state/county facilities; and private infrastructure.

Data Collection & Analysis

IGS will be working in the future towards updating and then maintaining a state fault database. As the USGS takes a step back from their formal large role in fault mapping, the State will step up and seek funding to complete and maintain it.

NEHRP EQ Hazard Program Proposal

The State active fault database was last updated in 2003. While this database is an important foundation, it is out of date and needs to be updated. New high-resolution satellite imagery and LiDAR data are available for many tectonically active areas, which can greatly improve the accuracy of mapped faults. New seismic investigations are also vitally important for updating the fault database and understanding the state’s seismic hazards. A recent robust sequence of earthquakes near Soda Springs, ID has drawn attention to the seismic hazard in southeastern Idaho. IGS is working in collaboration with the Utah Geological Survey to apply for USGS Earthquake Hazard Program funds to map and investigate the Wasatch, Cache Valley, and Bear Lake faults.

Earthquake Clearinghouse Plan

An earthquake Clearinghouse is crucial for supporting and organizing post-earthquake reconnaissance efforts, maximizing information sharing and availability, and better utilizing the talents of those present immediately after a damaging earthquake. Reconnaissance teams comprised of engineers, academics, and scientists typically flock to a damaged area to investigate earthquake impacts. These teams make rapid, general damage surveys of the affected area, document initial important observations from the particular earthquake, and assess the need for follow-up areas of research. Observations and findings from these teams support emergency response and recovery activities in the short term and improve the understanding of natural hazards and how to mitigate their impacts in the long term.

Regulatory

Enacting building codes, dam design requirements, and other regulatory measures is necessary to ensure that structures have earthquake-resistant construction. Areas of known extreme hazard, such as fill soils and known faults, can be designated and zoned for open space or similar non-vulnerable uses. IOEM adopts the Western States Seismic Policy Council (WSSPC) Policy Recommendation 07-4 wherein WSSPC not only endorses adoption and enforcement of International Existing Building Code, the International Building Code, and the International Residential Code, but also discourages modification and amendments that weaken these codes. The State Legislative session formally adopts the most recent International Building Codes, allowing for the local jurisdictions to adopt them as well.

Further IOEM adopts the additional policy of encouraging including of NEHRP provisions which include purpose, education, incentives, lifelines, and public and private sectors. The State could also provide incentives (e.g., tax relief) for proper owners to retrofit their homes and other properties. Earthquake insurance is typically very expensive, and coverage is generally not required by lending institutions.

In addition, IOEM adopts WSSPC Policy Recommendation 06-1: Developing Earthquake Risk-Reduction Strategies stated here:

WSSPC strongly encourages the development of long-term, comprehensive statewide and community-level earthquake risk-reduction strategies as part of an all-hazards plan to reduce injury, loss of life, property damage, and economic disruption from earthquakes.

WSSPC believes comprehensive statewide and local plans and strategies should include the following elements:

- Assessment of all seismic hazards to quantify and define the risk to communities
- Implementation of land-use and development policies to reduce exposure to earthquake hazards
- Adoption of enforcement of the International Building Codes for the seismic design, inspection, and construction of new buildings and structures
- Adoption of International Existing Building Code for the maintenance and retrofit of seismically "at risk" structures
- Development and implementation of retrofit, redevelopment, grant and abatement programs to help strengthen existing structures, where necessary
- Support of [ongoing] public-education efforts and public/private partnerships to raise awareness of seismically induced threats and build constituent support for earthquake hazard reduction programs.

It would be a useful mitigation strategy in the future to have a consolidated listing at the State agency level of all local jurisdiction ordinances pertaining to earthquake planning for a statewide analysis and understanding of the effectiveness of such policies.

9.7.2 Catalog of Potential Mitigation Alternatives

Table 9-17 summarizes a range of potential alternatives for mitigating the earthquake hazard.

9.7.3 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions to address the earthquake hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2018-025: Exercise Earthquake Clearinghouse and Communications Plan
- Action 2018-027: Exercise Rapid Visual Assessment Teams Action 2018-028: Shakecast computer modeling after an earthquake event to determine highest likelihood of infrastructure that is damaged from the epicenter
- Action 2018-029: Northern Idaho seismic assessment, outreach, and replacement to include: hazard analysis of rail shipping Crude Oil, Coal, and other Petroleum Products; property inventory and seismic inspection; update of building codes; earthquake awareness and education; development of multi-state groups, joint exercises between Washington/Idaho, and replacing/improving RR highway crossings, bridges, high risk areas

Table 9-17. Potential Opportunities to Mitigate the Earthquake Hazard

Community-Scale	Organizational-Scale	Government-Scale
Manipulate the hazard: ➢ Apply engineering solutions that minimize or eliminate the hazard **Reduce exposure and vulnerability:** ➢ Locate outside of the hazard area (off soft soils) ➢ Retrofit structure (anchor house structure to the foundation) ➢ Secure household items that can cause injury or damage (such as water heaters, bookcases, and other appliances) ➢ Build to higher design **Build local capacity:** ➢ Practice “drop, cover, and hold” ➢ Develop household mitigation plan, such as creating a retrofit savings account, communication capability with outside, 72-hour self-sufficiency during an event ➢ Keep cash reserves for reconstruction ➢ Become informed on the hazard and risk reduction alternatives available. ➢ Develop a post-disaster action plan for your household ➢ Consider the purchase of earthquake insurance	**Manipulate the hazard:** ➢ Apply engineering solutions that minimize or eliminate the hazard **Reduce exposure and vulnerability:** ➢ Locate or relocate mission-critical functions outside hazard areas where possible ➢ Build redundancy for critical functions and facilities ➢ Retrofit critical buildings and areas housing mission-critical functions **Build local capacity:** ➢ Adopt a higher standard for new construction; consider “functional recovery-based design” when building new structures ➢ Keep cash reserves for reconstruction ➢ Inform employees about the possible impacts of earthquakes and how to deal with them at work. ➢ Develop a continuity of operations plan ➢ Consider the purchase of earthquake insurance	**Manipulate the hazard:** ➢ Apply engineering solutions that minimize or eliminate the hazard **Reduce exposure and vulnerability:** ➢ Locate critical facilities or functions outside the hazard area where possible ➢ Harden infrastructure ➢ Provide redundancy for critical functions ➢ Adopt higher regulatory standards ➢ Encourage and invest in renewable energy and backup and storage, such as microgrids, for vital systems redundancy during power outages and interruptions **Build local capacity:** ➢ Provide better hazard maps ➢ Provide technical information and guidance ➢ Enact tools to help manage development in hazard areas (e.g., tax incentives, information) ➢ Include retrofitting and replacement of critical system elements in the capital improvement plan ➢ Develop a strategy to take advantage of post-disaster opportunities ➢ Warehouse critical infrastructure components such as pipes, power lines, and road repair materials ➢ Develop and adopt a continuity of operations plan ➢ Initiate triggers guiding improvements (such as >50% substantial damage or improvements) ➢ Further enhance seismic risk assessment to target high hazard buildings for mitigation opportunities. ➢ Develop a post-disaster action plan that includes grant funding and debris removal components. ➢ Evaluate earthquake insurance as an option ➢ Establish Local Assistance Centers
Nature-based opportunities: ➢ None identified		

Chapter 10. Flood

Flood

Flooding is the partial or complete inundation of normally dry land. Types of flooding experienced in Idaho are numerous and include riverine flooding, flash floods, alluvial fan flooding, ice/debris jam flooding, dam/canal/levee failure, stormwater, sheet or areal flooding, and mudflows.

CHANGES SINCE 2018

+1
Federal Disaster

+13
Significant Flood Events

CANALS

401
Miles

STATE IMPACT RATING

High (30)

SOCIALLY VULNERABLE POPULATION

30%
Of Total Population

18,006
Persons

CLIMATE PROJECTIONS

Early snowmelt caused by warming temperatures may contribute to peak storm runoff floods

Extreme precipitation events may cause dam spillway overflows resulting in increased downstream flooding

COMMUNITY LIFELINES

332
Total

259
State Buildings

313
State Bridges

84
State Dams

273
Miles of State Roads

10. FLOOD

2023 SHMP Changes

- Flooding events that occurred in the State of Idaho from January 1, 2018, through December 31, 2022, were researched for the 2023 SHMP.
- New and updated figures from federal and state agencies were incorporated.
- This section discusses how the flood hazard may impact socially vulnerable populations and community lifelines.
- National Risk Index ratings are included for the counties identified as most vulnerable to the flood hazard.

10.1 HAZARD DESCRIPTION

Flooding is the partial or complete inundation of normally dry land. The types of flooding experienced in Idaho are numerous and include riverine flooding, flash floods, alluvial fan flooding, ice/debris jam flooding, levee/dam/canal breaks, stormwater, sheet or areal flooding, and mudflows (especially after a wildfire). Flooding has produced the most damaging and costly disasters in Idaho, and significant events have occurred regularly throughout the history of the State.

10.1.1 Flooding Types

The following sections describe the types of floods that pose a hazard risk in Idaho.

Riverine

Overbank flooding of rivers and streams is the most common type of flood event. The floodplain is an area of land adjacent to a stream or river that often floods during periods of high water flows. A regulatory floodway may be established within a floodplain, where the channel of a river or other watercourse and the adjacent land areas are reserved in order to carry the deep and/or fast flowing water from a 1 percent annual chance flood event. Floodplains and floodways are designated in order to communicate flood risk to landowners in the area and to promote flood resistant development within the floodplain. Figure 10-1 shows the typical components of a riverine floodplain.

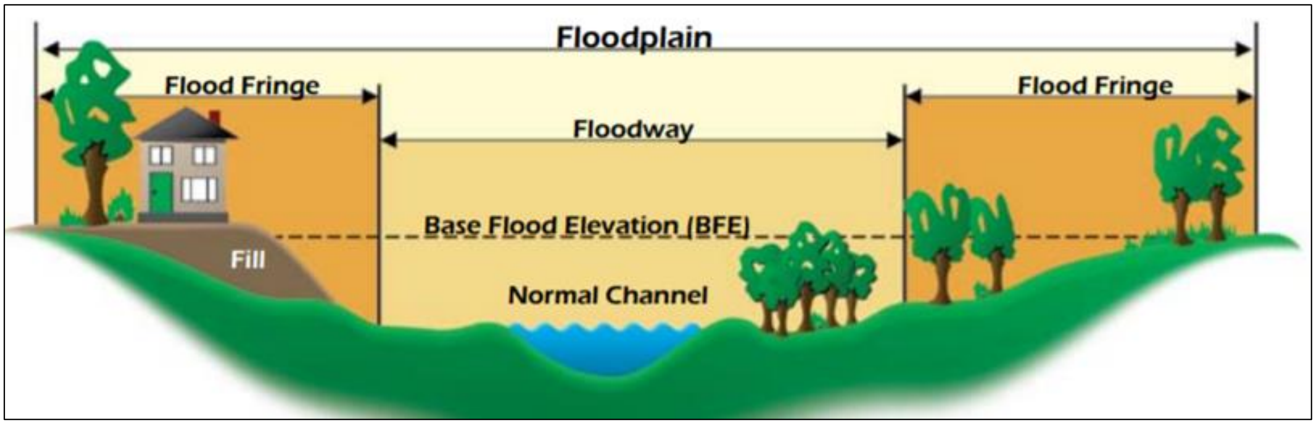


Figure 10-1. Characteristics of a Floodplain, as defined by the National Flood Insurance Program

Channels are defined, ground features that carry water such as rivers, creeks, streams, or ditches. When a channel receives too much water, the excess water flows over its banks and inundates low-lying areas, causing a flood (FEMA 2023).

Riverine floodplains range from narrow, confined channels to wide, flat areas depending on topography. The volume of water in the floodplain, and the flow rate at which it moves through the floodplain, is a function of the size of the contributing watershed, topographic characteristics such as watershed shape and slope, and climatic and land-use characteristics. In steep, narrow valleys, flooding usually occurs quickly, is of short duration, and floodwaters are likely to be rapid and deep. In relatively flat floodplains, areas may remain inundated for days or even weeks, but floodwaters are typically slow moving and relatively shallow and may accumulate over long periods of time.

Flooding of large rivers often results from large-scale weather systems that generate prolonged rainfall over wide areas. These same weather systems may cause flooding in hundreds of smaller basins that drain to major rivers. Small rivers and streams are susceptible to flooding from intense rainfall in localized weather systems, annual spring floods from snowmelt, and rain-on-snow events. The extent of flooding depends on the depth of winter snowpack and spring weather patterns.

The National Weather Service (NWS) defines the flood stage for river forecast points in the State of Idaho. Flood stage is the river height or flow volume at which water begins to overflow banks and poses a definite hazard to life or property. Roads, infrastructure, and property near a river may be inundated when the river exceeds the flood stage. A flood stage is established by historical flood events, modeling, and input by local governments in coordination with the NWS and is used to communicate short term flood potential resulting from current weather conditions. A flood stage supplements the risk communication provided by floodplain designation. The Base Flood Elevation is the elevation of a flood with a 1 percent annual chance of occurring, often referred to as the 100-year flood. A “Regulatory Floodway” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. (https://www.fema.gov/floodway)

The term “500-year flood” is the flood that has a 0.2 percent chance of being equaled or exceeded each year. The 500-year flood could occur more than once in a relatively short period of time. Statistically, the 0.2 percent (500-year) flood has a 6-percent chance of occurring during a 30-year period of time, the length of many mortgages.

Flash Floods

Flash floods are, “a rapid and extreme flow of high water into a normally dry area, or a rapid water level rise in a stream or creek above a predetermined flood level, beginning within six hours of the causative event (e.g., intense rainfall, dam failure, ice jam). However, the actual time threshold may vary in different parts of the country” (NOAA NWS 2023). Flash floods may also occur in draws or gullies where there is no stream or creek. These are characterized by a rapid rise in water level, high velocity, and large amounts of debris. Major factors in flash flooding are the intensity and duration of rainfall and the steepness of watershed and stream gradients. The amount of watershed vegetation, the natural and artificial flood storage areas, and the configuration of the stream bed and floodplain are contributing features. Flash floods may result from the failure of a dam, rapid snowmelt, loss of vegetation due to wildfire, or the sudden breakup of an ice jam. Flash flooding in urban areas is an increasingly serious problem due to the removal of vegetation, the replacement of ground cover with impermeable surfaces that increase runoff, and the construction of drainage systems that increase the speed of runoff. Flash floods can roll boulders, tear down trees, undermine infrastructure, and scour new channels. Rapidly rising water can reach heights of 30 feet or more. Flash flood-producing rains can also trigger mudslides (NOAA 2023).

Alluvial Fan Floods

Alluvial fan flooding is most prevalent in the arid Western States. Alluvial fans are made of sediments that are deposited where a stream or river leaves a defined channel and enters a broader and flatter floodplain. Alluvial generally occur where a stream exits a higher gradient reach into a lower gradient, such as a mountain stream reaching a lower valley, or at the exit of a confined canyon. As the water slows with the changing gradient, it tends to first drop its coarse-grained sediments, and then its fine-grained sediment. As sediments are deposited, the flow path becomes unpredictable due to the random nature of the deposition. The result is a fan-shaped deposit of alluvium. Alluvial fans are especially dangerous and convey high flood risk. When the stream or river repeatedly deposits sediment onto its alluvial fan, the flow paths can become erratic and unpredictable between events, typically following and switching between poorly defined channels, or even acting as sheet flow across the fan. Alluvial fans are also dangerous because each high flow event may cause rapid changes and form new channels or flow paths. FEMA designates Zone AO as the 1 percent annual chance flood zone for shallow flooding, sheet flow, or areas with high flood velocities on alluvial fans. Human activities often exacerbate flooding and erosion problems on alluvial fans. Roads act as drainage channels, carrying high-velocity flows to lower portions of the fan, while filling, leveling, grading, and structures can alter flow patterns.

Pit Capture

Gravel pits and other pond features in the floodplain of rivers pose a flood risk through pit capture. A pit capture occurs when there is a difference in water elevation between the river and a pond, resulting capture has the potential to permanently change the course of a river and significantly alter the streambed and gradient of the river, both upstream and downstream of the event.

When a pit capture occurs, water from the river will first flow into the pit. The initial avulsion can be sudden. Erosion occurs at the site of the breach, both widening and deepening the opening and will continue upstream from the breach in the form of a headcut, or downcutting of the riverbed. The sediment carried by the river plus the sediment transported due to the headcut, will generally settle out of the water column in the pit. As the water surface equalizes between the river and pit, it will seek an exit point where it can directly return to the river channel, or sometimes flow overland if a direct connection is not available until a path back to the river is found. The end result of a pit capture is that a portion of a river channel may be largely abandoned and the river will continue to reinforce its new flow path. This new flow path may shift additional flood risk into areas that were not directly threatened before.

There are two primary failure modes that can cause a pit capture. The first is an overtopping failure, where the river stage rises above a bank and simply overtops it, causing erosion and downcutting of that bank and opening a breach. The second mechanism begins with piping, a hydraulic phenomenon where subsurface water finds an underground flow path moving sediments through the ground and into the pit. As the process continues, the “pipes” can get larger as more sediment is entrained and moved out of the bank. Once enough material has moved, the bank may begin to collapse, which then can lead to the overtopping mechanism to take over and reinforce the pit capture.

Ice Jam Floods

An ice jam is an accumulation of ice that acts as a natural dam or constriction and restricts the flow of a body of water. Ice jams can occur under a variety of conditions. Ice jams may build up to a thickness great enough to raise the water level and cause flooding (NOAA SciJinks 2023). Ice jams may be caused by frazil ice, which is made up of needle shaped ice crystals that form in supercooled, turbulent water, and often has a slushy appearance. Frazil ice can be transported downstream to a point where it may start to accumulate and contribute to ice jams, often building up around other chunks of ice or against constrictions and obstructions.

Ice jam floods can occur during fall freeze-up from the formation of frazil ice, during midwinter periods when stream channels freeze solid to form anchor ice, and during spring break-up when rising water levels from snowmelt or rainfall break the existing ice cover into large floating masses (or floes) that lodge at bridges and other constrictions. Damage from ice jam flooding usually exceeds that caused by open water flooding. Flood elevations are usually higher than predicted for free-flow conditions, and water levels may change rapidly. Additional physical damage is caused by the force of floes striking buildings and other structures.

Sheet Flooding

Sheet flooding is sometimes referred to as areal flooding. This is a type of flood hazard with shallow depths of 1 to 3 feet flowing overland. The flooding does not come from a stream or body of water, but from heavy rains on relatively impervious surfaces, rapid snow melt, or rain on snow and spreads across the landscape. The water flows across the ground towards natural and artificial drainage channels, generally in excess of their capacities. This leads to sustained flooding until the water drains or is pumped, impacting homes, roads, businesses, and agriculture. The sheet flow hazard may be represented by the zone designation AO on Flood Insurance Risk Maps.

Rain on Snow Flooding

Rain on snow increases the snowmelt rate, which can cause flooding. Rain on snow events in the spring are particularly dangerous as warmer weather returns along with breezy winds increasing runoff on multiple rivers and streams. Especially in recent years, this has affected the entire state in areas with snowpack. Sheet flooding occurs in areas where the ground is still frozen with existing snow cover and is further exacerbated by the fluctuating temperatures with warming and cooling cycles. When the temperatures cool and precipitation falls as snow again, the chances of flooding increase as it melts with the next rain on snow event as the temperatures warm. Areas that have previously flooded and not quite dried out yet may have locations where the ground is still frozen. Mid-level slopes that did not receive snow in January for example, but did in February, have potential flood concerns. Heavy snowpack areas are closely monitored during spring rain on snow events.

Levee or Dike Failure

Levees are man-made structures, usually an earthen embankment designed and constructed with sound engineering practices to contain, control, or divert the flow of water in order to provide protection from temporary flooding. A levee is built parallel to a body of water, typically a river, to protect the lives and properties behind it. Currently, there are thousands of miles of levees across the United States. No levee provides full protection from flooding. Levees can be constructed using various materials ranging from soil, rock, concrete, sandbags, gabions, sheet-piling, or any combination thereof. Railroad and highway grades can act as levees, even though they may not have been constructed specifically for that purpose.

Similar to earthen dams, levees may fail by breaching or overtopping. Breaches may potentially cause the most damage and can occur either through gradual erosion or sudden breaks, both of which can result in large amounts of water flowing uncontrolled onto adjacent lands. Contributors to levee failures include inadequate design, poor construction, and lack of repair or maintenance to remove invasive vegetation and burrowing animals, earthquakes, and large floods that can cause erosion or overtopping. However, levees are unlike dams, which typically are designed and constructed against overtopping for all but the most extreme of hydrologic events. Some levees are designed to a particular level of flood protection. The minimum standard for the United States Army Corps of Engineers (USACE) Rehabilitation and Inspection Program is a 10 percent annual chance flood with 2 feet of freeboard. Other levees were built to meet an immediate need without the benefit of a deliberate design. These do provide some level of protection, but may have been poorly constructed, and the level of protection may not meet the USACE minimum standard. The implication to communities protected by a levee against a 100-year flood is not one of whether the levee will be overtopped, but instead when and/or how often the levee will be overtopped resulting in its potential failure and catastrophic flooding of adjacent lands. Communities need to consider fully the flood risks and establish protection measures for levee failures before they occur. Up to date surveys of the height of the levee relative to its surroundings and awareness of any low areas at the top of the levee are important in reducing unexpected overtopping. During a flood event, the top of the levee may be raised temporarily by sandbags or other means to prevent overtopping. When a levee is overtopped and the land side of the levee is not adequately armored, the flowing waters can erode and undercut the levee, causing it to collapse. Water flowing through or under a levee will weaken and cause flooding on the land side. Water easily can flow through animal tunnels, along channels in the soil left by root systems, or through poorly compacted or sandy soils. “Sand boils” on the land side of the levee are an indication of water seepage. Wave action or scouring on the water side of the levee can reduce the width of the levee causing it to fail.

Canal Failure

Canals are found throughout Idaho and provide essential irrigation to agricultural lands. Irrigation in Idaho goes as far back as at least 1839 when missionaries put in a ditch for crop irrigation during the summers. By 1864, many important canal companies were starting in Idaho. In the early 1900s, much of the arid land in southwest Idaho was developed through reclamation projects. These projects included dams to collect water and provide flood control and canals to deliver water to agricultural areas (Idaho State Historical Society 1971).

In Idaho, irrigation districts and private irrigation companies are entities which own water rights and distribute water. The structure of each entity varies. Information regarding each type, as described by IDWR, is as follows:

- Irrigation districts are created pursuant to local elections authorized by a county commission upon petition of landowners. They are typically created for the purpose of new irrigation development or acquiring irrigation projects, but they may be created for other reasons. Irrigation districts hold water rights, own diversion facilities and infrastructure, and are governed by a state of by-laws created by a board of directors who are elected by district members. The districts are public, involuntary, semi-municipal fee-collecting entities controlled by local landowners.

Private irrigation companies are often referred to as irrigation companies, canal companies, mutual ditch companies, and reservoir companies. They are privately formed, non-profit, fee-collecting companies that furnish delivery of water for irrigation purposes. A company holds water rights and members own shares in the company. Water is typically allocated annually by share, and shareholders pay assessments for maintenance of water conveyance infrastructure and related expenses. The size and number of ditches or canals administered by such companies vary. Private irrigation companies typically elect boards of directors and often adopt by-laws (IDWR 2023).

Most canals in Idaho are earthen structures and share many of the same potential failure modes as dams and levees (breaching or overtopping). The probability of canal failure is increased and the risks to life and property are greater when development encroaches on canals hindering maintenance, repair, and regular inspection.

10.1.2 Dam Failure

Compared to other flood hazards in Idaho, dam failures are rare. However, because a dam failure can release high flows into river channels with little or no advance warning, similar to flash flooding, they can cause significant damage and loss of life. The 1976 failure of the Teton Dam is an example of this hazard. This section provides additional information on dam failure as one type of flood hazard.

Definitions

A **dam** is typically considered to be an artificial barrier constructed across a watercourse to store, control, or divert water, mine tailings slurry, wastewater, or liquefied industrial or food processing by products. The State of Idaho regulates dams based on the definition expressed in Idaho Code 42.1711(b): Any artificial barrier or embankment, together with appurtenant works, constructed for the purpose of storing water or that stores water, which is ten (10) feet or more in height from the natural bed of the stream or watercourse at the downstream toe of the barrier or from the lowest elevation of the outside limit of the barrier as determined by the department, if it is not across a stream channel or watercourse, to the maximum water storage elevation, and has or will have an impounding capacity at maximum water storage elevation of fifty (50) acre-feet or more.

Although dams can take many forms that may not be immediately obvious, they typically are constructed of earth, rock, or concrete. Most have a section called a spillway or weir over or through which water flows, either intermittently or continuously. Some have hydroelectric power generation systems installed.

The storage volume behind a dam commonly is referred to as the **reservoir**. An example is illustrated in Figure 3.1.A which shows the water surface behind Dry Creek Dam located in Payette County. Most water storage reservoirs are measured in acre-feet; however, noting that other units also are sometimes used to express storage capacity (e.g., tons, cubic feet, gallons, etc.) An acre-foot is the volume of water equal to one acre of land covered to a depth of 1 foot (approximately 325,850 gallons).

A **dam failure** is an uncontrolled release of impounded water or waste due to a sudden collapse, breach, or overtopping of the dam, resulting in downstream flooding. A dam failure can also occur more slowly, allowing time for people downstream to react and move out of the path of the advancing flood wave; noting that any uncontrolled release of stored contents is considered to constitute a failure, nonetheless.

Inundation zones are the surface areas downstream from a dam that would be submerged by water in the event of a dam failure. These zones can be modeled using computer applications and known or assumed conditions related to the dam and reservoir.

Hazard is defined as the potential consequences to downstream life and property resulting from a dam failure and/or uncontrolled release of water. Hazard classification does not take into account the physical condition of the dam or size characteristics, only the consequence of failure.

Risk is defined as the combination of consequence (hazard) and likelihood (probability) that a failure mechanism will fully develop to result in downstream property damage and/or loss of life. Although “hazard” and “risk” are often used synonymously by the public, these terms have distinctly different meanings when applied to dams.

Dam Failure Causes

Dam failure occurs when structural or operational issues cause a dam to release dangerously high flows to downstream areas. Dam failures can result from any one or a combination of the following causes:

- Overtopping of the primary dam structure by the reservoir due to inadequate spillway design, gradual settlement of the dam crest, blockage of spillway, and other factors.
- Foundation defects that result in settlement, slides, slope instability, uplift pressures, and seepage can also cause dam failures.
- Failure of earthen embankments due to seepage, internal erosion along hydraulic structures such as spillways and outlet conduits, erosion due to animal burrows, and cracks in the dam structure.
- Failure due to problems with conduits and valves
- Miscellaneous causes that include but are not limited to:
  - Prolonged periods of rainfall or rapid snowmelt that exceed the design capacity of the emergency spillway
  - Poor design and/or construction
  - Lack of necessary maintenance and/or repair of deficient components
  - Negligent operation, including the failure of the dam owner to implement previously recommended safety features, practices, or standards of care
  - Failure of upstream dams on the same waterway
  - Landslides into reservoirs, which cause surges that result in overtopping
  - High winds, which can cause significant wave action and result in substantial erosion

Three factors influence the potential severity of a dam failure: the height of the dam, the amount of water impounded, and the distance to and extent of development and infrastructure located downstream. If the river channel downstream of a dam has extensive development, then the dam’s failure can lead to loss of life and/or costly property damage.

Regulatory Oversight

The following agencies and programs provide regulatory oversight of dams in the State of Idaho.

Idaho Department of Water Resources (IDWR) Dam Safety Program

The Dam Safety Program establishes requirements for proper planning, design review, construction oversight, and inspection of regulated dams and reservoirs. Dam Safety Program personnel regularly inspect existing projects according to the potential consequences of the dam's failure on downstream life and property (aka hazard). The frequency of individual dam inspections may also depend on the project's physical condition, method of construction, maintenance record, age, and size and storage capacity. All regulated dams must be inspected by the Department at least every 5 years.

Regardless of size, any water storage dam may be regulated for public safety if the structure is classified Significant or High hazard, meaning that its potential failure would result in significant damage to downstream property or loss of life. As of 2022, IDWR regulates approximately 400 water storage dams and 20 mine tailings impoundment structures.

IDWR uses a hazard rating system to classify dams and reservoirs based on a three-tier system: low, significant, and high-hazard categories. The hazard classification assigned to any structure is based solely on the potential consequences to downstream life and property that would result from a failure of the dam and sudden release of water (Idaho Department of Water Resources 2023).

- **High Hazard** – A high-hazard rating does not imply or otherwise suggest that a dam suffers from an increased risk for failure. It simply means that if failure were to occur, the resulting consequences likely would be a direct loss of human life and extensive property damage. For this reason, all high-hazard dams must be properly designed, and at all times responsibly maintained and safely operated because the consequences of failure are so great. IDWR considers the inundation of residential structures with flood water from a dam break to a depth greater than or equal to two (2) feet to be a sufficient reason for assigning to a dam a high-hazard rating. An up-to-date Emergency Action Plan is a requirement for all owners of High hazard dams (Idaho Department of Water Resources 2023).
- **Significant Hazard** – Significant hazard dams are those structures whose failure would result in significant damage to developed downstream property and infrastructure or that may result in an indirect loss of human life. An example of the latter would be a scenario where a roadway is washed out and people are killed or injured in an automobile crash caused by the damaged pavement (Idaho Department of Water Resources 2023).
- **Low Hazard –** Low hazard dams typically are located in sparsely populated areas that would be largely unaffected by a breach of the dam. Although the dam and appurtenant works may be totally destroyed, damages to downstream property would be restricted to undeveloped land with minimal impacts to existing infrastructure (Idaho Department of Water Resources 2023).

U.S. Army Corps of Engineers Dam Safety Program

The National Dam Safety Act (Public Law 92-367) requires a periodic engineering analysis of every major dam in the country. The goal of this FEMA-monitored effort is to identify and mitigate the risk of dam failure to protect the lives and property of the public.

The U.S. Army Corps of Engineers (USACE) is responsible for safety inspections of some federal and non-federal dams in the United States that meet size and storage limitations specified in the National Dam Safety Act. Through the National Dam Inspection Act of 1972 (33 U.S.C. § 467), USACE is authorized to inventory all dams in the United States, creating the National Inventory of Dams (NID). There are approximately 92 thousand dams in the NID that are federally, state, or locally and privately. USACE has inventoried dams; surveyed each state and federal agency's capabilities, practices and regulations regarding design, construction, operation, and maintenance of the dams; and developed guidelines for inspection and evaluation of dam safety.

The USACE Dam Safety Program uses risk to inform how it manages the approximately 740 dams it operates and maintains, with life safety the highest priority. This approach is a best practice adopted to evaluate, prioritize, and justify dam safety decisions. Using risk information allows USACE to repair its dams in the most effective manner within a constrained budget. Table 10-1 describes the hazard categories that are assigned to dams through the Dam Safety Program.

Table 10-1. USACE Hazard Potential Classification

Hazard Category[a]	Direct Loss of Life[b]	Lifeline Losses[c]	Property Losses[d]	Environmental Losses[e]
Low	None expected	No disruption of services (cosmetic or rapidly repairable damage)	Private agricultural lands, equipment, and isolated buildings	Minimal incremental damage
Significant	None expected	Disruption of essential or critical facilities and access	Major or extensive public and private facilities	Major or extensive mitigation required or impossible to mitigate
High	Certain (one or more) extensive residential, commercial, or industrial development	Not considered for this category	Not considered for this category	Not considered for this category

a. Categories are assigned to overall projects, not individual structures at a project.
b. Loss of life potential based on inundation mapping of area downstream of the project. Analyses of loss of life potential should take into account the population at risk, time of flood wave travel, and warning time.
c. Indirect threats to life caused by the interruption of lifeline services due to project failure or operational disruption; for example, loss of critical medical facilities or access to them.
d. Damage to project facilities and downstream property and indirect impact due to loss of project services, such as impact due to loss of a dam and navigation pool, or impact due to loss of water or power supply.
e. Environmental impact downstream caused by the incremental flood wave produced by the project failure, beyond what would normally be expected for the magnitude flood event under which the failure occurs.

Source: (U.S. Army Corps of Engineers 2014)

Federal Energy Regulatory Commission Dam Safety Program

The Federal Energy Regulatory Commission (FERC) has the largest dam safety program in the United States. FERC cooperates with many federal and state agencies to ensure and promote dam safety and, more recently, homeland security. There are 3,036 dams that are part of regulated hydroelectric projects in the FERC program. Two-thirds of these are more than 50 years old. As dams age, concern about their safety and integrity grows, so oversight and regular inspection are important. FERC staff inspects hydroelectric projects on an unscheduled basis to investigate the following:

- Potential dam safety problems
- Complaints about constructing and operating a project
- Safety concerns related to natural disasters

- Issues concerning compliance with the terms and conditions of a license.

Every five years, an independent consulting engineer, approved by FERC, must inspect and evaluate projects with dams higher than 32.8 feet, or with a total storage capacity of more than 2,000 acre-feet.

FERC staff monitors and evaluates seismic research in geographic areas where there are concerns about seismic activity. This information is applied in investigating and performing structural analyses of hydroelectric projects in these areas. FERC staff also evaluates the effects of potential and actual large floods on the safety of dams. During and following floods, FERC staff visit dams and licensed projects, determines the extent of damage, if any, and directs any necessary studies or remedial measures the licensee must undertake. The FERC publication *Engineering Guidelines for the Evaluation of Hydropower Projects* guides FERC engineering staff and licensees in evaluating dam safety. The publication is frequently revised to reflect current information and methodologies.

FERC requires licensees to prepare emergency action plans and conducts training sessions on how to develop and test these plans. The plans outline an early warning system if there is an actual or potential sudden release of water from a dam due to failure. The plans include operational procedures that may be used, such as reducing reservoir levels and reducing downstream flows, as well as procedures for notifying affected residents and agencies responsible for emergency management. These plans are frequently updated and tested to ensure that everyone knows what to do in emergency situations.

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation's Dam Safety Program was implemented under the 1978 Reclamation Safety of Dams Act (Public Law 95-578 and subsequent amendments). It requires dams to be safely operated and maintained, as ensured through inspections for safety deficiencies, analyses utilizing current technologies and designs, and implementation of corrective actions as needed.

Reclamation's Safety Evaluation of Existing Dams program performs site evaluations and identifies potential safety deficiencies on U.S. Department of Interior dams. The program identifies dams that pose a threat to the public and completes analyses to expedite corrective action decisions.

Reclamation's Safety of Dams program evaluates and implements actions to resolve safety concerns at Reclamation dams. The selected course of action relies on assessments of risk and liability with environmental and public involvement input to the decision-making process.

Water Infrastructure Improvements for the Nation Act

The 2016 Water Infrastructure Improvements for the Nation (WIIN) Act created a new grant program under FEMA's National Dam Safety Program. The grants fund technical, planning, design, and construction assistance for rehabilitation of eligible high-hazard-potential dams (HHPDs). High hazard potential refers to any dam whose failure or mis-operation would cause loss of human life and significant property destruction. States with a dam safety program or an equivalent state agency can apply for HHPD grants. Dams eligible for funding under this program are non-federal dams that:

- Are located in a state or territory with its own dam safety program
- Are classified as "high-hazard-potential" by the dam safety agency in the state or territory where the dam is located

- Have emergency action plans approved by the state or territory dam safety agency
- Fail to meet minimum dam safety standards or pose an unacceptable risk to the public, as determined by the state or territory.

Licensed hydroelectric dams and dams built under the authority of the U.S. Secretary of Agriculture are not eligible.

The WIIN Act requires state hazard mitigation plans to include a risk assessment of eligible dams. The dam failure risk assessment presented in this chapter meets that requirement for the State of Idaho.

10.2 HAZARD LOCATION

Most flooding occurs along natural stream or river channels. The land along a stream or river that is identified as being susceptible to flooding is called the floodplain. Major floods have historically occurred in Idaho every one to two years and are considered the most serious and costly natural hazard affecting the State.

10.2.1 Flood

The federal standard for floodplain management under the National Flood Insurance Program (NFIP) is the "base floodplain" (also known as the 100-year floodplain, 1 percent annual chance floodplain, and Special Flood Hazard Area [SFHA]). This area is determined using historical data indicating that in any given year there is a 1 percent chance of the base flood occurring or 1 in 100, probability that water levels will exceed this magnitude. Base floods can occur in any year, even successive ones. The 1-percent annual chance flood is now the standard used by most federal and state agencies and by the NFIP. The 1-percent annual chance of flood hazard zones (both A and V-zones) and 0.2-percent annual chance flood zone throughout Idaho are identified in Figure 10-2.

Floods vary greatly in frequency and magnitude. Small flood events occur much more frequently than large, devastating events. Statistical analyses of past flood events can be used to establish the likely magnitude and recurrence intervals (period between similar events) of future events.

10.2.2 Dams

The 2022 National Inventory of Dams (NID) lists 409 dams in Idaho: 103 identified as high hazard potential, 144 identified as significant hazard potential, 161 identified as low hazard potential, and 1 with undetermined potential (U.S. Army Corps of Engineers 2023). The NID database is maintained by the USACE, and a summary report is submitted annually to DHS-FEMA. The dams listed in the NID meet at least one of the following criteria:

- High hazard potential
- Significant hazard potential
- Equal or exceed 25 feet in height and exceed 15 acre-feet in storage
- Equal or exceed 50 acre-feet storage and exceed 6 feet in height.

In addition to the dams reported by IDWR to the NID, IDWR also maintains a listing of smaller, low hazard dams across Idaho. Structures in the dataset include non- regulated, pending, reclaimed, and breached dams, as well as dams with no identified status. Figure 10-3 shows the distribution of dams located across the State. Table 10-2 lists the State-defined high hazard dams.

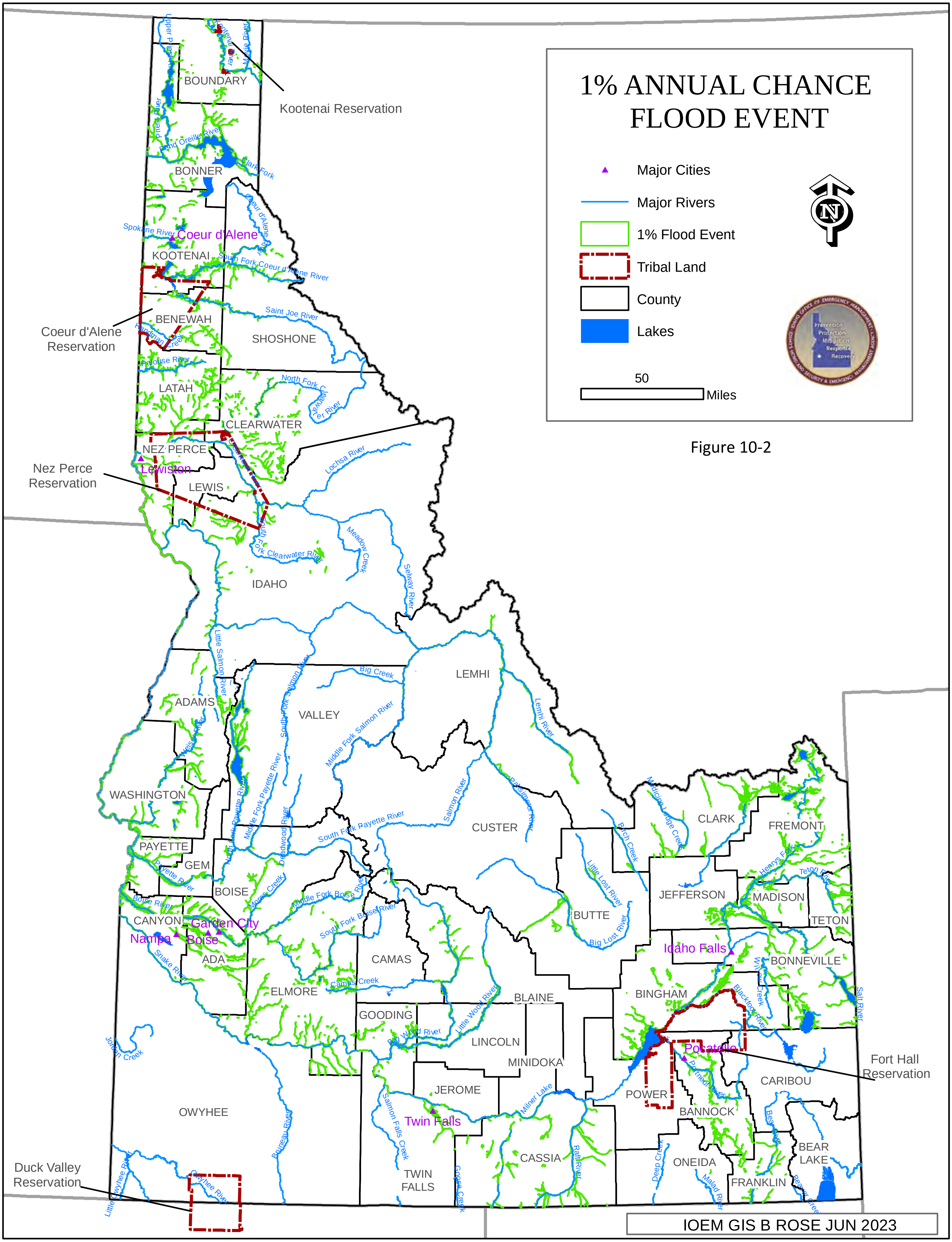
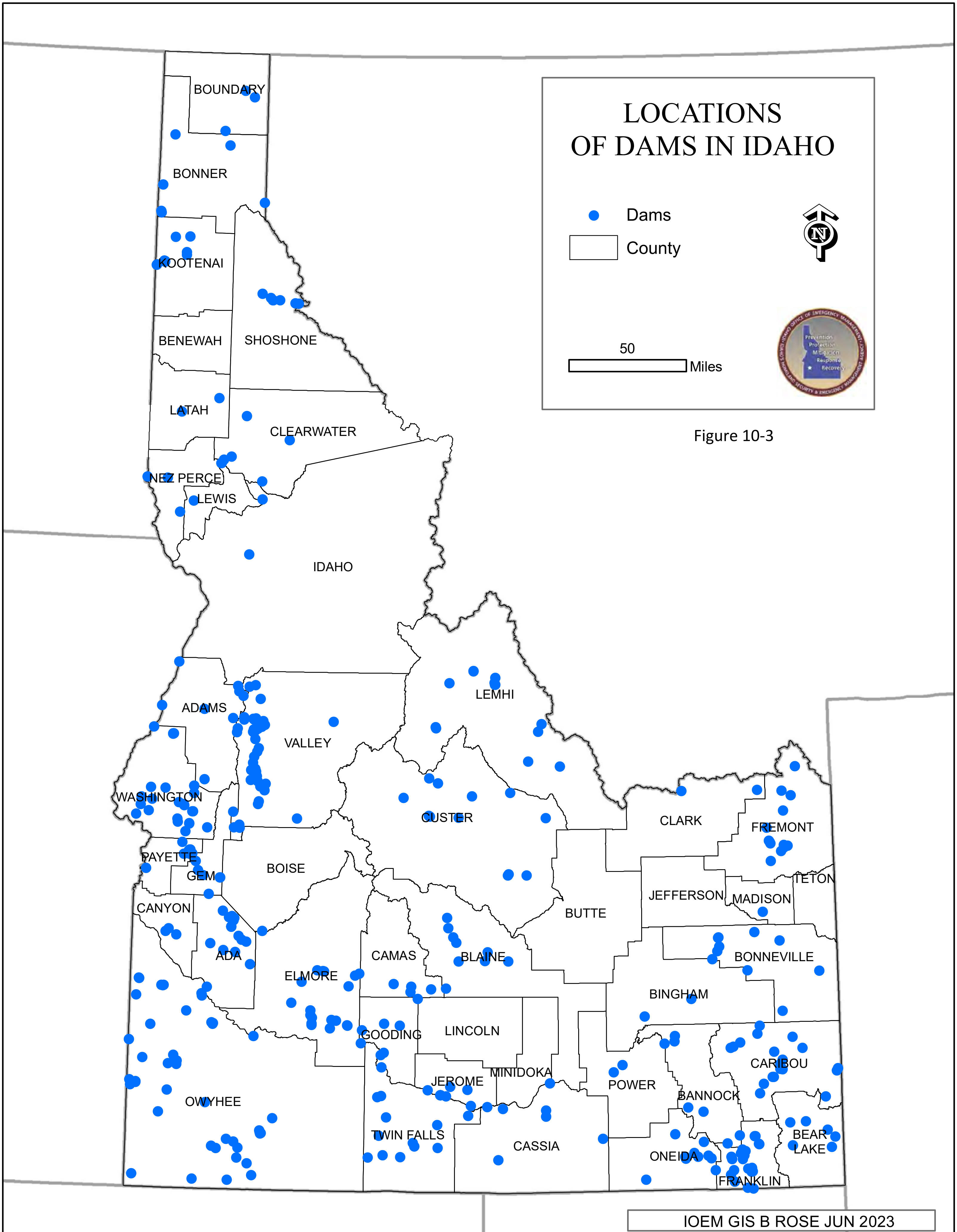

1% ANNUAL CHANCE FLOOD EVENT
Major Cities
Major Rivers
1% Flood Event
Tribal Land
County
Lakes
50
Miles
Kootenai Reservation
Coeur d'Alene Reservation
Nez Perce Reservation
Fort Hall Reservation
Duck Valley Reservation
BOUNDARY
BONNER
KOOTENAI
BENEWAH
SHOSHONE
LATAH
CLEARWATER
NEZ PERCE
LEWIS
IDAHO
ADAMS
VALLEY
LEMHI
WASHINGTON
PAYETTE
GEM
BOISE
CANYON
ADA
ELMORE
CAMAS
CUSTER
BUTTE
CLARK
FREMONT
JEFFERSON
MADISON
TETON
BONNEVILLE
BINGHAM
BLAINE
GOODING
LINCOLN
MINIDOKA
JEROME
TWIN FALLS
CASSIA
POWER
BANNOCK
CARIBOU
ONEIDA
FRANKLIN
BEAR LAKE
OWYHEE
Coeur d'Alene
Lewiston
Garden City
Nampa
Boise
Idaho Falls
Pocatello
Twin Falls
Spokane River
South Fork Coeur d'Alene River
Saint Joe River
Clark Fork
Pend Oreille River
Priest River
Kootenai River
Lochsa River
Selway River
Meadow Creek
South Fork Clearwater River
Little Salmon River
South Fork Salmon River
Big Creek
Middle Fork Salmon River
Lemhi River
Salmon River
Pahsimeroi River
Medicine Lodge Creek
Birch Creek
Little Lost River
Big Lost River
Henrys Fork
Teton River
South Fork Payette River
Middle Fork Payette River
North Fork Payette River
Deadwood River
Payette River
Boise River
Mores Creek
Middle Fork Boise River
South Fork Boise River
Snake River
Camas Creek
Big Wood River
Little Wood River
Milner Lake
Salmon Falls Creek
Goose Creek
Raft River
Deep Creek
Malad River
Bear River
Blackfoot River
Portneuf River
Willow Creek
Salt River
Bruneau River
Owyhee River
Little Owyhee River
Jordan Creek
Palouse River
IOEM GIS B ROSE JUN 2023

Figure 10-2



LOCATIONS OF DAMS IN IDAHO
Dams
County
50
Miles
BOUNDARY
BONNER
KOOTENAI
BENEWAH
SHOSHONE
LATAH
CLEARWATER
NEZ PERCE
LEWIS
IDAHO
ADAMS
VALLEY
LEMHI
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
BOISE
GEM
TETON
JEFFERSON
MADISON
CANYON
BUTTE
BONNEVILLE
ADA
CAMAS
BLAINE
ELMORE
BINGHAM
GOODING
LINCOLN
CARIBOU
MINIDOKA
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
IOEM GIS B ROSE JUN 2023

Figure 10-3

Table 10-2. High Hazard Dams in Idaho

Name	State ID #	National ID #	County	Dam Height (feet)	Hydraulic Height (feet)	Storage Capacity (acre--feet)	Hazard Potential (State)
Meadow Creek Mtis	77-XX15	ID06213	Lemhi	0	0	0	High
Bannister Basin	65-23731	ID06220	Payette	108	105	990	High
Strong Arm No 1 (Upper)	13-2286	ID00228	Franklin	39.1	35.8	1713	High
Soda	11-2081	ID00060	Caribou	110	105	15760	High
Oneida	13-2040A1	ID00068	Franklin	111	102	11400	High
Oneida Dike	13-2040A2	ID00533	Franklin	47	31	4456	High
Mackay	34-2225	ID00181	Custer	75.2	67	45000	High
Magic	37-2116	ID00039	Blaine	128	113	191500	High
Saint John	15-XX02	ID00001	Oneida	43.4	39	630	High
Blackfoot	27-2007a1	ID00204	Caribou	46.5	35	350000	High
Blacks Creek	63-0379	ID00208	Ada	51.5	45	3640	High
Boise Diversion	63-2388	ID00281	Ada	56.9	46	1200	High
Arrowrock	63-3613	ID00280	Elmore	350	257	272224	High
Lucky Peak	63-3618	ID00288	Ada	258	240	307000	High
Deer Flat Lower	63-4868A1	ID00278	Canyon	50	42	173200	High
Deer Flat Middle	63-4868A2	ID00277	Canyon	14	11.5	63000	High
Deer Flat Upper	63-4868A3	ID00276	Canyon	60	52	173000	High
Anderson Ranch Dam	63-3614	ID00279	Elmore	342	332	474942	High
Brundage	78-2085	ID00337	Adams	63	56.5	7330	High
Thompson Mtis	72-7257a	ID00448	Custer	789	775.5	895000	High
Star No 6	94-XX18	ID00385	Shoshone	33.3	33.3	175	High
Cedar Creek	47-2440a	ID00045	Twin Falls	90	84	30000	High
Cabinet Gorge	96-2269	ID00222	Bonner	208	201	104600	High
Dworshak	83-XX01	ID00287	Clearwater	701	688	3453000	High
Osburn	94-xx07	ID00293	Shoshone	71	62	519	High
Crane Creek Main Dam	67-2384A1	ID00135	Washington	64	55	56800	High
Crane Creek Dike	67-2384A2	ID00513	Washington	24.6	15.3	35300	High
Lamont	13-2291	ID00071	Franklin	67.6	63.5	2040	High
Deadwood	65-2917	ID00284	Valley	153.9	144	162000	High
Twin Lakes South	13-0841a1	ID00077	Franklin	35.5	31	14000	High
Twin Lakes North	13-0841a2	ID00540	Franklin	31.8	27.4	14000	High
McArthur	98-2143	ID00154	Boundary	14.7	10.2	1085	High
Deep Creek	15-2077	ID00005	Oneida	90.6	81	5537	High
Devil Creek	15-2081	ID00229	Oneida	83.6	73.4	4464	High
Dry Creek Main	65-7136a1	ID00324	Payette	67.81	62.81	1859.1	High
Murtaugh Lake	01-2027B	ID00165	Twin Falls	42.2	38.7	7720	High
Fish Creek	37-1162	ID00183	Blaine	91.7	69	5515	High
Goose Lake	78-4006	ID00259	Adams	27	21	6550	High
Oakley	45-2059	ID00233	Cassia	144.8	139	76000	High
Ashton	21-2164	ID00178	Fremont	60	60	9800	High
Henrys Lake	21-2152	ID00008	Fremont	25.2	22.5	58700	High

Name	State ID #	National ID #	County	Dam Height (feet)	Hydraulic Height (feet)	Storage Capacity (acre--feet)	Hazard Potential (State)
Island Park	21-2156	ID00272	Fremont	84	75	135000	High
Hot Springs No 2	61-2236	ID00202	Elmore	41.3	36.6	5334	High
Paddock Valley	65-2149	ID00250	Washington	49.2	42.4	22300	High
Winchester	85-2020	ID00148	Lewis	40.2	36.3	1425	High
Daniels	15-2080	ID00006	Oneida	95.6	81.7	8700	High
Little Wood	37-2779	ID00041	Blaine	129	117.3	30000	High
Lost Valley	67-2053	ID00255	Adams	31.3	23.1	9583	High
Mann Creek	67-2386	ID00285	Washington	138	124	12950	High
Mormon	37-2105	ID00024	Camas	27.1	22.8	19280	High
Montpelier Creek	11-2159	ID00062	Bear Lake	82	73	4050	High
Moyie	98-2060	ID00155	Boundary	92	68	450	High
Black Canyon	65-2288	ID00282	Gem	128.5	111	29822	High
Horseshoe Bend Hydroelectric	65-12563	ID00726	Boise	66	61.4	700	High
Cascade	65-2927	ID00283	Valley	110	78	693200	High
Albeni Falls	97-2056	ID00319	Bonner	65	65	1156130	High
Portneuf	29-2065	ID00180	Caribou	54.6	47	20504	High
Mountain Home	61-0276	ID00238	Elmore	47.7	42.4	5468	High
Salmon Falls	47-2017A	ID00044	Twin Falls	223.5	217	230650	High
Hulet	57-7152	ID00372	Owyhee	99	92	4290	High
Hells Canyon	03-2017	ID00055	Adams	228	221	170000	High
Brownlee	03-2018	ID00056	Washington	395	277	1470000	High
Oxbow	03-2019	ID00057	Adams	145	130	58200	High
Minidoka	01-2000	ID00275	Minidoka	86	81	210000	High
Milner	01-2027A	ID00223	Twin Falls	78	73.5	39000	High
Palisades	01-268	ID00273	Bonneville	260	249	1401000	High
Gem State	01-7018	ID83006	Bonneville	47.5	43	5000	High
Salmon Falls Lower	02-2060	ID00052	Gooding	45.6	38	32000	High
C J Strike	02-2080	ID00054	Elmore	115	105	250000	High
Soda Creek Main Dam	11-2160A1	ID00063	Caribou	36.3	31.3	2500	High
Post Falls North	95-4518A1	ID00496	Kootenai	45	26	225000	High
Post Falls Middle	95-4518A2	ID00220	Kootenai	64	58.5	225000	High
Post Falls South	95-4518A3	ID00497	Kootenai	36.5	29.5	225500	High
Crowther	15-2076	ID00034	Oneida	90	85.4	959	High
Spring Valley	86-2038	ID00150	Latah	47.4	42.3	721	High
Squaw Creek	55-2181	ID00236	Owyhee	61	53.3	1140	High
Sublett	43-2584	ID00031	Cassia	47.7	42.6	2400	High
Texas Basin	57-7153	ID00375	Owyhee	121	109.3	6340	High
Reservoir A	85-0016	ID00261	Nez Perce	59.7	57	3300	High
Teton	22-2290		Fremont	0	0	0	High
Trail Creek	37-12111	ID00037	Blaine	22.9	18	66.5	High
Itafos Cooling Pond	11-xx13	ID00470	Caribou	20	17	592	High

Name	State ID #	National ID #	County	Dam Height (feet)	Hydraulic Height (feet)	Storage Capacity (acre--feet)	Hazard Potential (State)
J-Ditch Effluent Lagoon	65-XX25	ID00493	Valley	41.5	38.5	645	High
C Ben Ross	67-2385	ID00136	Adams	61.3	57.8	8550	High
Fairchild No. 1 (Upper)	67-2390	ID00216	Washington	77.5	74.2	3303	High
Simplot Effluent Irrigation Lagoon	29-7437	ID00305	Bannock	38.5	34	900	High
Soldiers Meadow	85-2146	ID00149	Nez Perce	61.1	50	2370	High
Weston	13-2293	ID00074	Oneida	42.2	37.2	2066	High
Ririe	25-7004	ID00344	Bonneville	204	169	100500	High
Aikman	63-12361	ID00491	Gem	76.6	67	2000	High
Glendale	13-2288	ID00175	Franklin	73.4	68.9	5727	High
Foster	13-2298	ID00079	Franklin	70	65	2969	High
Little Payette Lake Main	65-3219A1	ID00243	Valley	25	16	10300	High
Lucky Friday No 4	94-xx25	ID00728	Shoshone	132	99	624	High
American Falls	01-2064	ID00274	Power	86.5	77.5	1672590	High

10.2.3 Levees

There are 139 levee systems or 242 miles in total located in Idaho. Most of the levees in Idaho are locally owned and maintained; only about 27 are operated by USACE (U.S. Army Corps of Engineers n.d.). There exist many miles of levees that have not been mapped, measured, or adequately inspected. Per Idaho Statute, levees are exempted from the IDWR dam safety regulations, and there is no other state agency tasked with specific duties to provide for public safety as it relates to design, construction, or inspection of levees. In most instances, the design, construction, and maintenance of levees is left to the discretion of local entities. Strategies being discussed at the State are to develop a state safety program to regulate new levees in general accordance with the Draft Recommendations for a National Levee Safety Program as presented in the 2009 Report to Congress.

The USACE owns and maintains over 24,000 miles of levees nationwide; however, it is federally authorized to inspect levees with local non-federal sponsors who then are responsible for routine maintenance and repair. The USACE offers flood fighting training to qualified jurisdictions. The USACE developed a National Levee Database through the Levee Safety Program with information and mapping of those Idaho levees that are included in the Corps Levee Safety Program. Unfortunately, the levees listed in the database represent a small percentage of the total number of levees in the state. The National Levee Database is being expanded to capture local levee information on a volunteer basis.

Levees require maintenance to provide the level of protection they were designed and built to offer. Maintenance responsibility belongs to a variety of entities including local, state, and federal government and private landowners. Levee maintenance is a certification requirement for levee accreditation under the NFIP (44CFR § 65.10). Levees may not be certified for maintaining flood protection when the levee owner does not maintain the levee or pay for an independent inspection. The impacts of an un-certified levee include higher risk of levee failure. In addition, insurance rates may increase because FEMA identifies on Flood Insurance Rate Maps that the structures are not certified to protect from a one-percent annual chance flood event (FEMA 2021).

Table 10-3 lists the locations of levee systems throughout the State as reported in the USACE National Levee Database; this list is subject to change without notice. These systems represent the levees that are actively inspected and have maintained a "minimally acceptable" rating or better in the USACE Rehabilitation and Inspection Program. The table includes levees that are sponsored federally, by the State, or locally.

Table 10-3. Levee Systems in Idaho

County	System Name	Sponsor	Length (Miles)	Rehabilitation Program Status
Ada County	Fairgrounds	Flood Control District #10 of Idaho	0.23	Active
Ada County	Mink Farm	Flood Control District #10 of Idaho	0.48	Inactive
Ada County	Strunk-Stillwell	Flood Control District #10 of Idaho	0.89	Active
Bannock County	Pocatello 1 (Left Bank—Upper)	City of Pocatello, ID	2.15	Active
Bannock County	Pocatello 2 (Right Bank—Upper)	City of Pocatello, ID	3.09	Active
Bannock County	Pocatello 3 (Left Bank—Middle)	City of Pocatello, ID	0.89	Active
Bannock County	Pocatello 4 (Left Bank—Lower)	City of Pocatello, ID	2.29	Inactive
Bannock County	Pocatello 5 (Right Bank—Lower)	City of Pocatello, ID	1.47	Inactive
Benewah County	Cherry Creek / Shepherd	City of St. Maries, Shepherd Diking District	2.38	Active
Benewah County	Cottonwood	Cottonwood Diking District	2.22	Inactive
Benewah County	Hells Gulch Levee	Benewah County	0.78	Not Enrolled
Benewah County	Highway 3—St. Joe	St. Joe Drainage District 3	2.59	Inactive
Benewah County	Meadowhurst	Meadowhurst Diking District	3.89	Active
Benewah County	Riverdale	Riverdale Diking District	2.53	Active
Benewah County	Saint Joe River Levee	Benewah County	0.17	Not Enrolled
Benewah County	Saint Joe River Levee 2	Benewah County	3.57	Not Enrolled
Benewah County	Saint Joe River Levee 4	Benewah County	0.45	Not Enrolled
Benewah County	Saint Joe River Levee 6	Benewah County	0.06	Not Enrolled
Benewah County	Saint Joe River Levee 7	Benewah County	0.68	Not Enrolled
Benewah County	Saint Joe River Levee 8	Benewah County	0.93	Not Enrolled
Benewah County	St. Maries Authorized	City of St. Maries	2.55	Active
Bingham County	Blackfoot 1 (Right Bank and Right Bank of Diversion Channel)	Flood Control District #7 of Idaho	4.82	Inactive
Bingham County	Blackfoot 2 (Left Bank)	Flood Control District #7 of Idaho, Unknown	3.58	Inactive
Bingham County	Blackfoot 3 (Left Bank of Diversion Channel)	Flood Control District #7 of Idaho	0.53	Active
Bingham County	Blackfoot Golf Course	City of Blackfoot, ID	0.50	Active
Bingham County	Ferry Butte	Bingham County, ID	0.39	Inactive
Bingham County	Nonpareil	Bingham County, ID	1.69	Active
Bingham County	Todd Lambert	Bingham County, ID	0.12	Inactive
Blaine County	Bible Camp	Flood Control District #9 of Idaho	0.14	Active
Blaine County	Broadford Bridge / Eccles	Flood Control District #9 of Idaho	0.54	Active
Blaine County	Deer Creek	Flood Control District #9 of Idaho	0.09	Inactive
Blaine County	Gage	Flood Control District #9 of Idaho	0.46	Inactive
Blaine County	Meyers	Flood Control District #9 of Idaho	0.30	Active
Blaine County	Star Bridge (Left Bank)	Flood Control District #9 of Idaho	0.24	Active

County	System Name	Sponsor	Length (Miles)	Rehabilitation Program Status
Blaine County	Zinc Spur	Flood Control District #9 of Idaho	0.17	Inactive
Boise County	Horseshoe Bend	City of Horseshoe Bend, ID	1.31	Active
Bonner County	Lightning Creek Authorized	Village of Clark Fork	0.74	Active
Bonner County	Lightning Creek Levee	City of Clark Fork	0.74	Not Enrolled
Bonner County	Lightning Creek Levee 2	City of Clark Fork	0.37	Not Enrolled
Bonneville County	Ririe Outlet Channel Levee	Bureau of Reclamation	1.37	Not Enrolled
Boundary County	Bonners Ferry Left Bank	City of Bonners Ferry	1.55	Active
Boundary County	Bonners Ferry Right Bank	City of Bonners Ferry	1.06	Active
Boundary County	Kootenai Dike District 1	Boundary County	4.25	Inactive
Boundary County	Kootenai Dike District 10	Boundary County	8.39	Inactive
Boundary County	Kootenai Dike District 11	Boundary County	9.08	Inactive
Boundary County	Kootenai Dike District 12	Boundary County	6.02	Inactive
Boundary County	Kootenai Dike District 13	Boundary County	4.29	Inactive
Boundary County	Kootenai Dike District 15	Boundary County	0.95	Active
Boundary County	Kootenai Dike District 16 North	Boundary County	1.85	Inactive
Boundary County	Kootenai Dike District 16 South	Boundary County	4.69	Inactive
Boundary County	Kootenai Dike District 2	Boundary County	3.16	Inactive
Boundary County	Kootenai Dike District 3	Boundary County	3.77	Inactive
Boundary County	Kootenai Dike District 4	Boundary County	5.76	Inactive
Boundary County	Kootenai Dike District 5	Boundary County	3.24	Inactive
Boundary County	Kootenai Dike District 6	Boundary County	11.20	Inactive
Boundary County	Kootenai Dike District 8	Boundary County	7.68	Inactive
Boundary County	Kootenai Dike District 9	Boundary County	4.03	Inactive
Boundary County	Kootenai Levee 1	Kootenai County	8.62	Not Enrolled
Butte County	Howe	Butte County, ID	0.46	Active
Canyon County	Boise River Levee	Undefined	0.59	Not Enrolled
Canyon County	Boise River Levee 2	Undefined 2	0.53	Not Enrolled
Canyon County	Cromwell	Flood Control District #10 of Idaho	0.74	Active
Canyon County	Hitch	Flood Control District #11 of Idaho	0.24	Active
Canyon County	Ray Morden	Flood Control District #11 of Idaho	0.34	Active
Canyon County	Ross and Link	Flood Control District #11 of Idaho	0.27	Active
Canyon County	Slate-Allen	Flood Control District #11 of Idaho	0.11	Active
Canyon County	Young (Left Bank)	Flood Control District #11 of Idaho	0.69	Active
Clearwater County	Orofino	City of Orofino, ID	0.27	Active
Gem County	Emmett	City of Emmett, ID	0.71	Active
Gem County	Garfield	Payette County, ID	0.51	Inactive
Gem County	Letha Bridge (Left Bank)	Gem County, ID	0.16	Active
Gem County, Payette County	Highsmith	Payette County, ID	0.48	Inactive
Gooding County	Gooding Diversion (Upstream)	City of Gooding, ID	0.77	Active
Idaho County	Kooskia Middle Fork	City of Kooskia, ID	0.40	Active

County	System Name	Sponsor	Length (Miles)	Rehabilitation Program Status
Idaho County	Kooskia South Fork (Left Bank)	City of Kooskia, ID	0.50	Active
Idaho County	Kooskia South Fork (Right Bank)	City of Kooskia, ID	1.46	Active
Idaho County	Lawyers Creek RB	City of Kamiah, ID, Idaho County, ID, Lewis County, Idaho	1.56	Inactive
Idaho County	Stites	City of Stites, ID	0.95	Active
Idaho County	White Bird (Left Bank)	Flood Control District #6 of Idaho—Division 2	0.11	Inactive
Idaho County	White Bird (Right Bank)	Flood Control District #6 of Idaho—Division 2	1.10	Inactive
Idaho County, Lewis County	Lawyers Creek (Left Bank)	City of Kamiah, ID, Idaho County, ID, Lewis County, Idaho	1.62	Inactive
Jefferson County	Heise-Roberts 1 (Left Bank)	Flood Control District #1 of Idaho, Unknown	30.57	Active
Jefferson County	Heise-Roberts 3 (Right Bank—Lower)	Flood Control District #1 of Idaho	2.72	Active
Jefferson County	Snake River Levee	Undefined	0.46	Not Enrolled
Jefferson County	Snake River Levee 2	Undefined	0.45	Not Enrolled
Jefferson County	Snake River Levee 3	Undefined	0.61	Not Enrolled
Jefferson County	Snake River Levee 4	Undefined	2.86	Not Enrolled
Jefferson County	Snake River Levee 6	Jefferson County, Idaho Flood CD No1	0.18	Not Enrolled
Jefferson County	Snake River Levee 7	Jefferson County, Idaho Flood CD No2	1.49	Not Enrolled
Kootenai County	Blue Lake	Eastside Highway District	2.67	Inactive
Kootenai County	Coeur d'Alene Authorized	City of Coeur D' Alene	1.63	Active
Kootenai County	Latour Creek	Kootenai County	0.51	Inactive
Kootenai County	Latour Creek Levee	Kootenai County	0.09	Not Enrolled
Kootenai County	Latour Creek Levee 2	Undefined	0.12	Not Enrolled
Kootenai County	Tamarack Ridge	Eastside Highway District	0.55	Inactive
Kootenai County, Shoshone County	Cataldo	Kootenai County, None, Shoshone County	0.99	Active
Latah County	Bear Creek	City of Kendrick, ID	0.22	Active
Latah County	Kendrick	City of Kendrick, ID	0.69	Active
Latah County	Kendrick EDA Project	City of Kendrick, ID	0.36	Active
Latah County	Potlatch Junction (Deep Creek)	Latah County, ID	0.56	Active
Lemhi County	Carmen	Lemhi County, ID	0.83	Active
Lemhi County	Edwards	Lemhi County, ID	0.10	Active
Lemhi County	Lemhi	City of Salmon, ID	1.02	Active
Lemhi County	Piper	Lemhi County, ID	0.17	Active
Lemhi County	Tomanovich & Tomanovich Extension	City of Salmon, ID, Lemhi County, ID	1.58	Active
Lemhi County	Tomanovich K.	Lemhi County, ID	0.48	Active
Lewis County	Nez Perce	City of Nezperce, ID	1.15	Inactive

County	System Name	Sponsor	Length (Miles)	Rehabilitation Program Status
Lewis County, Nez Perce County	Slickpoo (St. Joseph)	Lewis County, Idaho	0.37	Active
Madison County	Heise-Roberts 2 (Right Bank—Upper)	Flood Control District #1 of Idaho	10.08	Active
Madison County	Lyman Creek (Left Bank)	Sunnydell Irrigation District	0.79	Active
Madison County	Lyman Creek (Right Bank)	Sunnydell Irrigation District	0.83	Active
Nez Perce County	Culdesac	City of Culdesac, ID	0.64	Active
Nez Perce County	Peck 3	Nez Perce County, ID	0.13	Active
Nez Perce County	Sweetwater	Nez Perce County, ID	0.55	Active
Payette County	Bowman	Payette County, ID	0.48	Inactive
Payette County	Chapman	Payette County, ID	0.76	Active
Payette County	Falk Bridge	Payette County, ID	0.31	Inactive
Payette County	Highway 52 Bridge	Payette County, ID	0.48	Inactive
Payette County	John McKinney to Carpenter Levees	Payette County, ID	2.28	Active
Shoshone County	Kellogg	City of Kellogg	0.85	Active
Shoshone County	Pine Creek Levee		0.11	Not Enrolled
Shoshone County	Pine Creek Segment 1	Shoshone County	2.14	Active
Shoshone County	Pine Creek Segment 2	Shoshone County	0.64	Active
Shoshone County	Pine Creek Segment 3 / Pinehurst	City of Pinehurst, Shoshone County	2.21	Active
Shoshone County	Pine Creek Segment 4	Shoshone County	0.31	Active
Shoshone County	Pine Creek Segment 5	None, Shoshone County	0.20	Active
Shoshone County	South Fork Coeur d'Alene River Levee	Shoshone County	0.80	Not Enrolled
Shoshone County	South Fork Coeur d'Alene River Levee 2	Shoshone County, City of Osburn	0.26	Not Enrolled
Shoshone County	South Fork Coeur d'Alene River Levee 3	Shoshone County, City of Osburn	0.43	Not Enrolled
Shoshone County	South Fork Coeur d'Alene River Levee 4	Shoshone County, City of Osburn	0.17	Not Enrolled
Shoshone County	South Fork Coeur d'Alene River Levee 5	Shoshone County, City of Osburn	0.33	Not Enrolled
Washington County	Braun	Washington County Flood Control District #3	0.50	Inactive
Washington County	Cambridge	Washington County Flood Control District #3	0.23	Active
Washington County	Dickerson-Sweet	Washington County Flood Control District #3	2.16	Inactive
Washington County	Kirk (Downstream)	Washington County Flood Control District #3	0.77	Inactive
Washington County	Kirk (Upstream)	Washington County Flood Control District #3	0.51	Active
Washington County	Lyle	Washington County Flood Control District #3	0.52	Active

County	System Name	Sponsor	Length (Miles)	Rehabilitation Program Status
Washington County	Smith, WM.-Einsbar-Green	Washington County Flood Control District #3	1.76	Inactive
Washington County	Twin Bridges	Washington County Flood Control District #3	0.56	Active

Source: (U.S. Army Corps of Engineers n.d.)

10.2.4 Canals

Agriculture, and eventually development, across the arid portions of Idaho was made possible through the construction of irrigation canals. Water delivery to the agricultural areas included both small early projects and large-scale projects such as dams to collect water and canals to deliver water. The presence of canals is generally disregarded by the public, even though many canals crisscross the State. New and existing community development has encroached on the areas adjacent to the canals.

In Ada County, a considerable number of housing developments are situated near large-capacity canals. The proximity of development to this type of high-flow constructed channel creates a significant risk to life, safety, and property. Canal operators in Idaho have statutory easements so that they can maintain their canals and ditches, and many new and existing developments encroach directly into these easements. This encroachment, which in some cases is onto the banks of the canal, makes proper maintenance of the canals very difficult and can also compromise the safety of the canal. Canal operators should be consulted before new developments in the vicinity of their irrigation structures are approved to protect canal easements. This will ensure the canal operators have sufficient access to their canals so that they can maintain these irrigation structures and thus prevent future safety issues. Because most canals are privately owned and operated, and their construction precedes Idaho's surface water laws, widespread data for canal failure events is not readily obtainable. The Idaho Silver Jackets technical advisory group has expressed strong interest in monitoring this issue, and IOEM anticipates further discussions regarding flood hazards associated with canals. As seen in Figure 10-4, a majority of the canal systems are located in the southern portion of the state.

10.2.5 Watersheds

IOEM's Multi-Hazard Risk Portfolio contains maps, statistics, and information pertaining to watersheds. It includes flood risk ranking for Hydrologic Unit Code 8 watersheds (sub-basins) across the state. These rankings are based on population, property, and professional judgment. Figure 10-5 illustrates the flood risk by watershed. The Idaho Silver Jackets core team provided professional judgment for the rankings. Participating agencies ranked their top 10 sub-basins of focus, from the point of view of each agency's vision statement. Table 10-4 shows the ranking results.

Although the presence of a dam may increase the total risk in the watershed, it must be noted that a release of water from a dam failure may only affect a very limited downstream area. The risk attributed to annual flooding due to naturally occurring storm events often is much greater than the risk estimated for all but the largest-sized high hazard dams.

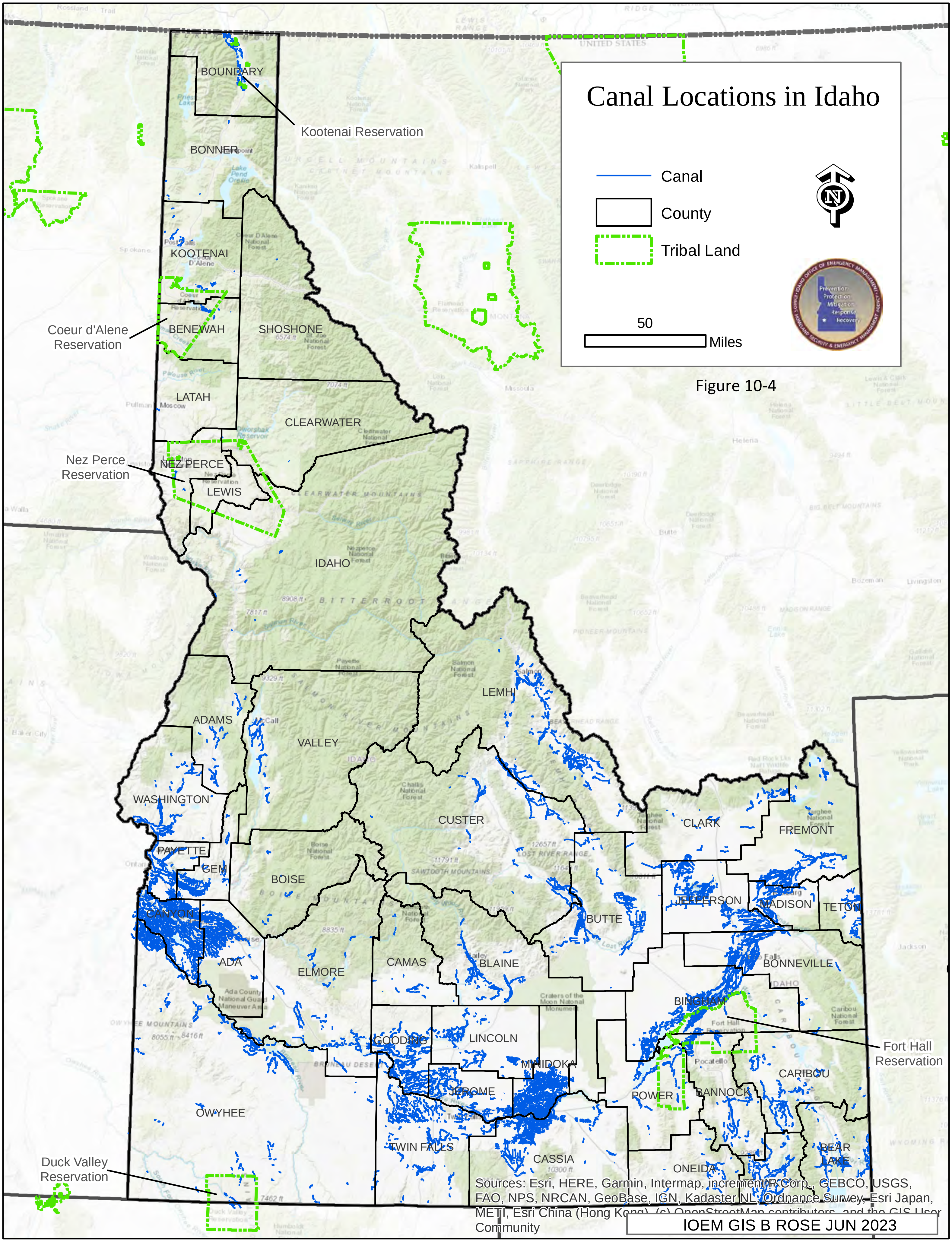

Canal Locations in Idaho
Canal
County
Tribal Land
50
Miles
Kootenai Reservation
Coeur d'Alene Reservation
Nez Perce Reservation
Fort Hall Reservation
Duck Valley Reservation
BOUNDARY
BONNER
KOOTENAI
BENEWAH
SHOSHONE
LATAH
CLEARWATER
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
ONEIDA
BEAR LAKE
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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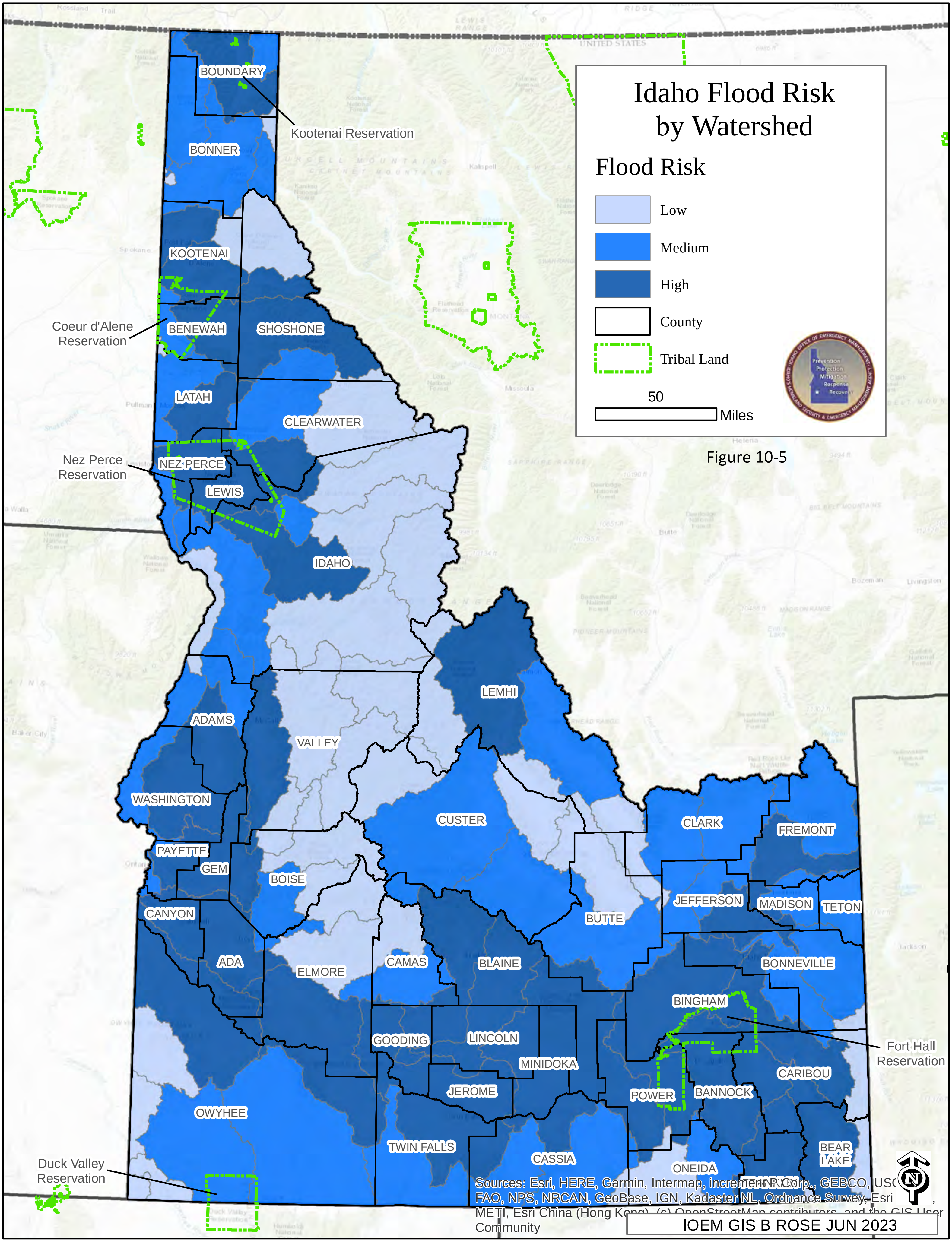
Figure 10-4



Idaho Flood Risk by Watershed
Flood Risk
Low
Medium
High
County
Tribal Land
50
Miles
Figure 10-5
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
BUTTE
CANYON
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
Fort Hall Reservation
GOODING
LINCOLN
MINIDOKA
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
Duck Valley Reservation
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Table 10-4. Watersheds in Idaho

Watershed	Description
Lower Boise	The Lower Boise Sub-Basin is home to hundreds of thousands of people who live in or near the Boise River floodplain. Lucky Peak, Arrowrock and Anderson Ranch dams upstream of this sub-basin provide flood control and storage capacity for the Boise River and its tributaries, though they cannot fully prevent flooding. With a combined reservoir volume of 949,700 acre-feet, these three upstream dams are all assigned the State's highest damage classification. There also are nine significant and 10 high hazard classification dams within the Boise sub-basin. Hundreds of thousands of people living downstream of the reservoirs are at risk of annual flooding.
Upper Snake-Rock	The Lower Boise Sub-Basin is home to hundreds of thousands of people who live in or near the Boise River floodplain. Lucky Peak, Arrowrock and Anderson Ranch dams upstream of this sub-basin provide flood control and storage capacity for the Boise River and its tributaries, though they cannot fully prevent flooding. With a combined reservoir volume of 949,700 acre-feet, these three upstream dams are all assigned the State's highest damage classification. There also are nine significant and 10 high hazard classification dams within the Boise sub-basin. Hundreds of thousands of people living downstream of the reservoirs are at risk of annual flooding.
Payette	The Payette Sub-Basin is home to hundreds of people who live in or near the Payette River floodplain. Flooding in this sub-basin could affect life and property, especially in the cities of Emmett, Horseshoe Bend, New Plymouth, and Payette, which have over 16,000 residents, combined. Affected properties can include residential, commercial, and agricultural lands along the river. Dam failure hazard includes a potential dam breach at Black Canyon Reservoir with a storage volume of 29,800 acre-feet. The dam has a high downstream damage classification.
South Fork Coeur d'Alene	Seven communities in the South Fork Coeur d'Alene Lake Sub-Basin are along the South Fork Coeur d'Alene River. This sub-basin has considerable risk to human life and property. There are three multiple loss communities (Pinehurst, Wallace, Kellogg) in this sub-basin. There are nine dams identified by IDWR.
Weiser	The Weiser Sub-Basin is largely privately owned with population and development concentrated along the Weiser River and the towns of Weiser, Midvale, Council, and Cambridge (combined population of around 7,000). The primary river system in this sub-basin is the Weiser River. There are several reservoirs in the sub-basin including Lost Valley Reservoir and Crane Creek Reservoir. The majority of the development in this sub-basin is agricultural, mostly along the Weiser River with some on Mann Creek and the Little Weiser. In this sub-basin, there are 19 dams considered by IDWR to be of high or significant hazard classification. Most are a flooding risk to residential and farmland development downstream. of 73 dams in the IDWR database listed in this sub-basin, none are on the Weiser River.
St. Joe	The St. Joe Sub-Basin is home to residents of St. Maries and spans much of Shoshone and Benewah County. The St. Joe and St. Maries Rivers make up the major water system within the basin. In this sub- basin, there are no flood control structures to regulate the strong waters of the St. Joe.
Big Wood	The Big Wood Sub-Basin is home to thousands of people who live in or near to the Big Wood River floodplain. The populated areas within the Big Wood boundaries include Sun Valley, Ketchum, Hailey, and Bellevue. Flooding within the Big Wood Sub-Basin could greatly disrupt life and property in Blaine County. Much of the population in the sub-basin lives along the Big Wood River. There are eight dams in the sub-basin categorized as posing a high to significant risk of flooding. The dams are along tributaries to the Big Wood and Malad Rivers. The largest dams are the Magic Reservoir Dam and the Trail Creek Dam, which is within the city limits of Sun Valley.
Lower Kootenai	The Lower Kootenai Sub-Basin is home to most of the residents of Boundary County, including the communities of Bonners Ferry and Moyie Springs (combined population of around 3,000). The Kootenai River is the major water system in the area. There is a high hazard classification dam at McArthur Reservoir, south of Bonner's Ferry. Land along the banks of the river is used for agriculture and rural development.

Watershed	Description
Clearwater	The Clearwater Sub-Basin is home to thousands of people who live in or near the Clearwater River floodplain, as well as its tributaries, which include the Potlatch, Lapwai Creek, Orofino Creek, and Lawyers Creek. Most of the land and inhabited properties in this basin belong to the Nez Perce Tribal Nation. The largest flood event would be a dam breach at the Dworshak reservoir upstream of this sub-basin. The volume of the reservoir is 3,453,000 acre-feet. A population of 164,208 lives in adjacent sub-basin, downstream of the reservoir that would be affected by a catastrophic dam breach, including the cities of Lewiston in Idaho, and Clarkston, Richland, Pasco, and Kennewick in Washington. The Dworshak dam is attributed with the highest damage classification.
American Falls	The American Falls Sub-Basin is home to thousands of people, with the majority living near the main flooding source: the Snake River. The cities of Blackfoot, American Falls, and Shelley are the largest cities. In this sub-basin, there are three dams considered by IDWR to be of High or Significant hazard classification: Gem State Dam, Simplot Effluent Irrigation Dam, and American Falls Dam. The Gem State and Simplot dams are a flooding risk to residential development and farmland downstream. The City of Shelley is within 5 miles downstream of the Gem State Dam and the Simplot Dam is on the outskirts of the City of Chubbuck.

10.3 PREVIOUS HAZARD OCCURRENCES

Many sources provided information regarding previous floods (riverine, flash, alluvial fan, ice jams, dam, levee, or canal failure) and associated losses throughout Idaho. Events that occurred between January 1, 2018, and December 31, 2022, are summarized below.

10.3.1 Disaster and Emergency Declarations

The following disaster declarations or emergency proclamations related to flood events have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 18 flood related events, classified as flood, heavy rains, flooding with landslides/mudslides, flooding with severe storms, flooding with winter storms, or dam collapse
- **Idaho State Emergency Proclamations, 2018 – 2022**: 4 flood related events, classified as spring flooding and late spring flooding.
- No USDA declarations or proclamations related to Flood-related events have been issued relevant to Idaho or any of its counties.

Figure 10-6 and Figure 10-7 show how the State's counties have been affected by these declarations. Known flood events that have impacted the State of Idaho and resulted in federal disaster or emergency declarations between 2018 and 2022 are identified in Table 10-5. Appendix D lists events prior to 2018.

10.3.2 Event History

Table 10-6 lists significant flood events (including flash floods, ice jams, and levee failures) that impacted the State of Idaho between 2018 and 2022. Due to the significant number of events, the table includes only events that caused at least $50,000 in property/crop damages. Appendix D lists events prior to 2018.

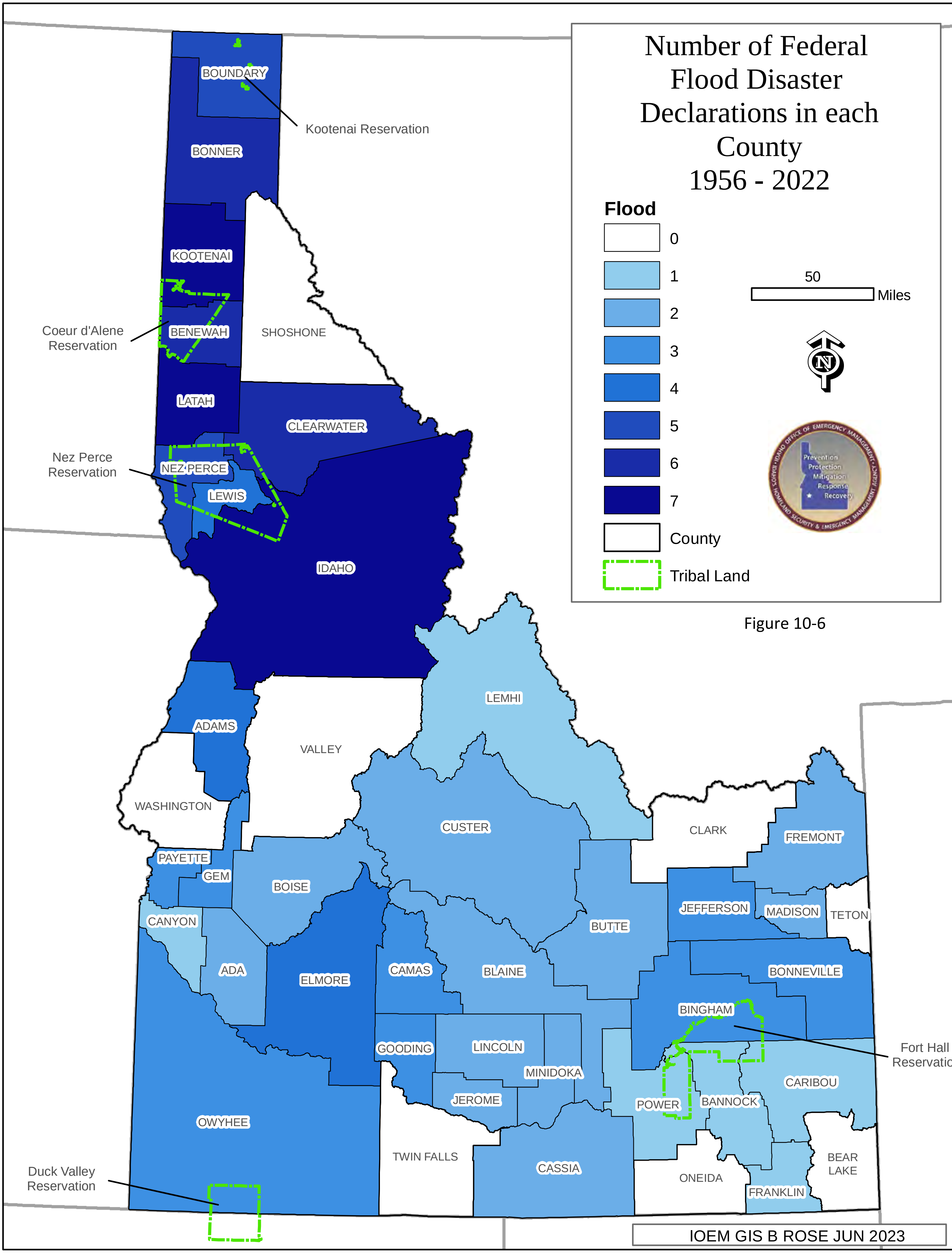
Number of Federal Flood Disaster Declarations in each County
1956 - 2022
Flood
0
1
2
3
4
5
6
7
County
Tribal Land
50
Miles
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
Fort Hall Reservation
GOODING
LINCOLN
MINIDOKA
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
ONEIDA
BEAR LAKE
FRANKLIN
Duck Valley Reservation
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Figure 10-6

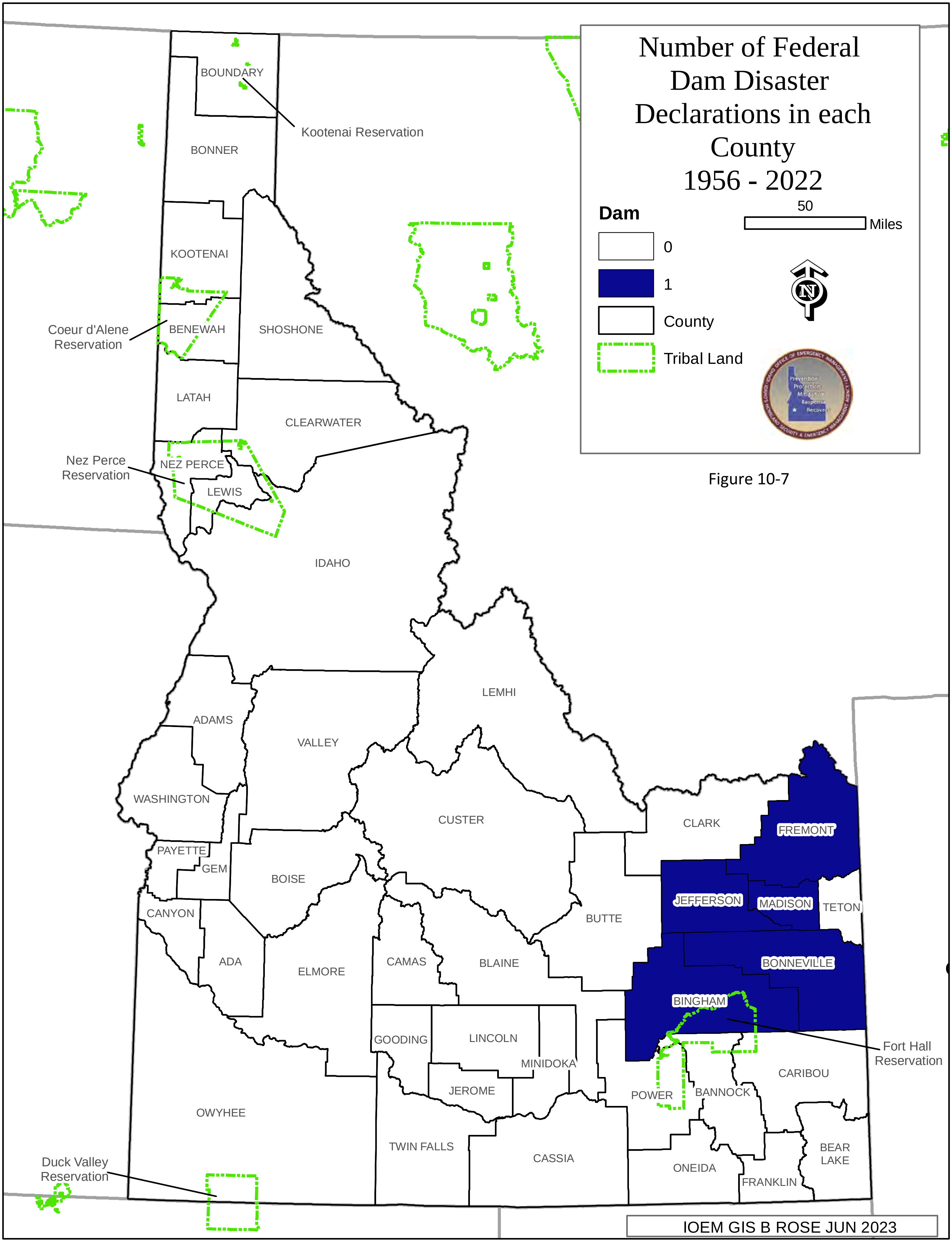
Number of Federal Dam Disaster Declarations in each County 1956 - 2022
Dam
0
1
County
Tribal Land
50
Miles
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
Fort Hall Reservation
JEROME
CARIBOU
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023
Figure 10-7

Table 10-5. Flood-Related Federal Declarations (2018 to 2022)

Incident Type	Declaration Title	Date Declared	State Declaration Number	Federal Declaration Number	Counties Affected
Flood	Spring Flooding	3/19/2018	ID-01-2018	N/A	N/A
Flood	Late Spring Flooding	5/29/2018	ID-02-2018	N/A	N/A
Flood	Spring Flooding	4/9/2019	ID-02-2019	N/A	N/A
Flood	Severe Storms, Flooding, Landslides, and Mudslides	6/12/2019		DR-4443-ID	Nez Perce Indian Tribal Nation Land; Adams County; Idaho County; Latah County; Lewis County; Valley County
Flood	Spring Flooding	6/21/2022	ID-01-2022	N/A	N/A

Source: FEMA 2023

Table 10-6. Significant Flooding in Idaho (2018 to 2022)

Date	Event Type	Counties Affected	Description
3/13/2018	Flood	Clark County; Madison County; Butte County; Caribou County; Blaine County; Custer County;	Flooding due to snow melt and heavy rains resulting in damages to several county roads, hay bales and crops, and campgrounds. The Governor declared Clark and Madison County as a state disaster area. One home was completely flooded by the event. Total associated damage cost was over $1 million.
3/14/2018	Flood	Fremont County; Madison County	Flooding due to snow melt and heavy rains resulted in extensive sand dune washout, damage/closure to the county roads and damage to nearby fields. Madison County was declared a disaster area by the State on March 19th. Total damage costs were more than $1.3 million.
5/11/2018	Flood	Bonner County	The USGS River Flow Gage at Albeni Falls Dam which controls the flow of the Pend Oreille River below the dam surpassed flood flow of 95,000 cubic feet per second (cfs) due to the melting of an above average snowpack. The flow increased to the moderate flood reading of 121,000 cfs
5/12/2018	Flood	Jefferson County	Seasonal snow melt and heavy rains caused significant damage to the levee near Lorenzo, eroding at a rate of 500 ft per day. The Snake River and Henry's Fork flowed at action stage for several weeks causing the flooding. Jefferson County was declared a disaster area due to $9,000 per day for 7 days due to damages caused by flood. The County required financial assistance from the USACE to fix the levee. A total of $100,000 was associated with damage costs.
5/18/2018	Flood	Nez Perce County	Heavy rain caused numerous urban flood events resulting in the overflow of a retention pond, hillside washout and erosion. Most roads and parking lots were flooded in the city and several apartments suffered first floor/yard flooding. A total of $50,000 was reported in associated damage costs.
6/1/2018	Flood	Blaine County	Heavy rains and snow melt caused flooding in the Big Wood River for several months. The extensive flooding event ended in June and the resulting insurance claims associated with the event totaled $750,000. Flood response and public property cleanup costs totaled $200,000.
2019	Ice Jam	Arco (Butte County)	An ice jam categorized as a freeze-up caused flooding on Big Lost River.
4/7/2019	Flood	Ada County; Valley County	Heavy rains and snow melt caused flooding and flash flooding resulting in debris flows throughout the counties. Total cost associated with this event was $823,000.
4/9/2019	Flood	Lewis County; Idaho County	Heavy rains and snow melt caused the Clearwater River to crest at record levels resulting in a levee break. Several homes were flooded, Hwy 13 was closed, two bridges were washed out and many wells were contaminated. Other impacts included mudslides. The levee was repaired by the public works department as the creek receded. The total cost associated with damage was $6.1 million.
4/9/2019	Flash Flood (ID-02-2019)	Latah County	The USGS River Gage on the Palouse River recorded a rise to the Flood Stage at 15 ft. The river continued to rise and reached 17 ft before receding. The total cost associated with this flood event was $50,000.

Date	Event Type	Counties Affected	Description
2022	Ice Jam	Salmon (Lemhi County)	An ice jam categorized as freeze-up located on Salmon River.
2022	Ice Jam	St. Anthony (Freemont County)	An ice jam category unknown caused minor flooding on Henry's Fork River.
6/12/2022	Flood (DR-4443-ID)	Nez Perce County	Flooding caused by Heavy rain caused U.S. 95 to partially close/limit to one lane. Associated costs totaled $1.8 million for this event.

NOAA (2023)

10.4 PROBABILITY OF FUTURE HAZARD EVENTS

10.4.1 Overall Probability

The State of Idaho has experienced 18 FEMA declarations associated with floods of all types since 1956—an average of about one every 4 years. According to NOAA, the State of Idaho experienced over 700 flood events of all types between 1956 and 2022, as summarized in Table 10-7, averaging about 10 flood events each year (NOAA 2023).

Table 10-7. Probability of Future Flood Events in Idaho

Hazard Type	Events Between 1956 and 2022	Average Frequency
Flood	439	6 events per year
Flash Flood	286	4 events per year
Dam Failures	4	1 event every 17 years

Source(s): NOAA 2023; ASDSO 2023

The single dam failure event since 1956 that led to a FEMA declaration represents an average of one such declaration every 69 years. The total number of recorded flood events includes four dam failure incidents, an average of about one event every 17 years.

Overall, the State can expect to at least experience similar average frequency of these events in the future, with the possibility of an increase in frequency due to the impacts from climate change.

Dam failures usually coincide with easily recognized events, such as earthquakes, landslides and excessive rainfall and snowmelt. Regardless of the level of design and attention to detail during construction, there is a "residual risk" associated with dams. Residual risk is that risk which remains after all reasonable safeguards have been implemented. For example, a dam that is designed to accommodate a 500-year flood could still cause significant downstream flooding when the spillway is activated, but this would not constitute a dam failure. Rather, it would be classified as a residual risk or "design" event. Overall, the probability of any type of dam failure is low in today's regulatory and dam safety oversight environment. However, aging infrastructure and nature's continued ability to visit extreme events on local populations constantly challenges a dam's overall risk assessment.

10.4.2 Climate Change Impacts

General Flooding

Providing projections of future climate change for a specific region is challenging. Shorter term projections are more closely tied to existing trends, making longer term projections even more difficult. The further out a prediction reaches the more subject to changing dynamics it becomes. Climate change is already impacting water resources, and resource managers have observed the following:

- Historical hydrologic patterns can no longer be solely relied upon to forecast the water future.
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply and quality, flood management, and ecosystem functions.
- Extreme climatic events will become more frequent, necessitating improvement in flood protection, drought preparedness, and emergency response.

Records have shown that over the past 100 years the State has seen an increase in temperature of one to two degrees (°F). In the coming years, it is predicted that streams will be warmer, populations of several fish species will decline, wildfires will become more common, deserts may expand, and water may be less available for irrigation (Environmental Protection Agency 2016).

Much of the water needed for agriculture, public supplies and other uses throughout Idaho comes from mountain snowpacks. As snowpacks are very important to the State, so is the timing of snowmelt runoff into rivers and streams. Snowpack is melting earlier each year, therefore the flow of meltwater into streams during the summer is declining and affecting water demands for agriculture growing season. Rising snowlines caused by warming temperatures will allow more mountain areas to contribute to peak storm runoff. High frequency flood events will also increase with a changing climate (Environmental Protection Agency 2016).

Along with reductions in the amount of snowpack and accelerated snowmelt, scientists project greater storm intensity, which would result in more direct runoff and flooding. Changes in watershed vegetation and soil moisture conditions will likely change runoff and recharge patterns. As stream flows and velocities change, erosion patterns will also change, altering channel shapes and depths, and possibly increase sedimentation behind dams, affecting habitat and water quality. As previously stated, climate change may lead to an increase in wildfires, which provides potential for more floods, increasing sediment loads and water quality impacts.

Small changes in rainfall, runoff and snowpack may also have significant impacts for water resource systems, including dams, levees, and canals. Dams are designed partly based on assumptions about a river’s flow behavior, expressed as hydrographs. Changes in weather patterns can have significant effects on the hydrograph used for the design of a dam. If the hygrograph changes, it is conceivable that the dam can lose some designed margin of safety, also known as freeboard. If freeboard is reduced, dam operators may be forced to release increased volumes earlier in a storm cycle to maintain the required margins of safety. Such early releases of increased volumes can also increase flood potential downstream.

Climate modeling based on the RCP4.5 scenario indicates that projected mid-century annual precipitation will increase in the northern regions and the Boise area (Figure 10-8). Some areas of eastern Idaho will see a decrease in precipitation. When increased precipitation modeling is compared to modeling for consecutive days without precipitation (Figure 8-13), models may indicate that precipitation events will be less frequent, but more severe. The RCP4.5 scenario represents a projected peak of greenhouse gas emissions around 2040, then a decline assuming that implemented policies achieve the goal of limiting emissions.

Source: (Climate Risk and Resilience Portal 2023)

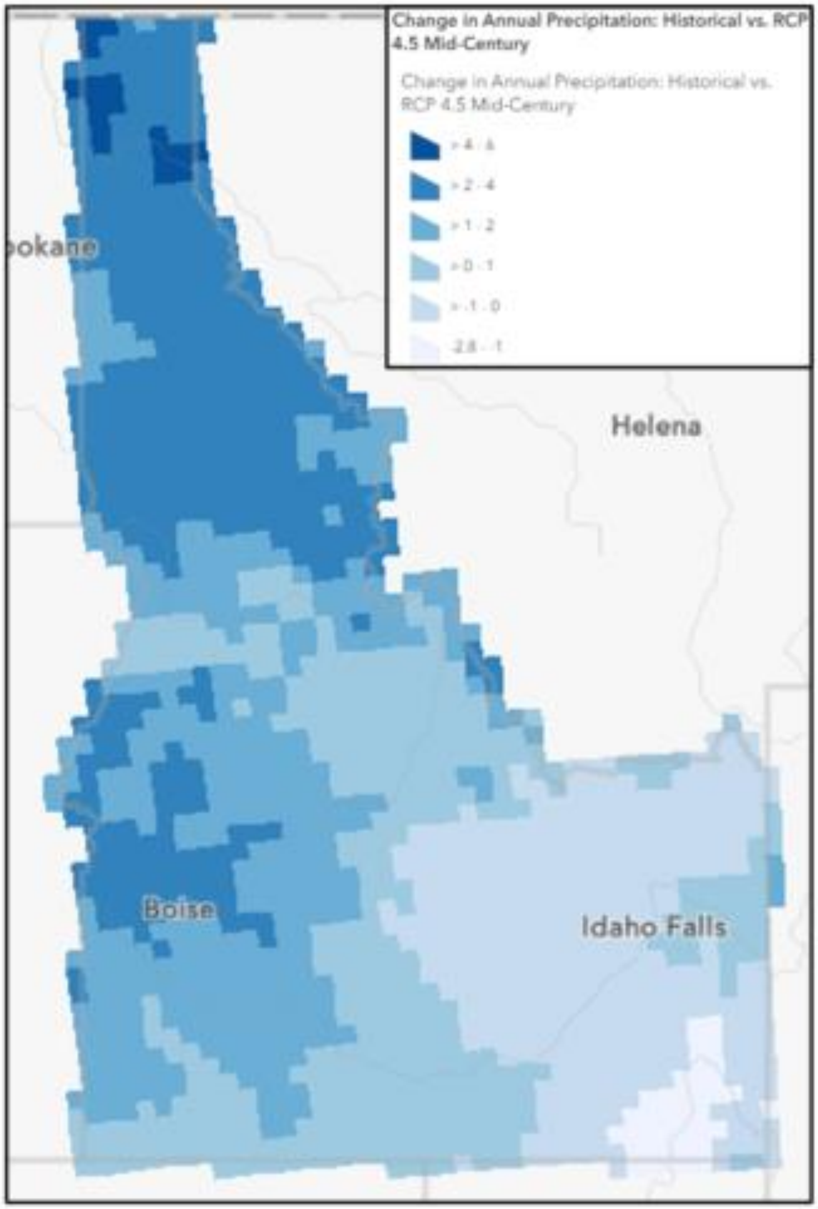

Figure 10-8. Change in Annual Precipitation Comparing the Historical Model with the RCP4.5 Mid-Century Projection

Dam Failure

Dams are designed partly based on historic patterns and assumptions about a river's flow behavior. Changes in weather patterns can have significant effects on a river's hydrograph used for the design of a dam. If the hygrograph changes suddenly or spasmodically, it is conceivable that the dam can lose some or all its designed margin of safety. When this happens, dam operators may be forced to release stored water earlier in a storm cycle or during other seasons to maintain the required margins of safety. Such releases can increase flood potential downstream.

Dams are constructed with spillways that serve as safety measures to help prevent overtopping of the dam in the event of the reservoir filling too quickly. Spillway overflow events at many large, high hazard dams often are referred to as "design or operations failures," resulting in discharges downstream that may increase the localized flooding potential. Although climate change will not increase the probability of catastrophic dam failure, it may increase the probability and/or magnitude of spillway releases (aka design failures).

10.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

A good deal is known concerning the mechanisms that lead to flooding; consequently, floods or flood conditions generally come with warnings. However, floodwaters can go where they are unexpected, warnings are not always heeded, and despite their predictability and history, flood damage continues.

In many cases, the failure to recognize or acknowledge the extent of the natural hydrologic forces in an area has led to development and occupation of areas that can clearly be expected to be inundated on a regular basis. Most streams overflow what are commonly regarded as their channels at least once every year or two. Residents downstream of dams or adjacent to levees and canals may become complacent, or have higher expectations, when flooding is reduced over time. Despite this, communities are often surprised when the stream leaves its channel to occupy its floodplain.

A past reliance on structural means to control floodwaters and reclaim portions of the floodplain has also contributed to inappropriate development and continued flood-related damages. Unlike the weather and the landscape, this flood-contributing factor can be controlled. Development and occupation of the floodplain places individuals and property at risk. Such use can also increase the probability and severity of flood events (and consequent damage) downstream by reducing the water storage capacity of the floodplain, or by pushing the water farther from the channel or in larger quantities downstream. IDWR's most current State Water Plan discusses the topics of water management and future development, information that could prove useful when discussing and assessing the hazard of flooding. (https://www.idwr.idaho.gov/IWRB/water-planning/state-water-plan.html).

The flood reduction afforded by dams throughout Idaho has allowed the development of lands immediately downstream of these structures. The same can be said of development in areas where levee structures provide protection from certain flooding events. Canals and irrigation structures have been increasingly faced with encroachment by urban and residential structures. For example, the operator of the New York Canal makes every effort to properly maintain the canal, but decades of encroachment by urban and residential structures have compromised its ability to perform necessary maintenance on the canal. This development pattern likely will continue for the foreseeable future, increasing flood risks unless improved mitigation measures are taken. As the State of Idaho population continues to grow and areas continue to be developed, the need for conveniently located state services and facilities will increase.

The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. This SHMP used the ICLUS modeling (Scenario SSP2 + RCP4.5) to prepare statewide and county-specific estimates for Idaho land use in 2020 and 2030.

Appendix E lists the estimated land-use area (square miles) located in the identified flood hazard areas for 2020 and projected area for 2030 by jurisdiction, demonstrating the risk assessment to reflect the changes in development. Statewide there is a projected decrease of 159 buildable square miles to be developed in the 1 percent annual chance flood hazard area by 2030. This decline is greatest in Boise County, where a reduction of 99 square miles is projected; this coincides with the increase in higher housing densities, which will place a greater number of people in the hazard area.

The Idaho Department of Water Resources released a Sample Floodplain Development Permit, which is required for all proposed development in a floodplain. All new buildings require an Elevation Certificate as proof that the lowest flood of the building is elevated to the defined flood protection elevation, as detailed in Title 46 of Idaho Code (§46-1022). Applicants must consult the local community's floodplain administrator to help determine the flood protection elevation. This statute was designed to help mitigate flood damage and helped to reduce flood insurance rates for buildings owners located within the floodplain.

New and existing community development has encroached on areas adjacent to canals in the southern portion of the State. In Ada County, a considerable number of housing developments are situated downstream of large capacity canals. The proximity of development to this type of high -flow, manmade channel creates a significant risk to life, safety, and property.

Canal operators in Idaho have statutory easements so that they can maintain their canals and ditches, and many new and existing developments encroach directly into these easements. This encroachment, which in some cases is actually onto the banks of the canal, makes proper maintenance of the canals very difficult and can also compromise the safety of the canal.

Population

Figure 3-7 displays the projected population growth by 2026. With this update, the Idaho Department of Labor produced population projection data for each region in the State through 2029. Increases in development in and around floodplains will put additional populations at risk and economic stress on the communities due to anticipated increased impacts and damages.

Other Conditions

Wildfires, particularly large-scale fires, can dramatically alter the terrain and ground conditions, making land already devastated by fire susceptible to floods. Normally, vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water, thus creating conditions perfect for flash flooding and mud flows. Areas directly affected by fires and those located below or downstream of burn areas are most at risk for flooding. Flood risk in these impacted areas remains significantly higher until vegetation is restored, which can take up to five years after a wildfire (FEMA 2013).

10.5 IMPACT ANALYSIS

10.5.1 Severity

General Flooding

Flood studies use historical records and statistical methods to determine the probability of occurrence for different discharge levels. A structure located within a Special Flood Hazard Area (SFHA) shown on an NFIP map has a 26 percent chance of suffering flood damage during the term of a 30-year mortgage. The SFHA boundary is a convenient tool for assessing vulnerability and risk in flood-prone communities. Many communities have maps that show the extent and likely depth of flooding for the base flood. Corresponding water-surface elevations describe the water elevation resulting from a given discharge level, which is one of the most important factors used in estimating flood damage.

Levee Failure

In the event of a levee failure, floodwaters may ultimately inundate the protected area landward of the levee. The extent of inundation is dependent on the flooding intensity. For example, failure of a levee during a 1-percent annual chance flood will inundate the 100-year floodplain previously protected by the levee. Canal failures are inherently unpredictable. Floodwaters influenced by the surrounding topography may inundate the side of the canal where a failure occurs. The extent of inundation is dependent on the flow the canal was carrying and how quickly the canal can be shut off once flooding is identified. Residential and commercial buildings near system overtopping or breach locations will suffer the most damage from the initial failure flood wave.

Dam Failure

Several factors can influence the potential severity of a dam failure including the amount of water impounded, the dam height, and the density, type, and value of development and infrastructure located downstream. Dam failures that are swift and sudden can produce a very significant flash flood downstream. For this risk assessment, the strength or magnitude of the hazard, also called hazard severity, is indicated by the dam hazard classification. The number of high-hazard dams in the state is a suitable indication of the severity of the dam failure hazard. Figure 10-9 shows the identified high-hazard dams in Idaho.

"Hazard" is not synonymous with "risk," which accounts for the probability of failure. Risk is equal to the probability that a failure will occur, multiplied by the resulting consequences to downstream life and property. As described at the beginning of this chapter, the hazard classification assigned to dams is based only on the potential consequences of a dam failure on downstream lives and properties.

WIIN-Act Eligible Dams

The IDWR Dam Safety Program has identified nine high-hazard dams as meeting the eligibility requirements of the WIIN Act. These are listed in Table 10-8

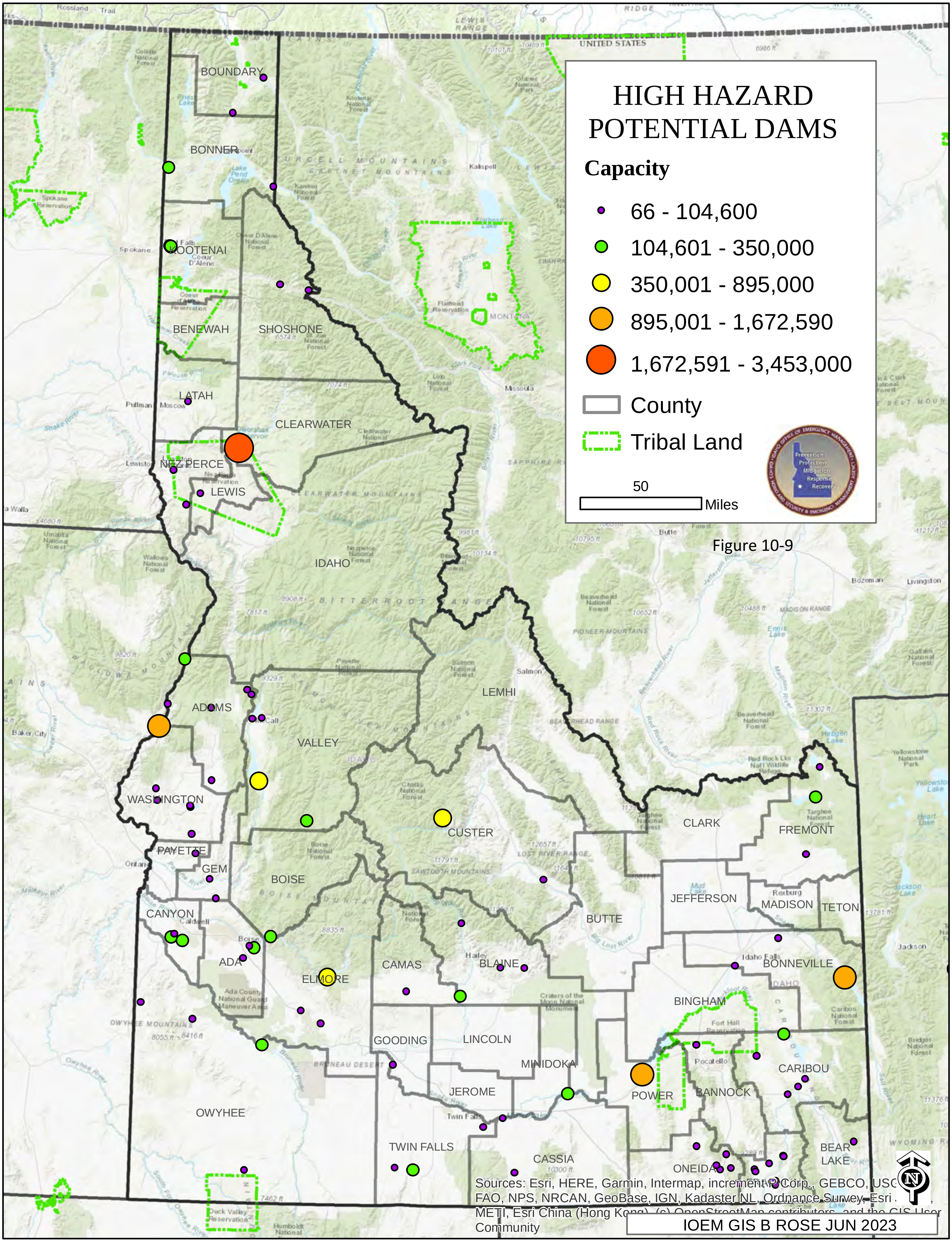
HIGH HAZARD POTENTIAL DAMS
Capacity
66 - 104,600
104,601 - 350,000
350,001 - 895,000
895,001 - 1,672,590
1,672,591 - 3,453,000
County
Tribal Land
50
Miles
BOUNDARY
BONNER
KOOTENAI
BENEWAH
SHOSHONE
LATAH
CLEARWATER
NEZ PERCE
LEWIS
IDAHO
ADAMS
VALLEY
LEMHI
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
CAMAS
BLAINE
BONNEVILLE
ELMORE
BINGHAM
GOODING
LINCOLN
MINIDOKA
CARIBOU
POWER
BANNOCK
JEROME
OWYHEE
TWIN FALLS
CASSIA
ONEIDA
BEAR LAKE
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community
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Figure 10-9

Table 10-8. Eligible WIIN Act High-Hazard-Potential Dams

Dam Name	Approximate Population at Risk	Hydraulic Height (feet)	Reservoir Volume (acre-feet)
Mountain Home Dam	3,500 + Interstate I-84	42.4	5,468
Winchester Dam	1,400 + U.S. Hwy 95	36.3	1,425
Mackay Dam	3,000 + U.S. Hwy 93	67	45,000
Crowther Dam	800	85.4	959
Oakley Dam	20,000	39	76,000
Blacks Creek Dam	14,000 + Idaho Corrections Wastewater Treatment Lagoons	45	3,640
Deep Creek Lower Dam	1,400 + Interstate-I15	81	5,537
Fish Creek Dam	300 + U.S. Hwy 26	69	5,515
Strong Arm Dam #1	300	35.8	1,713

Other High-Hazard Dams of Interest

This SHMP includes exposure and vulnerability analyses for 11 high-hazard dams other than the identified HHPDs. These are dams that qualify as high-hazard under Idaho's definitions but are not WIIN-eligible because they meet the State's minimum safety standards or are federal dams. The high-hazard dams analyzed in the 2018 plan are listed in Appendix D.

Seasonal Variance

The potential impacts from a dam failure can vary by season based on transient population increases due to tourism, reservoir level, and weather conditions. For example, Blaine County can see significant increases in population due to tourism in winter and summer. Several high-hazard dam inundation areas experience prolonged periods of extreme cold during winter, which can create the potential for ice jams and frozen ground impervious to infiltration that can increase the potential peak flood events that likely would not occur during summer months. Risk models are unable to quantitatively assess all of these impacts due to the number of variables consequently, they often are qualitatively assessed based on local knowledge and expertise.

HHPD Failure Inundation Zone Mapping

Hazard mapping to support exposure and vulnerability analyses for the identified HHPDs was generated using the Decision Support System for Water Infrastructural Security (DSS-WISE) program administered by the University of Mississippi. Outputs from the DSS-WISE program include polygon shapefiles of dam failure inundation extents with depth grids suitable for import into FEMA's risk assessment platform, Hazus. For security purposes, DSS-WISE-generated inundation zone extent mapping is considered to be "for official use only" and is not presented in this plan.

Other High-Hazard Dams of Interest Failure Inundation Zone Mapping

The high-hazard dams of interest identified in the 2018 hazard mitigation plan had inundation mapping available that had been utilized by local hazard mitigation planning efforts in the state to assess risk to dam failure. Data for the Black Canyon and Lucky Peak dams came from local hazard mitigation plans for Ada and Gem Counties. For the other dams, the Idaho Office of Emergency Management geo- referenced paper inundation maps from USACE and the U.S. Bureau of Reclamation, digitized the results to create GIS data, and performed spatial analysis. For security purposes, inundation zone extent mapping for these other dams is considered to be "for official use only" and is not presented in this plan.

10.5.2 Warning Time

General Flooding

Flood warnings and flash flood warnings and watches are issued by the local NWS Weather Forecast Office in the region. The NWS will update the watches and warnings and will notify the public when they are no longer in effect. Watches and warnings for flooding in Idaho are as follows (NOAA NWS 2009):

- Flash Flood Warning: Issued when flash flooding is occurring or imminent
- Flash Flood Watch: Issued when flash flooding is possible within the next 48 hours
- Flood Statement: Provides follow-up information regarding flood and flash flood warnings and advisories that are occurring or have occurred
- Flood Warning: Issued when river flooding is occurring or imminent
- Flood Watch: Issued when there is a potential for long duration river flooding within the next 72 hours
- Hydrologic Outlook: Discusses possibility of flooding beyond 72 hours, water supply, drought conditions
- Hydrologic Statement: Communicates notable hydrologic conditions that do not involve flooding, such as within riverbank rises, minor ice jams, etc.
- Urban/Small Stream Flood Advisory: Issued when short duration (less than six hours) localized flooding in city areas is occurring or imminent (usually not life threatening)

Due to the sequential pattern of meteorological conditions needed to cause serious flooding, it is unusual for a flood to occur without any warning. Warning times for floods can be between 24 and 48 hours. Flooding is more likely to occur due to a rainstorm when the soil is already wet and/or streams are already running high from recent previous rains. Pre-existing conditions when a storm begins are called “antecedent conditions.”

Flash flooding may occur with little warning time, particularly in areas that have a contributing factor, such as a recently burned watershed or frozen ground. The antecedent conditions and a tracked weather system would still prompt watches and warnings from the NWS. More warning time may be given in the case of rain-on-snow or general snowmelt flooding, as the snowpack will be well known and tracked as well.

Dam Failure

Dams can fail with little warning, particularly if the project is an earthen embankment dam. Intense storms may produce a flood in a few hours or even minutes for upstream locations. Flash floods can occur within 6 hours of the beginning of heavy rainfall, and dam failure may occur within hours of the first signs of breaching. Other failures and breaches can take much longer to occur, from days to weeks, as a result of debris jams, the accumulation of melting snow, buildup of water pressure on a dam with deficiencies after days of heavy rain, etc. Flooding also can occur when a dam operator purposely releases excess water downstream to accommodate inflow that might otherwise overtop the dam.

Warning time for dam failure varies depending on the time of day (daylight or nighttime), the cause of the failure and/or how long it takes the failure to develop. For example, during events of rapid snowmelt, evacuations likely can be planned with sufficient time. Conversely, in the event of a structural failure due to an earthquake, there may be no warning time at all. A dam’s structural composition also can affect warning time. Earthen dams tend not to fail instantaneously, instead gradually eroding until the discharging water fully breaches the dam and empties the reservoir or the eroded area is able to resist further erosion. Concrete gravity dams also tend toward a partial breach if one or more monolith sections are forced apart by escaping water. The time of breach formation can range from a few minutes to several hours or longer (U.S. Army Corps of Engineers 2019)

A structural failure can be sudden and perhaps occur with little to no warning despite previous assessments regarding the structural integrity of the system. If heavy rains are impacting a system, communities located in the immediate danger zone can be evacuated before a failure occurs; however, d, the community may or may not be able to recognize the impending failure and evacuate in time. If a failure occurs suddenly at night, prompt evacuation may be impossible.

Owners of high- and significant-hazard dams are required to maintain emergency action plans to use in the event of a potential dam failure or uncontrolled release of stored water. They are also required to have established protocols for flood warning and how to respond to imminent dam failure in the flood warning portion of their emergency operations plans. These documents are customarily maintained as confidential information, although copies are required to be provided to the local emergency responders, IDWR, and others as determined necessary.

Levee or Canal Failure

Like dam failures, levee and canal failures have warning times that depend on the cause of the failure. A structural failure can be sudden and perhaps with little to no warning, despite cautions regarding the structural integrity of the system. If heavy rains are impacting a system, communities located in the immediate danger zone can be evacuated before a failure occurs. If the failure is caused by overtopping, the community may or may not be able to recognize the impending failure and evacuate. If a failure occurs suddenly, evacuation may not be possible.

10.5.3 Cascading Impacts

General Flooding

Floods can influence other hazards, both natural and human related. Flood events can lead to failures of dams, levees, or canals, or vice versa. Landslides are also often caused by floods. Conversely, a flood event could help to lessen the hazards of both wildfire and drought, if only for a short period. All the human-caused hazard events covered in this Plan could be influenced in some way or another by a flood event. Flood impacts on infrastructure and facilities could initiate a hazardous material or radiological release, a cyber disruption, or power outage. Standing water left after a flood event could increase the susceptibility for a pandemic event to occur. Flooding can overwhelm wastewater treatment facilities, leading to contaminated wells and other water supplies. Inundated agricultural land is out of production until the water drains away.

Dam Failure

Flooding from dam failure may cause potential secondary hazards such as landslides, bank erosion, and destruction of habitat. Floodwaters carried to points downstream can cause damage in areas where it would not otherwise be expected. Environmental incidents can also occur due to hazardous material releases when floodwaters infiltrate facilities that store these types of materials. Utilities such as power, cable, and phone lines located in the inundation zones may be susceptible to damage. Loss of these utilities could create additional problems for those impacted by flooding from dam failure.

10.5.4 Environmental Impacts

The environmental impacts of flooding can be quite wide-ranging, from the dispersion of low-level household wastes into the fluvial system, to contamination of community water supplies and wildlife habitats with extremely toxic substances. Flood preparedness activities, such as forecasting and warning systems, can help to avoid some of these impacts. Indeed, actions undertaken prior to the event will have repercussions on the level of damages accruing from the flood. Effective mitigation actions (sandbagging, constructing temporary levees, etc.) can significantly reduce losses, and with advance planning and preparation, prevent some of these secondary environmental impacts. Specifically, the removal of fuel tanks and attention to hazardous waste would eliminate some of the potential problems seen today. In contrast, inadequate attention to these components of the flood hazard will invariably lead to additional problems and intensify adverse environmental impacts.

Variables such as depth of water, velocity of flows, and duration of inundation, in combination with land-use attributes, all contribute to the relative severity of flood impact. Floods of greater depth are likely to result in greater environmental damage than floods of lesser magnitude impacting larger areas. Floods of long duration will exacerbate environmental problems, as clean-up will be delayed, and contaminants may remain in the environment for a much longer time. The argument is the same for other flood traits; extreme conditions are likely to precipitate additional environmental problems.

Dam, Levee, or Canal Failure

Dam, levee, and/or canal failures can have a greater environmental impact than that associated with a normal flood event. The soil loss from erosion and scouring could be significantly greater due to large amounts of fast-moving water affecting a small area. Large amounts of sediment from erosion can alter the landscape and change an ecosystem. In addition, hazardous materials are carried away from flooded properties and distributed throughout the floodplain. Industrial or agricultural chemicals and wastes, solid wastes, raw sewage, and common household chemicals comprise many hazardous materials that spread by floodwaters. These pollutants contaminate the environment and all that they come into contact with, including the community’s water supply.

10.5.5 Local Hazard Mitigation Plan Impacts

Forty-three of the hazard mitigation plans prepared for Idaho’s counties list flood as a hazard of concern, and 18 counties rank it as a high-impact hazard:

- Benewah
- Bingham
- Blaine
- Boise
- Bonneville
- Boundary
- Camas
- Clearwater
- Custer
- Elmore
- Fremont
- Gooding
- Idaho
- Kootenai
- Lewis
- Payette
- Power
- Washington

An additional 23 counties identified flood as a medium-impact hazard.

Table 10-9 summarizes potential losses to vulnerable structures due to flood, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 10-9. Flood Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

Estimated Total Population Exposed	1,836,529
Estimated Number of Structures at Risk	162,559; 168 improvements; 8,738 parcels
Estimated Value of Structures at Risk	$17,585,052,510

10.6 VULNERABILITY OF PEOPLE AND ASSETS

A GIS analysis was performed to evaluate the number of people and assets within the following hazard areas:

- The FEMA-mapped 1 percent annual chance floodplain
- The mapped dam failure inundation area for the following dams, which have been identified as having needs that could be funded through FEMA HHPD grants:
    - Black Canyon
    - Blacks Creek
    - Crowther
    - Deep Creek
    - Fish Creek
    - Lucky Peak
    - Mackay
    - Mountain Home
    - Oakley
    - Strong Arm
    - Winchester
- The levee failure area, defined as areas with reduced flood risk due to levees, as mapped in the effective FEMA Digital Flood Insurance Rate Maps.

In addition to the GIS analysis to identify the exposure of people and structures in these hazard areas, a Hazus analysis was performed to estimate potential losses dues to flood damage to State facilities and community lifelines. Results are summarized below.

10.6.1 Total and Socially Vulnerable Populations

Socially vulnerable populations are most susceptible based on many factors, including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. Economically disadvantaged populations are likely to evaluate their risk and make decisions based on the major economic impact on their family and may not have funds to evacuate.

The aftermath of flooding events presents numerous threats to public health and safety, including unsafe food, contaminated drinking and washing water and poor sanitation, mosquitoes and animals, mold and mildew, carbon monoxide poisoning, and mental stress and fatigue. Current loss estimation models such as Hazus are not equipped to measure public health impacts. The best preparation for these effects includes awareness that they can occur, education of the public on prevention, and planning to deal with them during responses to flooding events.

Floods and their aftermath present numerous threats to public health and safety:

- Vehicles in flood waters—Flood waters can carry large amounts of debris, potentially increasing the damage they do.
- Unsafe food—Floodwaters can contain disease-causing bacteria, dirt, oil, human and animal waste, and farm and industrial chemicals. Their contact with food items, including food crops in agricultural lands, can make that food unsafe to eat.
- Contaminated drinking and washing water and poor sanitation—Flooding impairs clean water sources with pollutants; pollutants also infiltrate into the groundwater contaminating potable water. Flooded wastewater treatment plants and private sewage disposal systems can be overloaded, resulting in backflows of raw sewage becoming a cause of disease.

- Mosquitoes and animals—Floods provide new breeding grounds for mosquitoes in wet areas and stagnant pools; deceased animals can carry viruses and diseases if not disposed of timely and properly.
- Mold and mildew—Excessive exposure to mold and mildew can cause flood victims, especially those with allergies and asthma, to contract upper respiratory diseases, triggering cold-like symptoms. Infants, children, elderly people, and pregnant women are considered most vulnerable to mold-induced health problems.
- Carbon monoxide poisoning—In the event of power outages, the use of alternative fuels in enclosed or partially enclosed spaces can lead to carbon monoxide poisoning.
- Hazards when reentering and cleaning flooded homes and buildings—Flooded buildings can pose significant health and physical hazards to people entering them, including live electrical wires, gas leaks, flood debris, and hazardous materials.
- Mental stress and fatigue—People who live through a devastating flood can experience long-term psychological impact.

Table 10-10 summarizes the vulnerable and total population within the defined hazard areas. Detailed results for all counties are provided in Appendix E.

Table 10-10. Population Within the Flood Hazard Areas

	Statewide Total	Highest-Ranked Counties		
1% Annual Chance Floodplain				
Total Population in the Hazard Area	60,650	1. Ada (14,649)	2. Canyon (7,407)	3. Madison (4,611)
Vulnerable Population in the Hazard Area	18,006	1. Canyon (3,569)	2. Shoshone (2,315)	3. Gooding (2,206)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	29.7%	1. Benewah, Clark, Lincoln, Minidoka (all 100%)		
Black Canyon Dam Failure Inundation Area				
Total Population in the Hazard Area	8,141	1. Gem (7,870)	2. Payette (271)	n/a
Vulnerable Population in the Hazard Area	7,763	1. Gem (7,721)	2. Payette (43)	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	95.4%	1. Gem (98.1%)	2. Payette (15.8%)	n/a
Blacks Creek Dam Failure Inundation Area				
Total Population in the Hazard Area	5,525	1. Ada (4,753)	2. Canyon (772)	n/a
Vulnerable Population in the Hazard Area	139	1. Canyon (139)	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	2.5%	1. Canyon (18.0%)	n/a	n/a
Crowther Dam Failure Inundation Area				
Total Population in the Hazard Area	363	1. Oneida (363)	n/a	n/a
Vulnerable Population in the Hazard Area	0	n/a	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	0%	n/a	n/a	n/a
Deep Creek Dam Failure Inundation Area				
Total Population in the Hazard Area	583	1. Oneida (583)	n/a	n/a
Vulnerable Population in the Hazard Area	0	n/a	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	0%	n/a	n/a	n/a

	Statewide Total	Highest-Ranked Counties		
Fish Creek Dam Failure Inundation Area				
Total Population in the Hazard Area	115	1. Blaine (115)	n/a	n/a
Vulnerable Population in the Hazard Area	0	n/a	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	0%	n/a	n/a	n/a
Lucky Peak Dam Failure Inundation Area				
Total Population in the Hazard Area	127,702	1. Ada (104,308)	2. Canyon (18,471)	3. Payette (2,731)
Vulnerable Population in the Hazard Area	15,936	1. Ada (5,575)	2. Canyon (5,493)	3. Payette (2,678)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	12.5%	1. Washington & Owyhee (100% each)	3. Payette (98.1%)	
Mackay Dam Failure Inundation Area				
Total Population in the Hazard Area	1,855	1. Butte (1,160)	2. Custer (695)	n/a
Vulnerable Population in the Hazard Area	0	n/a	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	0%	n/a	n/a	n/a
Mountain Home Dam Failure Inundation Area				
Total Population in the Hazard Area	2,332	1. Elmore (2,332)	n/a	n/a
Vulnerable Population in the Hazard Area	1,384	1. Elmore (1,384)	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	59.3%	1. Elmore (59.3%)	n/a	n/a
Oakley Dam Failure Inundation Area				
Total Population in the Hazard Area	12,934	1. Cassia (12,358)	2. Minidoka (512)	3. Twin Falls (49)
Vulnerable Population in the Hazard Area	5,465	1. Cassia (4,952)	2. Minidoka (510)	3. Jerome (3)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	42.3%	1. Minidoka (99.6%)	2. Jerome (60.0%)	3. Cassia (40.1%)
Strong Arm Dam Failure Inundation Area				
Total Population in the Hazard Area	65	1. Franklin (65)	n/a	n/a
Vulnerable Population in the Hazard Area	0	n/a	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	0%	n/a	n/a	n/a
Winchester Dam Failure Inundation Area				
Total Population in the Hazard Area	195	1. Nez Perce (195)	n/a	n/a
Vulnerable Population in the Hazard Area	195	1. Nez Perce (195)	n/a	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	100%	1. Nez Perce (100%)	n/a	n/a
Levee Failure Inundation Area				
Total Population in the Hazard Area	1,261	1. Kootenai (485)	2. Bannock (299)	3. Bonner (274)
Vulnerable Population in the Hazard Area	301	1. Benewah (203)	2. Kootenai (97)	3. Bannock (1)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	23.9%	1. Benewah (100%)	2. Kootenai (20.0%)	3. Bannock (0.3%)

10.6.2 National Risk Index Ratings

According to the NRI, 17 of the state's 44 counties have NRI identified riverine flooding risk rated from relatively moderate to relatively low. The risk rankings for the highest ranked counties are shown in Table 10-11.

Table 10-11. NRI Ratings for Riverine Flooding in Highest-Ranked Idaho Counties

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Idaho County	$1,156,532	Relatively Moderate	Very Low	1.24	$1,521,797	75.72
Ada County	$886,893	Very Low	Very High	0.84	$850,508	63.25
Cassia County	$596,584	Relatively Moderate	Relatively Low	1.14	$702,176	58.70
Shoshone County	$442,626	Relatively High	Very Low	1.49	$680,549	58.09
Boundary County	$477,177	Relatively Low	Very Low	1.35	$637,085	56.47
Washington County	$364,730	Very High	Very Low	1.40	$566,865	53.86
Benewah County	$307,695	Relatively High	Relatively Low	1.41	$436,070	48.55
Latah County	$358,549	Relatively Low	Relatively Moderate	1.02	$370,014	45.30
Canyon County	$252,348	Relatively High	Relatively Moderate	1.18	$330,660	42.95

10.6.3 State-Owned or -Leased Facilities

Table 10-12 summarizes the number and estimated replacement cost value of all State-owned or -leased facilities in the defined hazard area. Table 10-13 shows the number of State agencies and counties that have State-owned or -leased facilities in the hazard area. Table 10-14 lists the top three state agencies and counties with State-owned or -leased facilities in the hazard area, by number of facilities and by total estimated replacement cost value. Detailed results for all counties and state agencies are provided in Appendix E.

Table 10-12. Total State Facilities Within the Flood Hazard Areas

	Number of Facilities in the Hazard Area			Total Estimated Replacement Cost Value		
	State-Owned	State-Leased	Total	State-Owned	State-Leased	Total
Riverine Flooding						
1% Annual Chance Floodplain	196	63	259	$280,407,081	$168,434,483	$448,841,564
Dam Failure						
Black Canyon Dam Failure Inundation Area	10	6	16	$4,480,277	$13,852,857	$18,333,133
Blacks Creek Dam Failure Inundation Area	0	0	0	$0	$0	$0
Crowther Dam Failure Inundation Area	0	0	0	$0	$0	$0
Deep Creek Dam Failure Inundation Area	4	3	7	$4,054,867	$8,301,087	$12,355,954
Fish Creek Dam Failure Inundation Area	5	0	5	$1,272,780	0	$1,272,780
Lucky Peak Dam Failure Inundation Area	401	176	577	$2,898,663,324	$645,184,197	$3,543,847,520
Mackay Dam Failure Inundation Area	10	7	17	$15,689,518	$19,369,203	$35,058,721
Mountain Home Dam Failure Inundation Area	0	0	0	$0	$0	$0
Oakley Dam Failure Inundation Area	12	15	27	$10,828,620	$41,505,435	$52,334,055
Strong Arm Dam Failure Inundation Area	0	0	0	$0	$0	$0
Winchester Dam Failure Inundation Area	0	0	0	$0	$0	$0
Levee Failure						
Levee Failure Inundation Area	8	4	12	$2,099,393	$11,068,116	$13,167,509

Table 10-13. State Facilities Within the Flood Hazard Areas by State Agency and County

	Total Number of State Agencies with Facilities in the Hazard Area			Total Number of Counties with Facilities in the Hazard Area		
	State-Owned	State-Leased	Total[a]	State-Owned	State-Leased	Total[a]
Riverine Flooding						
1% Annual Chance Floodplain	12	17	24	25	16	27
Dam Failure						
Black Canyon Dam Failure Inundation Area	4	4	7	1	1	1
Blacks Creek Dam Failure Inundation Area	0	0	0	0	0	0
Crowther Dam Failure Inundation Area	0	0	0	0	0	0
Deep Creek Dam Failure Inundation Area	3	3	5	1	1	1
Fish Creek Dam Failure Inundation Area	2	0	2	1	0	1
Lucky Peak Dam Failure Inundation Area	21	57	67	2	4	4
Mackay Dam Failure Inundation Area	4	5	8	2	2	2
Mountain Home Dam Failure Inundation Area	0	0	0	0	0	0
Oakley Dam Failure Inundation Area	5	8	12	2	1	2
Strong Arm Dam Failure Inundation Area	0	0	0	0	0	0
Winchester Dam Failure Inundation Area	0	0	0	0	0	0
Levee Failure						
Levee Failure Inundation Area	2	3	5	2	2	3

a. Total number of agencies or counties with vulnerable facilities may not be equal to the sum of those with state-owned facilities and those with state-lease facilities, as some agencies and counties have both state-owned facilities and state-leased facilities.

Table 10-14. Top Three State Agencies and Counties with State Facilities Within the Flood Hazard Areas

	Greatest Number of Facilities in Hazard Area				Greatest Replacement Cost Value in Hazard Area			
	State Agencies		Counties		State Agencies		Counties	
	Name	Facilities	Name	Facilities	Name	Value	Name	Value
1% Annual Chance Floodplain								
1.	Dept. of Fish & Game	86	Ada	71	Dept. of Parks & Recreation	$190.1 million	Ada	$114.7 million
2.	Dept. of Parks & Recreation	69	Clearwater	20	State Liquor Division	$47.0 million	Shoshone	$47.1 million
3.	Dept. of Transportation	17	Idaho & Shoshone	18 (each)	Dept. of Fish & Game	$42.1 million	Benewah	$41.5 million
Black Canyon Dam Failure Inundation Area								
1.	Dept. Trans, Div. Military	5 (each)	Gem	16	Dept. of Correction	$5.5 million	Gem	$18.3 million
2.			n/a	n/a	Division of Military	$3.3 million	n/a	n/a
3.	Dept. of Correction	2	n/a	n/a	Liquor Division, Judicial, Univ. of Idaho	$2.8 million each	n/a	n/a

	Greatest Number of Facilities in Hazard Area				Greatest Replacement Cost Value in Hazard Area			
	State Agencies		Counties		State Agencies		Counties	
	Name	Facilities	Name	Facilities	Name	Value	Name	Value
Deep Creek Dam Failure Inundation Area								
1.	Dept. of Transportation	2	Oneida	7	Division of Military	$3.6 million	Oneida	$12.3 million
2.	Division of Military	2	n/a	n/a	Liquor Division, Judicial, Univ. of Idaho	$2.8 million each	n/a	n/a
3.	State Liquor Div., Judicial Branch, Univ. of Idaho	1 (each)	n/a	n/a			n/a	n/a
Fish Creek Dam Failure Inundation Area								
1.	Dept. of Transportation	4	Blaine	5	Dept. of Transportation	$1.3 million	Blaine	$1.3 million
2.	Dept. of Trans. Dist. 4	1	n/a	n/a	Dept. of Trans. Dist. 4	$7,000	n/a	n/a
3.	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Lucky Peak Dam Failure Inundation Area								
1.	Boise State University	227	Ada	558	Boise State University	$2.1 billion	Ada	$3.5 billion
2.	Dept. of Fish & Game	55	Canyon	17	Dept. of Administration	$542 million	Canyon	$13.5 million
3.	Dept. of Parks & Recreation	52	Payette & Valley	1 (each)	Dept. of Parks & Recreation	$129 million	Payette & Washington	$2.8 million (each)
Mackay Dam Failure Inundation Area								
1.	Dept. of Fish & Game, Dept. of Transportation	4 (each)	Custer	10	Dept. of Fish & Game	$8.3 million	Butte	$17.8 million
2.			Butte	7	Division of Military	$8.3 million	Custer	$17.3 million
3.	Division of Military	3	n/a	n/a	State Liquor Division	$5.5 million		
Oakley Dam Failure Inundation Area								
1.	Dept. of Transportation	6	Cassia	25	Dept. of Agriculture	$11.1 million	Cassia	$46.8 million
2.	Department of Agriculture	4	Gooding	2	Depts. Of Correction, Health/Welfare, Parks/Recreation, Liquor Div., Idaho State Univ.	$5.5 million (each)	Gooding	$5.5 million
3.	Division of Military	3	n/a	n/a			n/a	n/a
Levee Failure Inundation Area								
1.	Dept. of Lands	7	Benewah	7	University of Idaho	$5.5 million	Kootenai	$8.3 million
2.	University of Idaho	2	Kootenai	3	State Liquor Division Lewis-Clark State College	$2.8 million (each)	Bonner	$2.8 million
3.	Dept. of Fish & Game, State Liquor Div., Lewis-Clarke State College	1 (each)	Bonner	2			Benewah	$2.0 million

Note: This table omits dams for which no state facilities are identified as being within the dam failure inundation area (see Table 10-13): Blacks Creek, Crowther, Mountain Home, Strong Arm, and Winchester

10.6.4 Highways, Bridges, Dams, and Canals

Table 10-15 summarizes the miles of highway and canals and the number of bridges and dams within the defined hazard areas statewide, as well as the counties with the greatest number of each. Analyses for these assets were conducted for each type of flooding as follows:

- 1 percent annual chance flood: highway, bridges, dams, and canals,

- Dam failure inundation areas: highway, bridges, and canals
- Levee failure inundation area: highway

Detailed results for all counties are provided in Appendix E.

Table 10-15. State Highways, Bridges, and Dams Within the Flood Hazard Areas

	Statewide Total	Highest-Ranked Counties		
1% Annual Chance Floodplain				
Miles of Highway	273	1. Idaho (39.1)	2. Lemhi (33.4)	3. Shoshone (17.3)
Number of Bridges	113	1. Shoshone (30)	2. Kootenai (22)	3. Lemhi (21)
Number of State-Regulated Dams	84	1. Elmore & Fremont (11 each)	3. Ada (7)	
Miles of Canals	400	1. Bingham (68)	2. Canyon (48)	3. Madison (41)
Black Canyon Dam Failure Inundation Area				
Miles of Highway	19	1. Gem (15.3)	2. Payette (3.3)	n/a
Number of Bridges	9	1. Gem (6)	2. Payette (3)	n/a
Miles of Canals	50	1 Gem (42)	2. Payette (8)	n/
Blacks Creek Dam Failure Inundation Area				
Miles of Highway	2	1. Canyon (1.4)	2. Ada (1)	n/a
Number of Bridges	4	1. Canyon (3)	2. Ada (1)	n/a
Miles of Canals	9	1. Canyon (6)	2. Ada (2)	n/a
Crowther Dam Failure Inundation Area				
Miles of Highway	1	1. Oneida (1.4)	n/a	n/a
Number of Bridges	0	n/a	n/a	n/a
Miles of Canals	0	n/a	n/a	n/a
Deep Creek Dam Failure Inundation Area				
Miles of Highway	6	1. Oneida (5.6)	n/a	n/a
Number of Bridges	0	n/a	n/a	n/a
Miles of Canals	0	n/a	n/a	n/a
Fish Creek Dam Failure Inundation Area				
Miles of Highway	6	1. Blaine (5.6)	n/a	n/a
Number of Bridges	0	n/a	n/a	n/a
Miles of Canals	5	1. Blaine (4.6)	n/a	n/a
Lucky Peak Dam Failure Inundation Area				
Miles of Highway	80	1. Ada (35.5)	2. Canyon (30.1)	3. Washington (8.0)
Number of Bridges	41	1. Ada (23)	2. Canyon (13)	3. Washington (4)
Miles of Canals	232	1. Canyon (131)	2. Ada (93)	3. Payette (6)
Mackay Dam Failure Inundation Area				
Miles of Highway	27	1. Butte (14.4)	2. Custer (12.8)	n/a
Number of Bridges	11	1. Butte (9)	2. Custer 92)	n/a
Miles of Canals	39	1. Butte (22)	2. Custer (17)	n/a
Mountain Home Dam Failure Inundation Area				
Miles of Highway	1	1. Elmore (1.2)	2. Owyhee (0.1)	n/a
Number of Bridges	1	1. Owyhee (1)	n/a	n/a
Miles of Canals	7	1. Elmore (7)	n/a	n/a

	Statewide Total	Highest-Ranked Counties		
Oakley Dam Failure Inundation Area				
Miles of Highway	28	1. Cassia (25.9)	2. Minidoka (2.1)	3. Twin Falls (0.3)
Number of Bridges	6	1. Cassia (4)	2. Gooding, Twin Falls (1 each)	
Miles of Canals	266	1. Cassia (257)	2. Minidoka (8)	3. Gooding (1)
Strong Arm Dam Failure Inundation Area				
Miles of Highway	1	1. Franklin (1.1)	n/a	n/a
Number of Bridges	1	1. Franklin (1)	n/a	n/a
Miles of Canals	1	1. Franklin (1)	n/a	n/a
Winchester Dam Failure Inundation Area				
Miles of Highway	14	1. Nez Perce (10.0)	2. Lewis (4.1)	n/a
Number of Bridges	16	1. Lewis (9)	2. Nez Perce (7)	n/a
Miles of Canals	0	n/a	n/a	n/a
Levee Failure Inundation Area				
Miles of Highway	1	1. Bonner (0.7)	2. Benewah (0.3)	n/a

10.6.5 Buildable Lands

Table 10-16 summarizes the amount of buildable land within the defined hazard area for 2020. Appendix E provides details on buildable land and ICLUS land use in the hazard area for all counties for 2020 and 2030.

Table 10-16. Buildable Lands Within the Flood Hazard Areas, 2020

	Statewide	Highest-Ranked Counties		
1% Annual Chance Floodplain				
Buildable Land in the Hazard Area (acres)	24,228	1. Bonner (3,329)	2. Kootenai (1,795)	3. Lemhi (1,754)
Hazard Area Buildable Land as % of Total County or State Buildable Land	3.8%	1. Butte (31.9%)	2. Madison (21.5%)	3. Bingham (17.7%)
Black Canyon Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	1,250	1. Gem (1,227)	2. Payette (23)	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	0.2%	1. Gem (24.0%)	2. Payette (0.4%0	n/a
Blacks Creek Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	487	1. Ada (400)	2. Canyon (118)	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	0.1%	1. Ada (0.7%)	2. Canyon (0.4%)	n/a
Crowther Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	18	1. Oneida (18)	n/a	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	<0.1%	1. Oneida (1.7%)	n/a	n/a
Deep Creek Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	92	1. Oneida (92)	n/a	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	<0.1%	1. Oneida (8.5%)	n/a	n/a
Fish Creek Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	13	1. Blaine (13)	n/a	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	<0.1%	1. Blaine (0.1%)	n/a	n/a

	Statewide	Highest-Ranked Counties		
Lucky Peak Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	11,902	1. Ada (8,151)	2. Canyon (2,643)	3. Washington (624)
Hazard Area Buildable Land as % of Total County or State Buildable Land	1.9%	1. Washington (20.9%)	2. Ada (16.3%)	3. Canyon (8.3%)
Mackay Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	2,507	1. Custer (1,488)	2. Butte (1,019)	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	0.4%	1. Butte (46.1%)	2. Custer (28.7%)	n/a
Mountain Home Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	690	1. Elmore (690)	n/a	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	0.1%	1. Elmore (5.0%)	n/a	n/a
Oakley Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	2,746	1. Cassia (2,548)	2. Minidoka (109)	3. Twin Falls (65)
Hazard Area Buildable Land as % of Total County or State Buildable Land	0.4%	1. Cassie (40.5%)	2. Minidoka (2.4%)	3. Twin Falls & Gooding (0.3% each)
Strong Arm Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	11	1. Franklin (11)	n/a	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	<0.1%	1. Franklin (0.1%)	n/a	n/a
Winchester Dam Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	15	1. Nez Perce (15)	n/a	n/a
Hazard Area Buildable Land as % of Total County or State Buildable Land	<0.1%	1. Nez Perce (0.1%)	n/a	n/a
Levee Failure Inundation Area				
Buildable Land in the Hazard Area (acres)	180	1. Bonner (113)	2. Kootenai (33)	3. Benewah (21)
Hazard Area Buildable Land as % of Total County or State Buildable Land	<0.1%	1. Benewah, Bonner, & Bannock (0.1% each)		

10.6.6 Repetitive Loss Analysis

As of May 23, 2023, Idaho has 35 FEMA-identified repetitive loss properties, of which 2 have been identified as severe repetitive loss properties. Table 10-17 provides a breakdown of these properties by county.

10.6.7 Community Lifelines

Table 10-18 summarizes the number of community lifelines by type within the defined hazard area. Detailed results for all counties are provided in Appendix E.

10.6.8 Potential Losses Due to a Hazard Event

Hazus provided estimates of the dollar loss values due to damage from flooding to State-owned or -leased facilities. For community lifelines, Hazus estimated loss as a percentage of total value of structures for each lifeline category. Results are summarized in Table 10-19 through Table 10-21. Detailed results for all counties are provided in Appendix E.

Table 10-17. Repetitive Loss Data for Idaho

County	Numbers of Properties					Total Losses	Loss Value	
	Repetitive Loss	Severe Repetitive Loss	Mitigated	NFIP-Insured	Outside SFHA		Cumulative	Average
Ada	2	0	0	1	2	4	$105,898	$26,474.50
Bannock	1	0	0	1	1	2	$23,333	$11,666.50
Benewah	3	0	0	0	0	10	$ 158,863	$15,886.30
Blaine	7	0	1	6	0	20	$313,907	$15,695.35
Jefferson	2	0	0	0	1	4	$21,451	$5,362.75
Kootenai	4	0	1	2	2	10	$ 222,042	$22,204.20
Latah	1	1	0	0	1	3	$30,830	$10,276.67
Payette	2	0	0	1	1	4	$57,321	$14,330.25
Shoshone	9	1	2	1	2	28	$357,444	$12,765.86
Teton	1	0	0	0	0	2	$6,852	$3,426.00
Washington	1	0	0	0	0	2	$15,327	$7,663.50
Total	**33**	**2**	**4**	**12**	**10**	**89**	**$1,313,268**	**$14,755.82**

Table 10-18. Community Lifelines Within the Flood Hazard Areas

	Number of Lifelines Within the Hazard Area					
	Energy	Food, Water, Shelter	Health & Medical	Safety & Security	Transportation	Total
1% Annual Chance Flood						
Statewide Total	73	3	4	52	200	**332**
Top Counties	1. Gooding (7) 2. Bingham & Elmore (6 each)	1. Bingham, Madison & Clearwater (1 each)	1. Ada & Washington (2 each)	1. Shoshone (7) 2. Lemhi (6) 3. Madison (5)	1. Bonner (24) 2. Adams (22) 3. Bannock (14)	**1. Bonner (27) 2. Adams (23) 3. Shoshone (20)**
Black Canyon Dam Failure						
Statewide Total	5	0	1	12	11	**29**
Top Counties	1. Gem (5)	n/a	1. Gem (1)	1. Gem (12)	1. Gem (7) 2. Payette (4)	**1. Gem (25) 2. Payette (4)**
Blacks Creek Dam Failure						
Statewide Total	1	0	0	1	3	**5**
Top Counties	1. Canyon (1)	n/a	n/a	1. Ada (1)	1. Canyon (2) 2. Ada (1)	**1. Canyon (3) 2. Ada (2)**
Crowther Dam Failure						
Statewide Total	0	0	1	0	0	**1**
Top Counties	n/a	n/a	1. Oneida (1)	n/a	n/a	**1. Oneida (1)**
Deep Creek Dam Failure						
Statewide Total	0	0	0	5	1	**6**
Top Counties	n/a	n/a	n/a	1. Oneida (5)	1. Oneida (1)	**1. Oneida (6)**
Fish Creek Dam Failure						
Statewide Total	0	0	0	0	0	**0**
Top Counties	n/a	n/a	n/a	n/a	n/a	**n/a**
Lucky Peak Dam Failure						
Statewide Total	23	2	7	76	15	**123**

	Number of Lifelines Within the Hazard Area					
	Energy	Food, Water, Shelter	Health & Medical	Safety & Security	Transportation	Total
Top Counties	1. Ada (15) 2. Canyon (5) 3. Boise, Elmore, Payette (1 each)	1. Ada (1) 2. Payette (1)	1. Ada (7)	1. Ada (64) 2. Canyon (10) 3. Payette (3)	1. Canyon (8) 2 Washington (4) 3. Payette (3)	**1. Ada (87) 2. Canyon (23) 3. Payette (7)**
Mackay Dam Failure						
Statewide Total	9	0	0	10	1	**20**
Top Counties	1. Butte (8) 2. Custer (2)	n/a	n/a	1. Butte (6) 2. Custer (4)	1. Butte (1)	**1. Butte (15) 2. Custer (5)**
Mountain Home Dam Failure						
Statewide Total	1	0	0	3	0	**4**
Top Counties	1. Elmore (1)	n/a	n/a	1. Elmore (3)	n/a	**1. Elmore (4)**
Oakley Dam Failure						
Statewide Total	13	0	2	16	3	**34**
Top Counties	1. Cassia (8) 2. Twin Falls (3) 3. Gooding (2)	n/a	1. Cassia (2)	1. Cassia (16)	1. Cassia (2) 2. Minidoka (1)	**1. Cassia (28) 2. Twin Falls (3) 3. Gooding (2)**
Strong Arm Dam Failure						
Statewide Total	0	0	0	0	0	**0**
Top Counties	n/a	n/a	n/a	n/a	n/a	**n/a**
Winchester Dam Failure						
Statewide Total	1	0	0	2	7	**10**
Top Counties	1. Nez Perce (1)	n/a	n/a	1. Nez Perce (2)	1. Nez Perce (5) 2. Lewis (2)	**1. Nez Perce (8) 2. Lewis (2)**
Levee Failure Dam Failure						
Statewide Total	2	1	0	6	0	**9**
Top Counties	1. Bonner (2)	1. Kootenai (1)	n/a	1. Kootenai & Bonner (2 each) 3. Bannock & Benewah (1 each)	n/a	**1. Bonner (4) 2. Kootenai (2) 3. Bannock & Benewah (1 each)**

Table 10-19. Statewide Loss Estimates Due to Flooding for State-Owned or -Leased Facilities

	Estimated Loss Due to Flooding	% of Total Facility Value
Riverine Flooding		
1% Annual Chance Flood	$41.9 million	0.3%
Dam Failure		
Black Canyon Dam Failure	$55,527	<0.1%
Deep Creek Dam Failure	$95,066	<0.1%
Fish Creek Dam Failure	$24,030	<0.1%
Lucky Peak Dam Failure	$2,749,614,672	18.6%
Mackay Dam Failure	$1,148,187	<0.1%
Oakley Dam Failure	$4,289,321	<0.1%

Note: This table omits dams for which no state facilities are identified as being within the dam failure inundation area (see Table 10-13): Blacks Creek, Crowther, Mountain Home, Strong Arm, and Winchester

Table 10-20. Loss Estimates Due to Flooding for State-Owned or -Leased Facilities, by Agency and County

	Agencies With Any Estimated Loss		Counties With Any Estimated Loss	
	Total Number	Top 3	Total Number	Top 3
Riverine Flooding				
1% Annual Chance Flood	14	1. Dept. of Parks & Recreation ($28.8 million) 2. Dept. of Fish & Game ($5.5 million) 3. Dept. of Environmental Quality ($2.7 million)	21	1. Benewah ($19.2 million) 2. Idaho ($5.3 million) 3. Boise ($4.3 million)
Dam Failure				
Black Canyon Dam Failure	1	1. State Liquor Division ($56,000)	1	1. Gem ($56,000)
Deep Creek Dam Failure	3	1. Division of Military ($51,000) 2. Dept. of Transportation ($32,000) 3. University of Idaho ($12,000)	1	1. Oneida ($95,000)
Fish Creek Dam Failure	1	1. Dept. of Transportation ($24,000)	1	1. Blaine ($24,000)
Lucky Peak Dam Failure	67	1. Boise State University ($1.89 billion) 2. Dept. of Administration ($290 million) 3. Dept. of Parks & Recreation ($100 million)	4	1. Ada ($2.74 billion) 2. Canyon ($4.0 million) 3. Washington ($1.8 million)
Mackay Dam Failure	7	1. Dept. of Fish & Game ($622,000) 2. Division of Military ($192,000) 3. Public Health Dist. 6 ($149,000)	2	1. Custer ($857,000) 2. Butte ($291,000)
Oakley Dam Failure	12	1. Dept. of Health and Welfare ($739,000) 2. Dept. of Agriculture ($619,000) 3. Dept. of Correction ($596,000)	2	1. Cassia ($3.9 Million) 2. Gooding ($387,000)

Note: This table omits dams for which no state facilities are identified as having losses due to dam failure: Blacks Creek, Crowther, Mountain Home, Strong Arm, and Winchester

Table 10-21. Estimated Loss Percentage for Community Lifelines Within the Flood Hazard Areas

	Estimated Loss as % of Total Value of Structures					
	Energy	Food, Water, Shelter	Health & Medical	Safety & Security	Transportation	Total
1% Annual Chance Flood						
Statewide	16.8%	0.3%	2.8%	4.9%	0.0%	11.4%
Top Counties	1. Boise (61.7%) 2. Teton (39.8%) 3. Latah (36.9%)	1. Bingham (1.0%)	1. Washington (5.5%)	1. Kootenai (35.3%) 2. Boise (31.0%) 3. Clearwater (21.1%)	n/a	1. Boise (44.2%) 2. Teton (39.8%) 3. Twin Falls (32.5%)
Black Canyon Dam Failure						
Statewide	12.8%	0.0%	0.0%	47.4%	0.0%	26.7%
Top Counties	1. Gem (12.8%)	n/a	n/a	1. Gem (47.4%)	n/a	1. Gem (26.7%)
Blacks Creek Dam Failure						
Statewide	0.2%	0.0%	0.0%	0.0%	0.0%	0.1%
Top Counties	1. Canyon (0.2%)	n/a	n/a	n/a	n/a	1. Canyon (0.2%)
Deep Creek Dam Failure						
Statewide	0.0%	0.0%	0.0%	5.9%	0.0%	5.9%
Top Counties	n/a	n/a	n/a	1. Oneida (5.9%)	n/a	1. Oneida (5.9%)
Lucky Peak Dam Failure						
Statewide	51.3%	35.1%	48.1%	51.1%	0.0%	50.7%

	Estimated Loss as % of Total Value of Structures					
	Energy	Food, Water, Shelter	Health & Medical	Safety & Security	Transportation	Total
Top Counties	1. Ada (60.9%) 2. Boise (37.1%) 3. Canyon (37.0%)	1. Ada (40.0%) 2. Payette (30.2%)	1. Ada (48.1%)	1. Ada (54.5%) 2. Canyon (39.0%) 3. Payette (3.7%)	n/a	1. Ada (54.9%) 2. Canyon (38.3%) 3. Boise (37.1%)
Mackay Dam Failure						
Statewide	0.3%	0.0%	0.0%	1.5%	0.0%	0.9%
Top Counties	1. Butte (0.3%) 2. Custer (0.1%)	n/a	n/a	1. Custer (2.1%) 2. Butte (1.1%)	n/a	1. Custer (1.7%) 2. Butte (0.7%)
Mountain Home Dam Failure						
Statewide	0.0%	0.0%	0.0%	4.9%	0.0%	3.7%
Top Counties	n/a	n/a	n/a	1. Elmore (4.9%)	n/a	1. Elmore (3.7%)
Oakley Dam Failure						
Statewide	15.3%	0.0%	13.4%	8.2%	0.0%	11.7%
Top Counties	1. Gooding (21.0%) 2. Twin Falls (16.3%) 3. Cassia (12.8%)	n/a	1. Cassia (13.4%)	1. Cassia (8.2%)	n/a	1. Gooding (21.0%) 2. Twin Falls (16.3%) 3. Cassia (10.0%)
Winchester Dam Failure						
Statewide	12.5%	0.0%	0.0%	9.5%	0.0%	10.5%
Top Counties	1. Nez Perce (12.5%)	n/a	n/a	1. Nez Perce (9.5%)	n/a	1. Nez Perce (10.5%)

Note: This table omits dams for which no community lifelines are identified as having losses due to dam failure: Fish Creek, Crowther, and Strong Arm

10.7 MITIGATING THE HAZARD

10.7.1 Mitigation Rationale

Flooding

Flooding is the most serious, devastating, and costly of natural hazards and can occur virtually anywhere. Most Idaho residents live near rivers that are subject to periodic flooding. Floods in Idaho frequently damage roads, farmlands, and structures, often disrupt lives and businesses, and occasionally cause the loss of life. A few streams in Idaho are subject to almost annual flooding, but damaging floods are much less frequent in most areas. Historically, the greatest impact has been to the northern and north-central parts of the State, where communities are vulnerable to flooding of the many rivers, lakes, and creeks in the area due to snowmelt, rain, or rain on snow events. The steep, mountainous terrain creates a flood-prone environment, and development is often confined to areas adjacent to stream channels.

The nature and magnitude of riverine flood-related damages are dependent on:

- Flow volume and velocity—High volume and/or velocity flows carry huge mechanical forces and are capable of damaging even substantial structures. This may be extreme for the failure of a dam, levee, or canal.
- Duration—Long-duration floods of even low volume can cause great damage due to prolonged inundation (e.g., crop damage).
- Bank stability—Bank erosion can alter channel paths and result in a substantial loss of property.

- Sediment load and in-stream debris—Siltation from sediment transport and deposition may decrease the carrying capacity of the channel, exacerbating flood events. Siltation may also decrease reservoir storage capacity, degrade fish and wildlife habitat, change the course of a stream, or introduce chemicals into the stream. In-stream debris increases the likelihood of mechanical damage and may raise flood levels when jams form.
- Secondary hazards—Secondary hazards associated with flooding include landslides, mudslides, structural damage, hazardous materials releases, the spread of pollution and disease.

Generally, flash floods represent the greatest risks to life and property due to the rapid onset, the potentially high velocity of water, and the debris load carried by floodwaters. Flash floods resulting from a series of fast-moving storms may produce more than one flood crest, and the sudden destruction of structures and washout of access routes may result in the loss of life. Flash floods happen somewhere in Idaho almost every year and are a major cause of weather-related fatalities in the United States each year.

The possibility for injury and death from flash floods is heightened because motorists oftentimes underestimate the depth and velocity of floodwaters, causing stalled and flooded vehicles and drowning; nearly half of all flash-flood fatalities are vehicle related, usually occurring when motorists attempt to drive through floodwaters.

Sheet flooding can cause major damage, as flooding can occur when there is rapid snowmelt or rain on snow events. This is a temporary event, however if the ground is frozen then the water and ice have nowhere to go, turning the area into a temporary lake or river.

In general, human hazards during flooding include drowning, electrocution from downed power lines, leaking gas lines, fires and explosions, hazardous chemicals, and displaced wildlife. Economic losses and the disruption of social systems are often enormous. Floods may destroy or damage structures, furnishings, business assets including records, crops, livestock, roads and highways, and railways. They often deprive large areas of electric service, potable water supplies, wastewater treatment, communications, medical care, and many other community services and may do so for long periods of time.

Dam, Canal, and Levee Failure

The primary rationale for mitigating risks associated with dam, canal, and levee failure is the potential for loss of life and economic loss. Presently, a comprehensive inventory of levees and levee systems in Idaho does not exist. The National Levee Database program, run by USACE, does have some information, however participation is voluntary and has not produced a widespread inventory. As more comprehensive levee inventory and inspection programs emerge, additional mitigation of risk associated with levees/ levee systems can be identified. Further, with the exception of some federal-owned levees, most do not benefit from regular safety inspections as typically are provided for Idaho’s dams.

There are no known data deficiencies known between lists and records of the status of state and federally owned dams. Risk mitigation is strongly dependent on reducing the probability that failure will occur and reducing the potential damage to life and property resulting from the failure. Certain dams have been constructed to reduce downstream flooding, but they must still release water to prevent being overtopped. This release of water mitigates catastrophic flooding, but some downstream flooding may still occur.

Other factors that contribute to damage to infrastructure systems are encroachment on levees and canals, lack of maintenance on systems, and development of areas downstream of dams creating issues with flooding and management of water release.

10.7.2 Programs and Agencies

RiskMAP

An accurate understanding of a hazard is the first step towards successful mitigation. To fully understand a hazard and the risk that it poses, the ability to accurately assess vulnerability is vital. After vulnerability is determined, it is then possible to assess potential losses if a state inventory of facilities and infrastructure is available. Idaho currently fully embraces FEMA's ongoing Risk Mapping, Assessment, and Planning (RiskMAP) program, which is an in depth, 5-year process to fully understand the risk. The discovery process, and the resulting report and map, is comprised of 4 phases (Figure 10-10).

Source: (FEMA 2023)

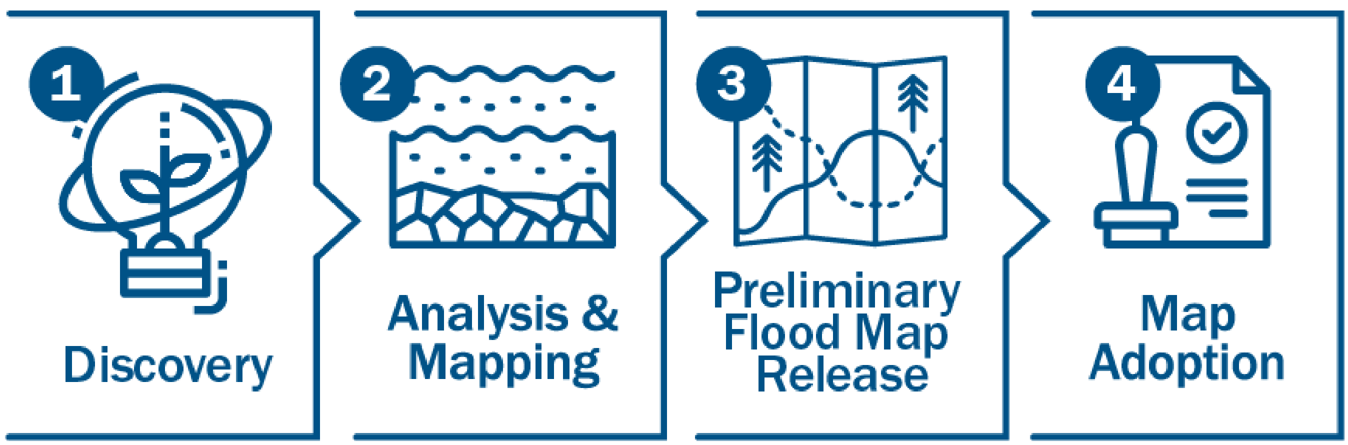


Figure 10-10. RiskMAP Process

The first phase focuses on data collection from all possible sources to help inform and guide future phases. Phase two involves review of all data and follow up communications with locals to begin to identify possible areas of mitigation action. The third phase includes a series of meetings to bring together all watershed stakeholders to continue to refine possible mitigation projects and flood study needs. The fourth and final phase concludes with the creation of the final discovery report and map, which documents the agreed upon desired flood study areas and mitigation project locations. Should additional RiskMAP projects be selected to occur in the area, the report and map will be the foundation for defining the future project scope.

The risk report provides non-regulatory information to help jurisdictions and stakeholders better understand their risk. This improved risk understanding can then aid in improved communication of those risks to local businesses and citizens, with the end goal of driving mitigation actions to reduce that risk.

National Flood Insurance Program

The NFIP is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

Participation in the NFIP is based on an agreement between a local government and the federal government that states if a community will adopt and enforce a floodplain management ordinance to reduce future flood risks to construction and other ground disturbing activities in mapped Special Flood Hazard Areas (SFHA), the federal government will make flood insurance available within the community as a financial protection against flood losses. The SFHA has been defined using topographic and hydrologic information and sometimes engineering studies, to identify what area would be inundated in a 1% annual chance flood event. In this type of event, there is a 1% chance each and every year that a flood of that magnitude could occur or be exceeded.

Cities and counties in the NFIP have adopted an ordinance that meets or exceeds the minimum requirements of the NFIP found in Title 44 CFR § 60.3. The ordinance explains requirements for floodplain development permits, construction standards, and other pertinent information for floodplain management.

Homeowners insurance does not cover flood damage. A private insurance agent can write an NFIP policy, or a property owner can buy coverage directly through the NFIP. Flood insurance can be purchased for any property even if it is not shown in an SFHA on a Flood Insurance Rate Map (FIRM). An insurance policy is rated based on typical insurance variables such as amount of coverage for the structure and contents and specifically on the mapped flood zone and the type of construction, especially the foundation. Only buildings and structures, not land, are protected by an NFIP policy.

Lenders have a federal mandate, the "mandatory purchase requirement," that says if a loan for a property is federally insured or is made by federally insured institutions and the structure is in a SFHA, flood insurance is required. For more information on claims and trends, see https://www.floodsmart.gov/historical-nfip-claims-information-and-trends.

Community Rating System

The Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP. Twenty-four communities participate statewide.

In CRS communities, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community's efforts that address the three goals of the program:

- Reduce and avoid flood damage to insurable property
- Strengthen and support the insurance aspects of the National Flood Insurance Program
- Foster comprehensive floodplain management

Flood Control Districts

Flood Control Districts provide control of rivers, streams, their tributaries, and related structures within the district boundaries in order to protect life and property from flooding. Funded by local taxes and with authority from Idaho Code § 42-3115, the flood control district board of directors accomplishes this goal through various projects, such as removing debris from waterways, repairing and stabilizing stream banks, and constructing and maintaining structural works. A flood control district also has the authority to declare a flooding emergency and help fight floods. Idaho Code Title 42 Chapter 31 further describes the purpose, establishment, and authority of flood control districts. There are 18 active flood control districts in the state. Typically, Flood Control Districts complete channel maintenance, bank stabilization, and gravel removal:

- **Channel Maintenance**—The Flood Control District removes accumulations of woody debris from the river to help maintain a clear channel to reduce the risk of flooding during high river flows. Loose debris can get caught up on bridges or other channel obstructions during higher flows and cause localized flooding damage. Once an obstruction causes the water to overtop the banks, it’s difficult to predict where the flood water will go. Generally, the District only removes trees that have already fallen in the river or are about to fall in the channel. If a tree is ready to fall, the District often cuts the trunk 2 to 3 feet above the ground and leaves the root in place to help keep the bank stable. Woody debris needs a drying period prior to burning. The District places wet woody debris outside of the river channel, often in piles designed to provide temporary wildlife habitat. Channel maintenance is completed under permits from the Idaho Department of Water Resources and the Army Corps of Engineers, and consistent with a protocol for tree and brush removal that is approved by the agencies. The Idaho Department of Environmental Quality approves debris burning each week based on weather conditions and stops burning any time air quality is potentially at risk.
- **Bank Stabilization**—Rivers naturally move laterally over time. Sometimes this movement can put property at risk when banks destabilize and erode. The District works with property owners to stabilize eroding banks by placing rock in the river and along the banks to redirect flows and reduce erosion. Generally, this work is requested and largely funded by the property owner but guided by the District to ensure an effective outcome. The District plants willows in or immediately behind rocks placed along the bank to further stabilize the banks and reestablish vegetation.
- **Gravel Removal**—From time to time, the District works with highway districts to remove gravel at key locations. Accumulated gravel can alter river flow and present a significant risk during a flood. Accumulated gravel is removed from the channel and used by the highway districts for construction projects, which saves taxpayer money.

10.7.3 General Mitigation Approaches

Flood mitigation is principally involved with accommodating desired social and economic goals while preventing losses to life, health, and property. In general, flood damage may be mitigated by protecting life and property from floodwaters through proper floodplain management, actions to increase water storage capacity, structural measures such as levees and dikes, contingency planning by local, county, and state agencies, and educating the public and decision makers to better understand flood hazards. Recommended approaches to implementing these mitigation solutions include:

- Hazard management
- Information/Education
- Preparedness
- Infrastructure
- Regulatory
- Mapping and analysis

- Resilience

A key distinction of flooding, when compared to other hazards, is the extent to which the actions of others can influence the impact of flooding on a community. Activities in the upper portions of a basin that generate additional surface water runoff, in-stream debris, or sedimentation may increase flooding in downstream communities. It is essential that flood mitigation planning address the entire basin and that communities undertaking local planning efforts coordinate and cooperate with adjacent jurisdictions.

Flash Flooding and Sheet Flooding

In comparison to riverine flooding, flash and sheet flooding comes with little warning and is considerably less predictable. These floods are generally triggered by more concentrated events (e.g., focused thunderstorms, rain-on-snow, overwhelmed infrastructure, and dam failures) that are harder to foresee with any reliability. Certain areas, though, due to their terrain and precipitation, can be identified as relatively high risk. Mitigation focuses on factors that can be controlled and providing for an effective evacuation, response, and recovery.

Ice and Debris Jam Flooding

Mitigation for ice and debris jam floods is closely related to riverine and flash flooding mitigation and is not described separately. A critical difference is that when a jam flood occurs, removing the jam is generally not practical and can be dangerous. Ice jams will eventually break up; debris jams will take longer, and removal may have to wait until lower flows are present. One step is to control the jam-forming material prior to the event, which is not always feasible. Another is to identify potential events, including key indicators, and develop appropriate response plans.

Dam, Canal, and Levee Failure

The mitigation of risk associated with dam failure can depend in large part on whether the dam is newly constructed or an older existing structure. New dams can be designed to meet stringent safety criteria, including the passage of extreme flood discharges and resistivity to earthquakes thereby lowering the probability of failure. Land downstream of new dams, or in the vicinity of existing canals, can be zoned or otherwise regulated to limit new construction and exposure, and thus reduce the hazard potential.

Any time there are flood events, concerns resurface regarding levees and dikes in Idaho. The United States Army Corps of Engineers (USACE) has built levees to protect communities from flooding, and then the levees are turned over to local sponsors for maintenance. Idaho residents and elected officials often have false assumptions regarding the ownership and maintenance of canals, levees, and dikes. Addressing the risks associated with existing levees often is problematic, especially when the structure is located on multiple properties and/or ownership cannot be determined easily. The encroachment of existing and new development into canal easements must be addressed so that canal operators can properly maintain their infrastructure. Regarding dams, an important aspect to help reduce risk is the development of an emergency action plan (EAP) that is focused on the proper operation of the dam, advanced warning, and evacuation instructions. Unfortunately, most levees and levee systems in Idaho do not have an equivalent mechanism comparable to EAPs for high hazard dams. In extreme or unique cases, removing a dam, levee, or canal may be the most efficient and cost-effective approach to mitigating imminent risk to life and property by removing the hazard.

Public awareness measures, such as notices on final plats and public education on dam safety, are proactive mitigation measures that should be implemented by local communities. The U.S. Bureau of Reclamation and operators of canals and irrigation structures must be allowed input on future development in the area of their structures for the safety of both the development and so that operators can safely perform the operation and maintenance of their structures. The U.S. Bureau of Reclamation’s authority to prevent encroachments and to deal with existing encroachments, including removal, should be strengthened. Also, Emergency Action Plans that establish potential dam failure inundation limits, notification procedures, and thresholds are prepared for response to potential dam related disaster events.

10.7.4 Catalog of Potential Mitigation Alternatives

Table 10-22 summarizes a range of potential alternatives for mitigating the riverine flood hazard. Table 10-23 summarizes a range of potential alternatives for mitigating the dam failure hazard.

To ensure success against loss of life from dam failure, priority must be given to high hazard potential dams to reduce the risk of failure. Actions that most help to reduce risk or help to mitigate existing risk include the following:

- Continue funding of the State’s dam safety program to perform regular inspection of existing dams by qualified personnel, and to provide design review for new or pending construction of dams and mine tailings impoundment structures
- A renewed commitment to enforce identified violations that threaten downstream safety
- Encourage dam owner responsibility for safe operation and timely maintenance, and performing repair of identified deficiencies
- Implement activities that may help mitigate existing risk by periodically reviewing the emergency action plan and making needed revision, and conducting exercises that test the ability of the dam owner/operator, emergency responders, and downstream residents to effectively evacuate flood zones in a timely manner
- Discourage new development of high-density infrastructure within flood zones downstream of high hazard dams, especially areas adjacent to streams and rivers
- Provide financial opportunities to dam owners that will help offset future costs for repair, rehabilitation, replacement, or removal of dams and/or appurtenant structures that have been identified as presenting an unacceptable risk to downstream life and property.

Table 10-22. Potential Opportunities to Mitigate the Riverine Flood Hazard

Personal-Scale	Organizational-Scale	Government-Scale
• **Manipulate the hazard:** ❖ Clear storm drains and culverts ❖ Use low-impact development techniques • **Reduce exposure:** ❖ Locate outside of hazard area ❖ Elevate utilities above base flood elevation ❖ Use low-impact development techniques • **Reduce vulnerability:** ❖ Raise structures above base flood elevation ❖ Elevate items within house above base flood elevation ❖ Build new homes above base flood elevation ❖ Flood-proof structures • **Build local capacity:** ❖ Buy flood insurance ❖ Develop household plan, such as retrofit savings, communication with outside, 72-hour self-sufficiency during and after an event	• **Manipulate the hazard:** ❖ Clear storm drains and culverts ❖ Use low-impact development techniques • **Reduce exposure:** ❖ Locate critical facilities or functions outside hazard area ❖ Use low-impact development techniques • **Reduce vulnerability:** ❖ Build redundancy for critical functions or retrofit critical buildings ❖ Provide flood-proofing when new critical facilities must be located in floodplains • **Build local capacity:** ❖ Keep cash reserves for reconstruction ❖ Support and implement hazard disclosure for sale of property in risk zones. ❖ Solicit cost-sharing through partnerships with others on projects with multiple benefits.	• **Manipulate the hazard:** ❖ Maintain drainage system ❖ Institute low-impact development techniques on property ❖ Dredging, levee construction, and providing regional retention areas ❖ Structural flood control, levees, channelization, or revetments. ❖ Stormwater management regulations and master planning ❖ Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff • **Reduce exposure:** ❖ Locate or relocate critical facilities outside of hazard area ❖ Acquire or relocate identified repetitive loss properties ❖ Promote open space uses in identified high hazard areas via techniques such as: planned unit developments, easements, setbacks, greenways, sensitive area tracks. ❖ Adopt land development criteria such as planned unit developments, density transfers, clustering ❖ Institute low impact development techniques on property ❖ Acquire vacant land or promote open space uses in developing watersheds to control increases in runoff ❖ Preserve undeveloped and vulnerable shoreline ❖ Restore existing flood control and riparian corridors • **Reduce vulnerability:** ❖ Harden infrastructure, bridge replacement program ❖ Provide redundancy for critical functions and infrastructure ❖ Adopt regulatory standards such as freeboard standards, cumulative substantial improvement or damage, lower substantial damage threshold, compensatory storage, non-conversion deed restrictions. ❖ Stormwater management regulations and master planning. ❖ Adopt "no-adverse impact" floodplain management policies that strive to not increase the flood risk on downstream communities ❖ Facilitate managed retreat from, or upgrade of, the most at-risk areas ❖ Require accounting of sea level rise in all applications for new development in shoreline areas **Build local capacity:** ❖ Produce better hazard maps ❖ Provide technical information and guidance ❖ Enact tools to help manage development in hazard areas (stronger controls, tax incentives, and information) ❖ Incorporate retrofitting or replacement of critical system elements in capital improvement plan ❖ Develop strategy to take advantage of post-disaster opportunities ❖ Warehouse critical infrastructure components ❖ Develop and adopt a continuity of operations plan ❖ Consider participation in the Community Rating System ❖ Maintain and collect data to define risks and vulnerability ❖ Train emergency responders ❖ Create an elevation inventory of structures in the floodplain ❖ Develop and implement a public information strategy ❖ Charge a hazard mitigation fee ❖ Integrate floodplain management policies into other planning mechanisms within the planning area. ❖ Consider the probable impacts of future climate conditions on the risk associated with the flood hazard ❖ Consider the residual risk associated with structural flood control in future land use decisions ❖ Enforce National Flood Insurance Program requirements ❖ Adopt a Stormwater Management Master Plan ❖ Develop an adaptive management plan to address the long-term impacts of sea level rise

Table 10-23. Potential Opportunities to Mitigate the Dam Failure Hazard

Personal-Scale	Organizational-Scale	Government-Scale
• **Manipulate the hazard:** ❖ None • **Reduce exposure:** ❖ Relocate out of dam failure inundation areas • **Reduce vulnerability:** ❖ Elevate home to appropriate levels • **Build local capacity:** ❖ Learn about risk reduction for the dam failure hazard ❖ Learn the evacuation routes for a dam failure event ❖ Educate yourself on early warning systems and the dissemination of warnings	• **Manipulate the hazard:** ❖ Remove dams ❖ Harden dams • **Reduce exposure:** ❖ Replace earthen dams with hardened structures • **Reduce vulnerability:** ❖ Flood-proof facilities within dam failure inundation areas • **Build local capacity:** ❖ Educate employees on the probable impacts of a dam failure ❖ Develop a continuity of operations plan	• **Manipulate the hazard:** ❖ Remove dams ❖ Harden dams • **Reduce exposure:** ❖ Replace earthen dams with hardened structures ❖ Relocate critical facilities out of dam failure inundation areas ❖ Consider open space land use in designated dam failure inundation areas • **Reduce vulnerability:** ❖ Adopt higher floodplain standards in mapped dam failure inundation areas ❖ Retrofit critical facilities within dam failure inundation areas • **Build local capacity:** ❖ Map dam failure inundation areas ❖ Enhance emergency operations plan to include a dam failure component ❖ Institute monthly communications checks with dam operators ❖ Inform the public on risk reduction techniques ❖ Adopt real-estate disclosure requirements for the re-sale of property located within dam failure inundation areas ❖ Consider the probable impacts of future climate conditions in assessing the risk associated with the dam failure hazard ❖ Establish early warning capability downstream of listed high hazard dams ❖ Consider the residual risk associated with protection provided by dams in future land use decisions

10.7.5 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the flood hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-002: Develop a statewide approach to modeling and mapping projected future conditions
- Action 2023-003: Coordinate with federal and state agencies to identify gaps to better integrate climate change impacts into flood risk management
- Action 2020-001: Ensure downstream entities are made aware of HHPD risk status as it will impact their mission/operations.

Chapter 11. Hazardous Material Release

Hazardous Materials

Many hazardous materials are commonly used substances which may be harmless in small quantities or in their normal uses but are dangerous in large quantities or if released. Many products containing hazardous substances are used and stored in homes and businesses, and shipped daily on highways, railroads, waterways, and pipelines.

CHANGES SINCE 2018

+0

Decalared Disasters

+11

Hazardous Material Release Events

STATE IMPACT RATING

Low (12)

SOCIALLY VULNERABLE POPULATION

21.9%

Of Total Population

384,570

Persons

CLIMATE PROJECTIONS

Sites that make, store, or use hazardous materials located in areas at risk from future increased flooding and wildfire may be more susceptible to releasing hazardous materials as a result of a natural hazard event

CANALS

8,278

Miles

COMMUNITY LIFELINES

3,238

Total

5,339

State Buildings

1,830

State Bridges

380

State Dams

5,935

Miles of State Roads

11. HAZARDOUS MATERIALS RELEASE

11.1 HAZARD DESCRIPTION

Hazardous materials are substances that are considered severely harmful to human health and the environment. Many hazardous materials are commonly used substances which are harmless in their normal uses but are quite dangerous if released.

If released or misused, hazardous substances can cause death, serious injury, long-lasting health effects, and damage to structures and other properties, as well as the environment. Many products containing hazardous substances are used and stored in homes and these products are shipped daily on highways, railroads, waterways, and pipelines.

Multiple definitions and names are used for hazardous materials, depending on the nature of the problem being addressed. The United States agencies involved, as well as state and local governments, have different purposes for regulating hazardous materials that, under certain circumstances, pose a risk to the public or the environment. Table 11-1 provides definitions established by three federal agencies with significant involvement in hazardous materials management.

11.2 HAZARD LOCATION

Because hazardous materials are so widely used, stored, and transported, a hazardous material release incident could take place almost anywhere. Table 11-2 shows materials and chemical types commonly found at businesses across different sectors in Idaho, as identified by IOEM. Many hazardous materials are used, stored, and transported in very large quantities, so the impacts of a release incident may be widespread and powerful. Hazardous material incidents often occur on major highways and railways. Table 11-3 lists common types of hazardous materials incidents.

Table 11-1. Hazardous Material Definitions, By Agencies

Agency	Definition
Department of Transportation (DOT)	It is any substance or material in any form or quantity which poses an unreasonable risk to safety, health, and property when transported in commerce. The United States Department of Transportation (DOT) uses the term **hazardous materials**, which covers nine hazard classes, some of which have sub-categories called classifications. When a substance meets the DOT definition of a hazardous material, it must be transported in accordance with safety regulations providing for appropriate packaging, communication of hazards, and proper shipping controls. DOT includes in its regulations hazardous substances and hazardous wastes, both of which are regulated by the Environmental Protection Agency (EPA), if their inherent properties would not otherwise be covered.
Environmental Protection Agency (EPA)	(a) A hazardous substance is any material which when discharged into or upon the navigable water of the United States or adjoining shorelines may be harmful to the public health or welfare of the United States, including, but not limited to fish, shellfish, wildlife, and public or private property, shorelines, and beaches. EPA uses the term hazardous substance for chemicals which, if released into the environment above a certain amount, must be reported and depending on the threat to the environment, federal involvement in handling the incident can be authorized. A list of the hazardous substances is published in 40 CFR § 302, Table 302.4. (b) A hazardous waste is any material that may pose an unreasonable risk to health, safety or property when transported in commerce for the purposes of treatment, storage or disposal as waste. EPA uses the term hazardous wastes for chemicals that are regulated under the Resource, Conservation and Recovery Act (40 CFR § 261.33). Hazardous wastes in transportation are regulated by DOT (49 CFR § 171-177). (c) Extremely Hazardous Substances. EPA uses the term extremely hazardous substance for the chemicals which must be reported to the appropriate authorities if released above the threshold reporting quantity. Each substance has a threshold reporting quantity. The list of extremely hazardous substances is identified in Title III of Superfund Amendments and Reauthorization Act (SARA) of 1986 (40 CFR § 355). Extremely hazardous substances, while also generally toxic materials, represent acute health hazards that, when released, are immediately dangerous to the lives of humans and animals and cause serious damage to the environment. When facilities have these materials in quantities at or above the threshold planning quantity, they must submit “Tier II” information to appropriate State and/or local agencies to facilitate emergency planning. (d) Toxic Chemicals. EPA uses the term toxic chemical for chemicals whose total emissions or releases must be reported annually by owners and operators of certain facilities that manufacture, process, or otherwise use a listed toxic chemical. The list of toxic chemicals is identified in Title III of SARA.
Occupational Safety and Health Administration (OSHA)	(a) **Hazardous Chemical.** The United States Occupational Safety and Health Administration (OSHA) uses the term **hazardous chemical** to denote any chemical that would be a risk to employees if exposed in the workplace. Hazardous chemicals cover a broader group of chemicals than the other chemical lists. (b) **Hazardous Substances.** OSHA uses the term **hazardous substance** in 29 CFR § 1910.120, which resulted from Title I of SARA and covers emergency response. OSHA uses the term differently than EPA. Hazardous substances, as used by OSHA, cover every chemical regulated by both DOT and EPA. When a substance meets the DOT definition of a hazardous material, it must be transported in accordance with safety regulations providing for appropriate packaging, communication of hazards, and proper shipping controls. In addition to EPA and DOT regulations, the National Fire Protection Association (NFPA) develops codes and standards for the safe storage and use of hazardous materials. These codes and standards are generally adopted locally and include the use of the NFPA 704 standard for communication of chemical hazards in terms of health, fire, instability (previously called “reactivity”), and other special hazards (such as water reactivity and oxidizer characteristics). Diamond-shaped NFPA 704 signs ranking the health, fire and instability hazards on a numerical scale from zero (least) to four (greatest) along with any special hazards, are usually required to be posted on chemical storage buildings, tanks, and other facilities. Similar NFPA 704 labels may also be required for individual containers stored and/or used inside facilities. While it is defined somewhat differently by various organizations, the term “hazardous material” may be generally understood to encompass substances that have the capability to harm humans and other living organisms, property, and/or the environment. No universally accepted, objective definition of the term “hazardous material release incident” has been developed either. A useful working definition, however, might be framed as: any actual or threatened uncontrolled release of a hazardous material, its hazardous reaction products, or the energy released by its reactions that poses a significant risk to human life and health, property and/or the environment.

Table 11-2. Hazardous Materials Present by Business Type

Type of Business	Types of Chemicals Used
Airport and marine fuel depots	Gasolines and fuel oils
Breweries and distilleries	Alcohols
Chemical Manufacturers	Acids/Bases, cyanide wastes, heavy metals/inorganics, ignitable wastes, reactives, solvents
Cleaning Agents and cosmetics	Acids/bases, heavy metals/inorganics, ignitable wastes, pesticides, solvents
Compressed gas suppliers	medical and industrial gases
Constructions firms and sites	Acids/bases, explosives, compressed gases, fuels, ignitable wastes, solvents, radioactive materials
Dry Cleaners and laundaries	cleaning solvents, perchloroethylene, dry cleaning filtration residues, solvents
Educational and Vocational Shops	Acids/bases, ignitable wastes, pesticides, reactives, solvents
Electronic circuit makers	Acids/bases
Embalming supply houses and funeral services	formaldehyde, solvents
Equipment repair	Acids/bases, ignitable wastes, solvents
Farm/garden supply shops, lawn fertilizer companies, pesticide end users and application services	pesticides, fertilizers, herbicides, heavy metal/inorganics, solvents
Fireworks manufacturers	explosives, pyrotechnics
Food stores or warehouses	ammonia (in refrigeration systems), combustible dusts
Foundries	resins, other chemicals
Formulators	Acids/Bases, cyanide wastes, heavy metals/inorganics, ignitable wastes, reactives, pesticides, solvents
Fuel oil companies	fuel oils
Furniture/wood manufacturing and refinishing	solvents, ignitable wastes
Gasoline stations	Various fuels
Gun and ammo shops	ammunition, explosives
Hazardous waste disposal facilities	virtually anything
Hospitals	compressed gases, medicines, radioactive materials, etiologic agents
Laboratories, research, chemical and biological	Acids/Bases, cyanide wastes, heavy metals/inorganics, ignitable wastes, reactives, solvents, various chemical and etiologic agents
Leather tanners	various chemicals
LP-gas or propane suppliers	liquifiedflammable gases
Metal manufacturing	Acids/Bases, cyanide wastes, heavy metals/inorganics, ignitable wastes, reactives, solvents, spent plating wastes
Motor freight terminals and railroad transportation	Acids/bases, heavy metals/inorganics, ignitable wastes, lead-acid batteries, solvents, fuels
Paint, varnish, and lacquer makers and wholesalers	resins, solvents, chemical pigments and additives
Pest control companies	pesticides, poisons
Plastic and rubber makers	solvents, additives, bulk chemicals
Plating shops	acids/bases, cyanides
Printing and allied industries	acids/bases, heavy metals/inorganics, ink sludges, spent plating wastes, solvents
Pulp and paper mills	bleaches, caustics, acids, sulfur compounds, and others
School and university chemical laboratories	various chemicals
Swimming pools, and supply houses	liquified chlorine, oxidizers, acids/bases, algaecides
Steel mills	acids, degreasers
Textile and fiber manufacturers	solvents, dyes, resins, various other bulk chemicals
Vehicle maintenance	acids/bases, heavy metals/inorganics, ignitable wastes, lead-acid batteries, solvents, compressed gases, paints
Water treatment facilities	liquified chlorine, acids
Welding shops and supply shops	compressed gases
Wood Preserving	preserving agents

Table 11-3. Common Hazardous Material Incidents

Hazard Type/Location	Examples
Non-Structural	
Gas Leaks	• Natural gasoline breaks • Liquefied Petroleum Gases • Chlorine (swimming pool) • Ammonia (refrigeration)
Landfills, dumpsters, and other waste disposal sites	• Fires involving unwanted materials at the above locations
Electrical fires	• Power poles (Poly Chlorinated Biphenyls [PCB's]) • Transformer fires
Transportation	• Highway ○ Car fires ○ Accidents ○ Trucks and their contents • Rail ○ Engines and their various fuels ○ Tank cars and box cars carrying large quantities • Air ○ Cargo and passenger airlines • Water ○ Barges and their contents • Pipeline ○ Pipelines and their various contents – local, interstate, intrastate
Fixed Facility	
Medical/Research Facilities	
Industrial manufacturing and processing	
Agricultural/Lawn and Garden facilities	
Single Family Residences	
Apartment buildings, condominiums, and hotels	

11.2.1 Fixed-Site Hazardous Materials

Serious hazardous materials incidents – those causing hospitalizations, deaths, and large-scale economic loss and environmental damage – are generally the result of a series of improbable events involving large quantities of material and are relatively rare and difficult to predict.

Superfund Sites in Idaho

The federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) authorized the USEPA was to create a list of polluted locations requiring a long-term response to clean up. These locations are designated as Superfund sites, and are placed on USEPA's National Priorities List (NPL). The NPL guides the USEPA in determining which sites warrant further investigation for environmental remediation. The sites were areas of mining, heavy metal processing and manufacturing. In many cases the companies responsible for contamination are no longer in business, and the federal government has had to contribute to clean-up to protect citizens' health. IOEM carries out the requirements of the Federal Emergency Planning and Community Right to Know Act, as well as the Idaho Hazardous Substance Emergency Response Act. According to the USEPA, there are 13 Superfund sites in Idaho, as listed in Table 11-4.

Table 11-4. Superfund Sites in Idaho

City	County	Zip Code	Site Name
Rathdrum	Kootenai	83858	Arrcom (Drexler Enterprises)
Lemhi County	Lemhi	83469	Blackbird Mine
Smelterville	Shoshone	83837	Bunker Hill Mining & Metallurgical Complex
Pocatello	Bannock	83201	Union Pacific Railroad Co.
Idaho Falls	Bonneville	83401	Idaho National Engineering Laboratory (U.S. Department of Energy)
Soda Springs	Caribou	83276	Ballard Mine
Soda Springs	Caribou	83276	Monsanto Chemical Co. (Soda Springs Plant)
Soda Springs	Caribou	83276	Kerr-McGee Chemical Corp. (Soda Springs Plant)
Mountain Home	Elmore	83648	Mountain Home Air Force Base
Pocatello	Bannock	83201	Pacific Hide & Fur Recycling Co.
St. Maries	Benewah	83861	St. Maries Creosote
Stibnite	Valley	83677	Stibnite/Yellow Pine Mining Area
Pocatello	Bannock	83201	Eastern Michaud Flats Contamination

Source: (EPA 2022)

The Superfund sites in Idaho are legacy sites that have ongoing remediation in place and are well documented and monitored through the Department of Environmental Quality (DEQ), and all are in the cleanup phase. In relation to currently operating facilities with large quantities of hazmat on site, or railroad yards and trains carrying hazmat posing threats, the Superfund sites are less of a threat for the State.

Tier II reporting reveals the location and identity of large quantities of hazardous materials in storage and use. Table 11-5 shows the number of Tier II sites (1,227 total) in Idaho by county in 2022. Table 11-6 shows the number of Toxic Release Inventory (TRI) sites (123 total) in Idaho by county.

Table 11-5. Tier II Facilities in Idaho, by County (as of March 1, 2022)

County	T2 Facilities	County	T2 Facilities	County	T2 Facilities
Ada	226	**Cassia**	38	**Lewis**	5
Adams	4	**Clark**	1	**Lincoln**	9
Bannock	52	**Clearwater**	10	**Madison**	13
Bear Lake	15	**Custer**	4	**Minidoka**	30
Benewah	5	**Elmore**	38	**Nez Perce**	38
Bingham	30	**Franklin**	10	**Oneida**	6
Blaine	20	**Fremont**	13	**Owyhee**	10
Boise	5	**Gem**	7	**Payette**	24
Bonner	21	**Gooding**	34	**Power**	32
Bonneville	74	**Idaho**	15	**Shoshone**	9
Boundary	7	**Jefferson**	11	**Teton**	6
Butte	7	**Jerome**	39	**Twin Falls**	82
Camas	1	**Kootenai**	47	**Valley**	19
Canyon	139	**Latah**	21	**Washington**	12
Caribou	26	**Lemhi**	12		

Source: IOEM 2023

Table 11-6. TRI Reporting Facilities in Idaho, by County (as of October 2022)

County	TRI Facilities	County	TRI Facilities	County	TRI Facilities
Ada	14	Canyon	22	Latah	1
Adams	1	Caribou	2	Lemhi	1
Bannock	2	Cassia	4	Lewis	1
Benewah	3	Clearwater	1	Lincoln	2
Bingham	4	Custer	1	Minidoka	3
Blaine	1	Elmore	2	Nez Perce	12
Bonner	4	Gooding	3	Owyhee	3
Bonneville	7	Idaho	1	Payette	2
Boundary	1	Jerome	5	Power	1
Butte	1	Kootenai	8	Shoshone	5
				Twin Falls	5

Source: IOEM 2023

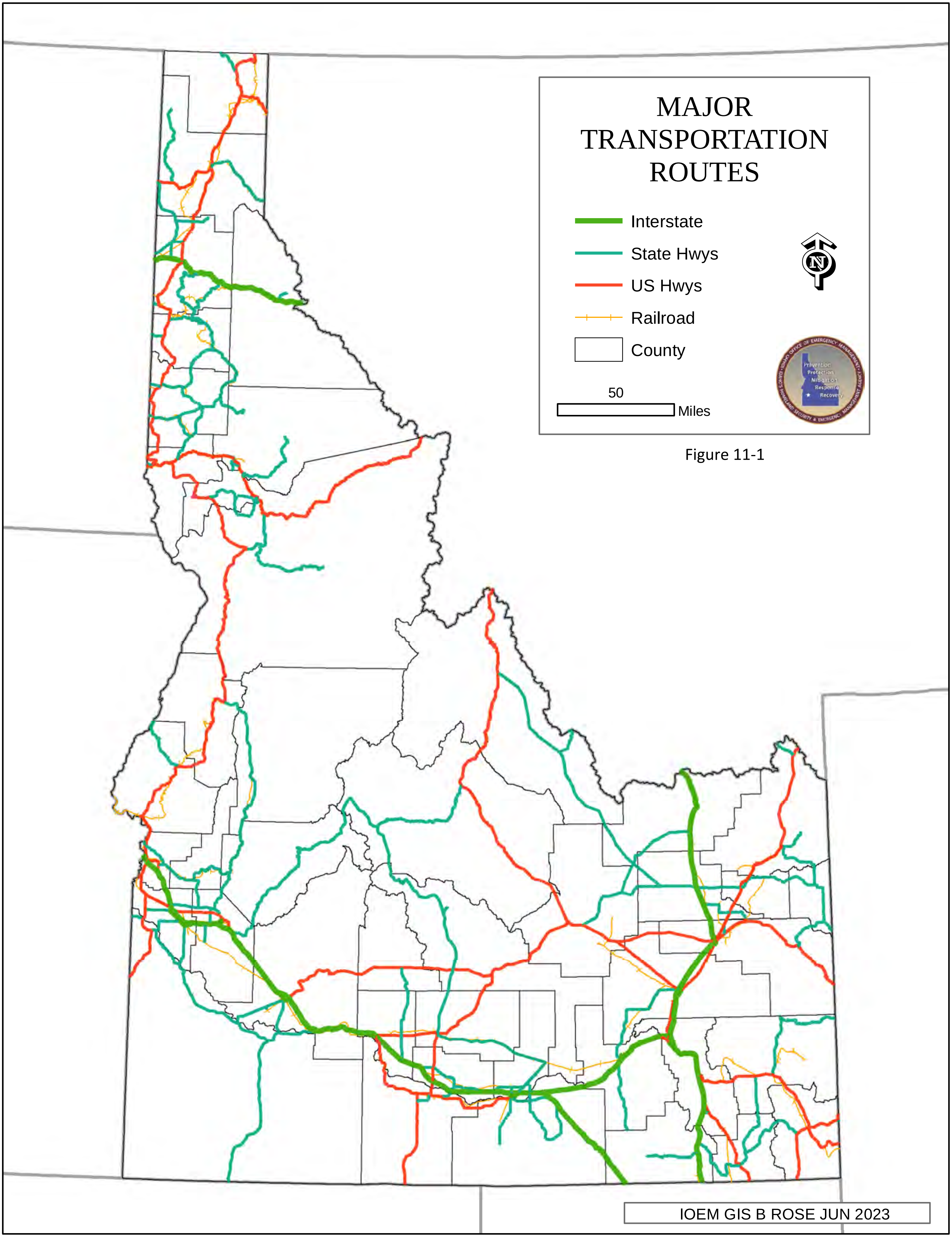
In-Transit Hazardous Materials

Incidents involving hazardous substances in transit can occur anywhere in the State, along highways and railroads. Idaho has a widespread highway network of over 60,000 miles, which includes interstate highways such as Interstates 84, 86, 15, and 90. Additionally, there are 1,887 miles of rail lines in the State. Figure 11-1 illustrates these major transportation routes in Idaho.

Groundwater and surface water can be contaminated from a hazardous materials release incident, from a single point source or on an area-wide basis, depending on the severity of the event. According to the Idaho Surface Water Assessment Plan published by DEQ, major contaminants of concern on an area-wide or “nonpoint source” basis include nitrates and pesticides. Nitrates are currently one of the most prevalent nonpoint source pollutants in Idaho. Sources that potentially contribute nitrates to groundwater and surface water include high densities of septic systems, agricultural activities such as fertilizer application and confined animal feeding operations, and disposal of food processing wastes.

Major point source contaminants of concern include volatile organic compounds and petroleum compounds. Point source contamination can come from industrial facilities, waste disposal sites, and large accidental spills. Additionally, point sources can be associated with small businesses, abandoned single family water supply wells, and other residential activities commonly located in every community (Idaho Division of Environmental Quality 1999).

Hazardous substances can also be transported via pipeline across Idaho. The State receives petroleum products by two pipelines, one running west along the Snake River Valley from refineries in Utah and another crossing the northern part of the State from refineries in Montana. Some petroleum products from Puget Sound refineries are also sent by pipeline to Portland, Oregon, and then by barge up the Columbia and Snake Rivers to Lewiston, Idaho. Those that use natural gas in the State receive their supply by interstate pipeline, mainly from Canada. One pipeline system enters Idaho at its northern border with Canada, crosses the panhandle, and continues to Washington, Oregon, and California. The other system runs from the San Juan Basin in southwestern Colorado across Idaho’s Snake River Plain to the Pacific Northwest and Canada. That system is bi-directional, so it can supply natural gas to Idaho either from Canada or from Wyoming and Colorado. Figure 11-2 shows the major pipelines crossing the state. This map does not include distribution lines in communities or propane distributors.


MAJOR TRANSPORTATION ROUTES
Interstate
State Hwys
US Hwys
Railroad
County
50
Miles
IOEM GIS B ROSE JUN 2023
Figure 11-1

Source: (Bureau of Transportation Statistics 2019)

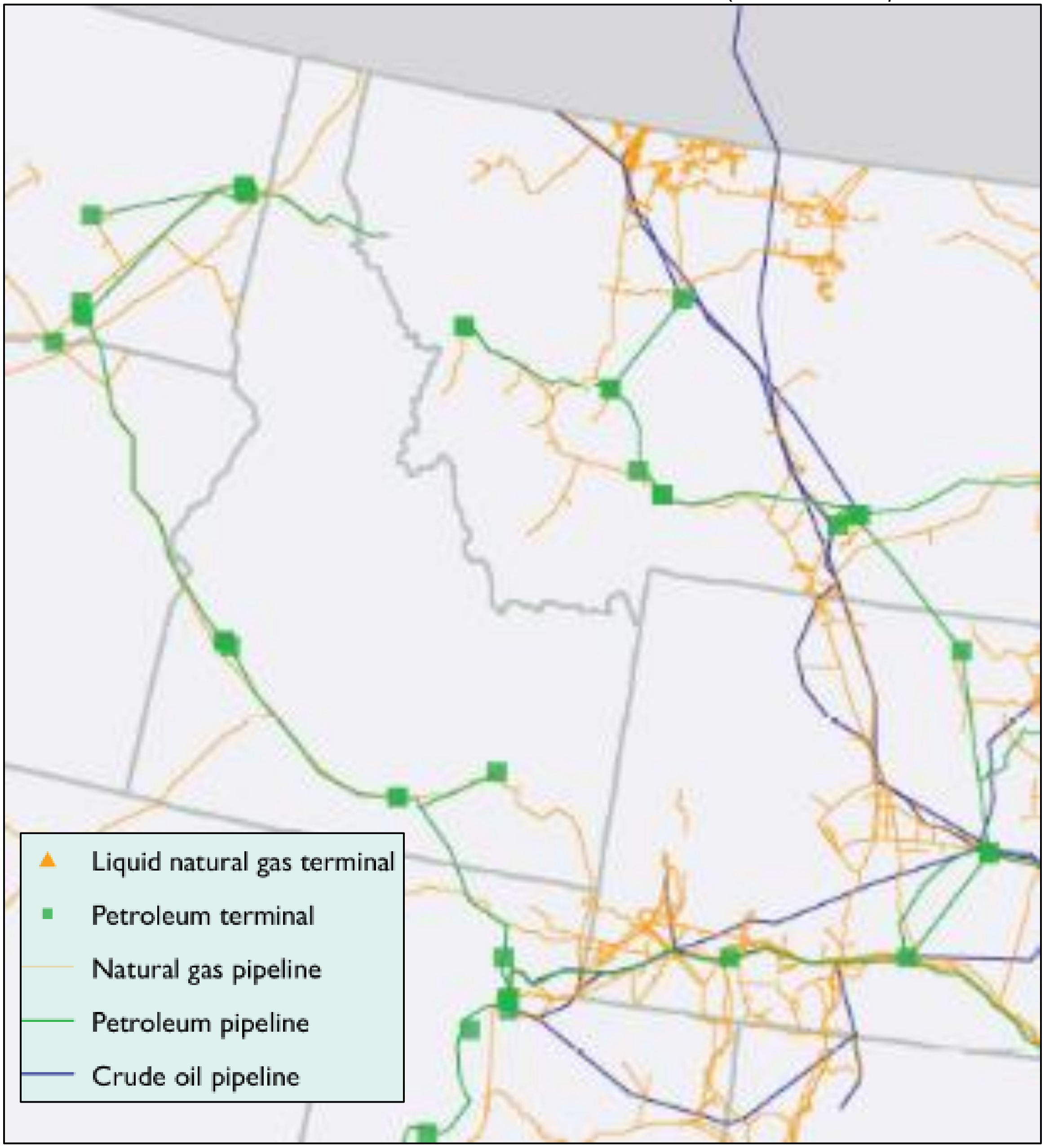


Figure 11-2. Petroleum and Natural Gas Pipelines in Idaho

11.3 PREVIOUS HAZARD OCCURRENCES

11.3.1 Disaster and Emergency Declarations

Between 1956 and 2022, FEMA did not include Idaho in any hazardous material-related disasters (DR) or emergencies (EM) declarations.

11.3.2 Event History

Accidental hazardous materials releases occur many times during any given day. Between 2018 and 2022, IOEM reported 1,032 hazardous material release events (as reported to IOEM). IOEM receives hundreds of hazardous material spill reports each year, which results in hundreds of thousands of notifications to federal, state, and local government agencies (IOEM 2023). Most incidents are minor, but some cause significant impacts such as injuries, evacuation, and the need for cleanup. Table 11-7 lists significant hazardous material release in the State of Idaho between 2018 and 2022. Due to the significant number of events, the table includes only events that caused at least $5,000 in damage and had a hazardous class rating of ≥ 5. Appendix D lists events prior to 2018.

Table 11-7. Hazardous Material Release Events in Idaho (2018 to 2022)

Date	Event Type	Counties Affected	Description
7/24/2022	Spillage	Boise	A spillage of 20 gallons of chlorite solution occurred on Orchard Access Road, due to a cargo release. An environmental contractor was dispatched to clean the contamination site. Hazard class rating was 8 and the cost associated with damages/cleanup was $85,000.
7/6/2022	Spillage	Pocatello	A spillage of corrosive liquids, Hotsy carbonate concentrate, was caused due to a forklift accident. Hazard class rating was 8 and costs associated with damages/cleanup was $6,000.
11/22/2021	Spillage	Boise	A spillage of phosphoric acid solution occurred on the highway system. Hazard class rating was 8 and the cost associated with damages/cleanup was $15,000.
6/4/2021	Spillage	Boise	A spillage of sodium hydroxide solution was released from a trailer traveling on the highway system. Approximately 4 gallons was released due to improper preparation for transportation of substance. Hazard class rating was 8 and the cost associated with damages/cleanup was over $8,000.
3/22/2021	Spillage	Boise	A spillage of environmentally hazardous substance was reported and occurred during transit. Hazard class rating was 9 and the cost associated with damages/cleanup was over $9,000.
1/20/2020	Spillage /Explosion	Wendell	A spillage of ferric chloride solution occurred on the highway system. Emergency response contractor properly managed/cleaned the hazard site. Hazard class rating was 8 and the cost associated with damages/cleanup was over $10,000.
1/1/2020	Vapor (Gas) Dispersion	Bonners Ferry	A spillage of environmentally hazardous substance, ethylene glycol, was released by a derailed train. Odors were reported at the site. Hazard class rating was 9 and the cost associated with damages/cleanup was $10,000.
12/7/2019	Spillage	Pocatello	A spillage of sodium hydroxide solution was released by cargo. Hazard class rating was 8 and the cost associated with damages/cleanup was over $5,000.
7/25/2019	Spillage	Pocatello	A spillage of sulfuric acid with more than 51% acid was released by freight. The spill was neutralized with sodium carbon. Hazard class rating was 8 and the cost associated with damages/cleanup was over $6,000.
5/1/2019	Spillage	Meridian city	A spillage of environmentally hazardous substance, Norfox NP-9 surfactant, was released from a trailer on the highway system. Hazard class rating was 9 and the cost associated with damages/cleanup was over $6,000.
9/27/2018	Spillage	Pocatello City	A spillage of sulfuric acid with more than 51% acid occurred on smaller roads from a spray truck. Hazard class rating was 8 and the cost associated with damages/cleanup was over $7,000.

Source: IOEM 2023

11.4 PROBABILITY OF FUTURE HAZARD EVENTS

11.4.1 Overall Probability

The events that can produce a hazardous materials release vary greatly, and the fact that all releases have a human component makes prediction difficult. According to IOEM, Idaho's 232 recorded hazardous material release events between 2018 and 2022 represent an average of almost 3 events per year (see Table 11-8). The State is expected to continue to experience the same average numbers each year.

Table 11-8. Probability of Hazardous Material Release Events in Idaho

Hazard Type	Events Between 2018 and 2022	Average Frequency
Hazardous Material Release	232	3 events every year

Source(s): IOEM 2023

11.4.2 Climate Change Impacts

Hazardous materials are everywhere; therefore, there are serious implications for impacts from climate change. As described in the earlier section regarding relationships to other hazards, hazardous materials are an important factor and often a cascading affect in every natural and many man-made disasters. Therefore, hazmat is subject to the same climate change considerations as each and every other hazard.

11.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029.

Not all land-use regulations restrict building around industrial facilities or along transportation routes. As the population increases, development will continue to increase in these areas, thereby exposing a greater number of individuals to the risk of a hazardous materials release. Increased development will lead to increased vulnerability and potential losses.

11.5 IMPACT ANALYSIS

11.5.1 Severity

Hazardous substance releases can contaminate air, water, and soils, possibly resulting in death and/or injuries. Dispersion can take place rapidly when the hazardous substance is transported by water and wind. While often accidental, releases can occur as a result of human carelessness, intentional acts, or natural hazards. Such releases can affect nearby populations and contaminate critical or sensitive environmental areas.

With a hazardous substance release, whether accidental or intentional, several potentially exacerbating or mitigating circumstances will affect its severity or impact. Mitigating conditions are precautionary measures taken in advance to reduce the impact of a release on the surrounding environment. Primary and secondary containment or shielding by sheltering-in-place measures protects people and property from the harmful effects of a hazardous substance release.

As discussed earlier, the severity of the incident is dependent not only on the circumstances described above, but also on the type of substance released and the distance and related response time for emergency response teams. The areas with the closest proximity to the releases are generally at greatest risk; however, depending on the agent, a release can travel great distances or remain present in the environment for a long period of time (e.g., centuries to millennia).

11.5.2 Warning Time

The warning time for an incident occurring at an on-site or fixed facility will vary. Incidents may be sudden without any warning such as an explosion or slowly developing such as a leaking container. Facilities that store extremely hazardous substances are required to notify local officials when an incident occurs. Local emergency responders and emergency management officials would determine the need to evacuate the public or to advise sheltering in place.

Similarly, to on-site hazardous substances incidents, the amount of warning time for incidents associated with hazardous substances in transit varies based on the nature and scope of the incident. If an explosion did not occur immediately following an accident, there may be time for warning of adjacent neighborhoods and enough time to facilitate appropriate protective actions.

11.5.3 Cascading Impacts

The secondary impacts associated with on-site hazardous substances releases include those impacting the health of the community and environment. The secondary impacts have the potential to occur regardless of the mode or the source of release. In addition to the secondary impacts noted for the fixed-site hazard, other impacts include damage to the infrastructure such as roadbeds or bridges may occur, Public Water, and Wastewater Systems.

Every year, natural disasters, such as wildfires, floods, earthquakes, hurricanes, tornadoes, and winter storms, challenge American communities. In addition to addressing the loss of power, homes, and lives from natural disasters, communities are tasked with the difficult job of managing the large amounts of natural disaster debris that may be generated by these disasters. Natural disaster debris refers to the material and waste streams resulting from a natural disaster. Disaster debris often includes building materials, sediments, vegetative debris, hazardous materials, and personal property. Large quantities of debris can make recovery efforts difficult by, for example, hindering emergency personnel, damaging, or blocking access to necessary infrastructure, and posing threats to human health and the environment. Generally, natural disaster debris can include:

- ACM (e.g., asbestos pipe wrap, siding, and ceiling and floor tiles).
- Ammunition and explosives
- Animal carcasses
- Asphalt
- Building contents (e.g., furniture, personal property)
- Commingled debris (i.e., a mixture of many debris types, such as construction and demolition debris, vegetative debris, household waste, and building contents)
- Construction and demolition debris (e.g., mixed metals, masonry materials, concrete, lumber, asphalt shingles)
- Cylinders and tanks
- Electronics waste (e-waste) (e.g., televisions, computers, cell phones)
- Food waste (e.g., rotten food from grocery stores, restaurants, and residences)
- Hazardous waste (e.g., batteries, pesticides, solvents, paint thinners, mercury containing devices)
- Household waste (e.g., household cleaners, freezer, and refrigerator coolant)
- Marine or waterway debris
- Medical waste
- Metals
- Mixed waste (i.e., waste containing both radioactive and hazardous waste components)
- Municipal solid waste
- PCB-containing waste (e.g., transformers, capacitors, other electrical equipment)
- Pharmaceuticals
- Radiological-contaminated waste (e.g., hospital equipment)
- Soils, sediments, and sandbags
- Tires
- Treated wood (e.g., utility poles, fencing, decks)
- Used oil and oil-contaminated waste
- Vegetative debris (or green waste) (e.g., uprooted trees, branches, stumps, leaves)
- Vehicles and vessels
- White goods (i.e., household appliances, such as stoves, refrigerators, washers/dryers, air conditioner units)

Many of the waste types indicated above are hazardous materials and must be properly handled and disposed of properly in designated locations.

11.5.4 Environmental Impacts

Hazardous materials incidents can have obvious, direct environmental impact as well as long-term, insidious environmental damage. If spilled, hazardous substances can contaminate wells, kill wildlife, and impact the ecosystem. Hazardous substance incidents also can cause acute and chronic health issues and have an impact on long-term public health. Water pollution is an immediate concern for direct human consumption, recreation, crop irrigation, and fish and wildlife consumption. Depending on the material, pollutants can bio accumulate to differing degrees, affecting animals high on the food chain long after a spill. Hazardous material incidents would not likely affect geology, but could significantly impact soils and farmlands, requiring expensive remediation. Unless a spill is directly adjacent, hazardous materials incidents are unlikely to affect archeological sites.

11.5.5 Local Hazard Mitigation Plan Impacts

Twenty-six of the hazard mitigation plans prepared for Idaho's counties list hazardous materials as a hazard of concern, and ten counties rank it as a high-impact hazard:

- Bonner
- Boundary
- Caribou
- Clearwater
- Franklin
- Fremont
- Jerome
- Lemhi
- Lincoln
- Power

An additional eleven counties identified hazardous materials as a medium-impact hazard. Local plans do not provide data that can be used to summarize statewide exposure and loss potential of people and structures for the hazardous materials hazard.

11.6 VULNERABILITY OF PEOPLE AND ASSETS

11.6.1 Total and Socially Vulnerable Populations

Due to the nature of a hazardous materials release, all people, property and the environment of the planning area are exposed to some degree to the hazard. Populations who live or work near major transportation routes or sites that use and store large quantities of hazardous materials are likely to be more vulnerable. The general population may be exposed to a hazardous substance release through inhalation, ingestion, or dermal exposure. Exposure may be either acute or chronic, depending upon the nature of the substance and extent of release and concentration. The populations considered most vulnerable include the elderly (persons over the age of 65), the young, pregnant women and people who are ill or immunocompromised. Vulnerable communities near hazardous materials sites are often composed of lower housing values, incomes, and education levels than the national average. These vulnerable communities have the least time to react in the event of a catastrophic hazardous material release. Cascading events from a disaster are more likely to amplify and compound vulnerabilities.

Populations exposed to environmental contamination from hazardous materials may experience chronic stress for various reasons (e.g., health concerns, uncertainty, and community conflict). This can be compounded when socially vulnerable populations do not have the resources to move to another location or seek medical help. Some may feel exploited, dismissed, powerless, unheard, or unsupported (Agency for Toxic Substances and Disease Registry 2021).

Populations living and/or working near facilities that produce, store, or transport hazardous substances are at higher risk of exposure. In particular, populations downstream, downwind, and downhill of a released substance are particularly vulnerable. Depending on the type of release and environmental conditions, people may be evacuated as a precaution or instructed to shelter-in-place. Populations living and/or working near major transportation routes are more vulnerable to a hazardous materials release because of the potential for chemicals to be transported on these major thoroughfares. Hazardous substances can also be transported via pipeline. The closure of waterways, ports, harbors, airports, highways, or refineries as a result of a hazardous materials release has the potential to impact the ability to deliver goods and services efficiently and could have cascading economic impacts to other neighboring states.

Because the hazardous materials hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction. Table 11-9 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 11-9. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

11.6.2 Vulnerability of Facilities, Infrastructure and Community Lifelines

All state-owned or -leased facilities are vulnerable to the impacts from hazardous materials releases. State assets near facilities that store or process hazardous materials or transportation corridors that permit the transport of hazardous materials have increased risks. All community lifeline facilities are vulnerable as well. All State roads and waterways that permit the transport of hazardous materials are potentially at risk of an incident. Hazardous material releases may lead to road or waterway closures until response and clean-up efforts are completed. This may impact access to communities, commuting to work, and the ability to deliver goods and services efficiently.

11.6.3 Potential Losses Due to a Hazard Event

A hazardous material release is not likely to result in any losses associated with damage or impairment to state assets. All losses from this hazard would be associated with impacts on the economy or operations. In the event of a hazardous materials release at or near a State asset, State employees may need to evacuate a building, with resulting loss of productivity that can be measured by days and dollar equivalency. Critical facilities and community lifelines need to remain in operation before, during, and after disaster events. Loss of use will impact the services they provide, which may have public safety and economic implications.

11.6.4 National Risk Index Ratings

The National Risk Index does not include data on hazard events relating to hazardous materials release for the State of Idaho.

11.7 MITIGATING THE HAZARD

11.7.1 Catalog of Potential Mitigation Alternatives

Table 11-10 summarizes a range of potential alternatives for mitigating the hazardous materials hazard.

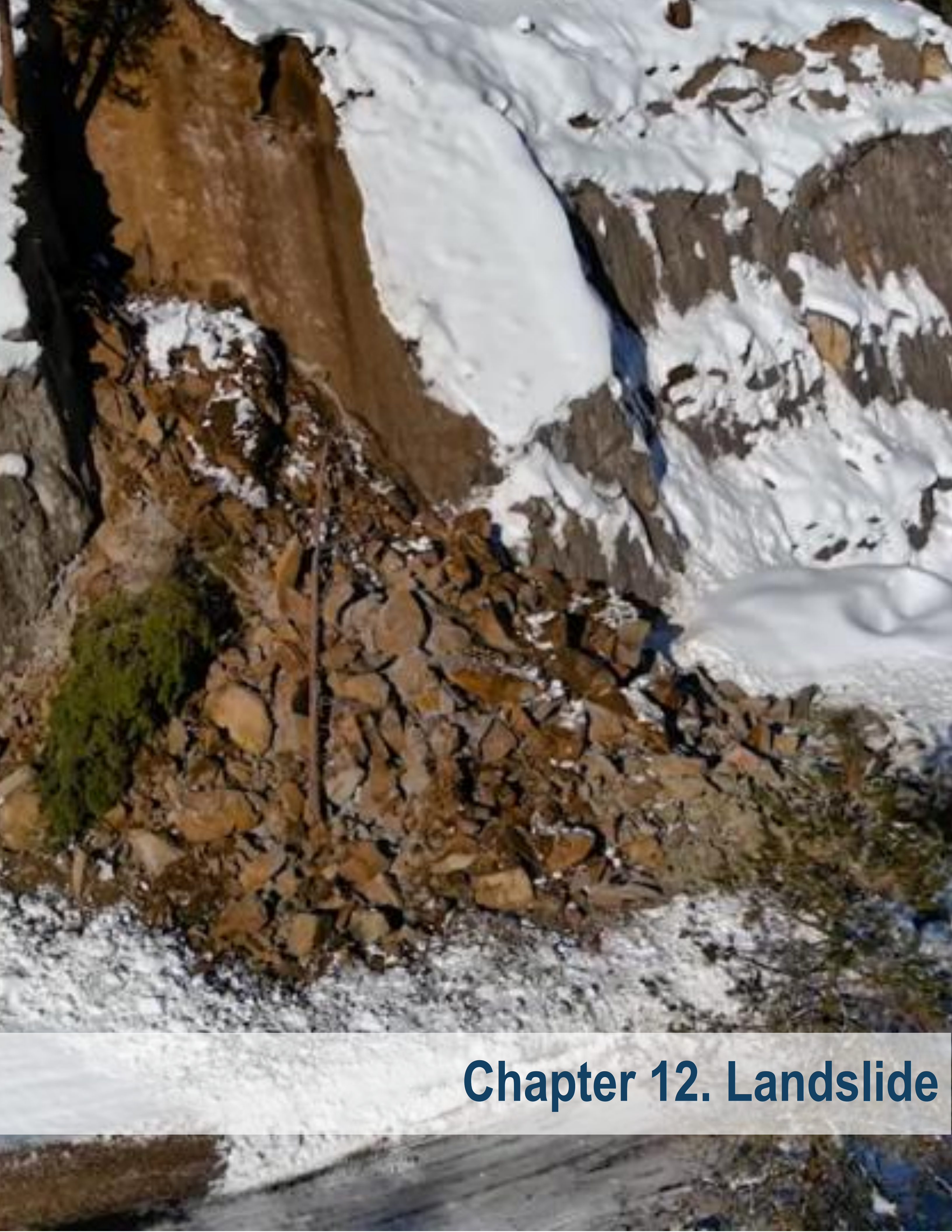
Table 11-10. Potential Opportunities to Mitigate the Hazardous Materials Hazard

Community-Scale	Organizational-Scale	Government-Scale
• **Manipulate the hazard:** ❖ Identify and eliminate sources of potential hazardous material spills • **Reduce exposure and vulnerability:** ❖ Increase distance between hazardous material sites and development • **Build local capacity:** ❖ Personal planning for potential events	• **Manipulate the hazard:** ❖ Identify and eliminate sources of potential hazardous material spills • **Reduce exposure and vulnerability:** ❖ Increase inspection of hazardous material facilities and transport vehicles. ❖ Ensure each facility has Safety Data Sheets for all hazardous materials on-site and staff know the location ❖ Educate staff on the correct way to handle hazardous materials ❖ Determine if high-risk chemical facilities are covered by Chemical Facility Anti-Terrorism Standards • **Build local capacity:** ❖ Conduct training for response	• **Manipulate the hazard:** ❖ Identify and eliminate sources of potential hazardous material spills • **Reduce exposure and vulnerability:** ❖ Increase inspection of hazardous material facilities and transport vehicles • **Build local capacity:** ❖ Conduct training for response ❖ Public outreach and education
Nature-based opportunities: ❖ There are no identified nature-based solutions to mitigate the impacts of hazardous materials release.		

11.7.2 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the hazardous materials hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects
- Action 2018-006: Create all-hazards publications for public education.



Chapter 12. Landslide

Landslide

A landslide is a mass of rock, earth or debris moving down a slope. Slides are caused by a combination of geological and climate conditions and the influence of urbanization. They can be initiated by storms, earthquakes, fires, volcanic eruptions or human modification of the land.

CHANGES SINCE 2018

+1
Federal Disaster

+13
Significant Landslide Events

STATE IMPACT RATING

Medium (24)

SOCIALLY VULNERABLE POPULATION

4.7%
Of Total Population

229
Persons

CLIMATE PROJECTIONS

More high-intensity rain events may increase landslide frequency

Increased wildfires associated with climate change escalate the risk of landslide and debris flows in the period following a fire

CANALS

68
Miles

COMMUNITY LIFELINES

16
Total

29
State Buildings

29
State Bridges

6
State Dams

86
Miles of State Roads

12. LANDSLIDE

12.1 HAZARD DESCRIPTION

A landslide is a mass of rock, earth or debris moving down a slope. Slides are caused by a combination of geological and climate conditions and the influence of urbanization. They can be initiated by storms, earthquakes, fires, volcanic eruptions or human modification of the land. Although gravity acting on an over steepened slope is the primary reason for a landslide, there are other contributing factors. Contributing factors include the following (USGS 2023):

- Erosion by rivers, glaciers, or ocean waves which create over-steepened slopes
- Rock and soil slopes weakened through saturation by snowmelt or heavy rains
- Earthquakes which create stresses making weak slopes fail
- Excess weight from rain/snow accumulation, rock/ore stockpiling, waste piles, or man-made structures

Landslides may be classified by both type of movement and material. An understanding of the types of landslides that occur is fundamental to assessing the landslide hazard and evaluating potential mitigation measures. The following list is a simplified differentiation based on the type of movement:

- **Falls**—Free falls of soil and rock with local rolling, bouncing, or sliding.
- **Slides**—Lateral and downslope movement of partially intact masses.
- **Flows**—Viscous flows of completely fragmented material, saturated with water. Landslides can also be differentiated based on the type of material involved.
- **Rock**—Bedrock Debris: Predominantly coarse material.
- **Earth**—Predominantly fine material.

Together, movement and material produce a composite classification scheme. For example, a free fall of bedrock is referred to as a “rock fall,” while a viscous flow of predominantly fine material is referred to as an “earth flow.” The wettest flows are referred to as “mud flows.” These events may be very difficult to distinguish from heavily debris-laden flash floods and functionally are essentially the same.

Landslides can be classified by their velocity—the more rapid the movement, the more dangerous the slide (Table 12-1).

Table 12-1. Landslide Velocity Classification

Description	Velocity Range
Extremely Rapid	> 5 m/sec
Very Rapid	3 m/min – 5 m/sec
Rapid	1.8 m/hour – 3m/min
Moderate	13 m/month – 1.8 m/ hour
Slow	1.6 m/ hour – 13 m/month
Very Slow	16 mm/year – 1.6 m/year
Extremely Slow Negligible	16 mm/year

12.1.1 Factors Contributing to Landslides

Natural factors contributing to landslides include slope morphology (shape), slope material (soil), bedrock geology, vegetation, and climate. Generally, the steeper a slope is, the more prone it is to landslides (except when the slope is so steep that loose material does not accumulate). A study of landslides in central Idaho has shown that most slides occurred on slopes of about 30 degrees and that landslides were rare on slopes steeper than 41 degrees. The general shape of a slope also influences the likelihood of a landslide. On a concave slope (e.g., hollow, swale, gully), water and debris tend to concentrate, making landslides more likely. Conversely, on a convex slope (e.g., ridge, nose), water and debris are less likely to accumulate.

The slope surface materials and their underlying geology also determine landslide risk. A landslide event is generally dependent on a material weakness. For example, if an impermeable layer exists, subsurface water will accumulate there, leading to reduced slope strength and a potential failure plane. The underlying and adjacent geology often influence the risk of landslides by controlling the movement of groundwater.

Vegetation contributes to slope stability in two ways. First, roots increase the shear strength of the slope material. Second, vegetation removes water from the hill slope by evapotranspiration. Therefore, burned watersheds are particularly vulnerable to landslides.

The climate of a region determines the frequency and magnitude of precipitation events. The amount of precipitation in Northern Idaho is higher than the statewide average. This, along with the topography of the region, increases the likelihood of landslides in this part of the State. The size and timing of precipitation events also has a great impact on landslide risk. They influence the processes of rock weathering (important in influencing soil depth and strength), the type of vegetation that occupies the hill slopes, and the fire regime of the region. Most wildfires occur in mid- to late summer, the same season that severe thunderstorms are most likely to contribute to landslides. Further, the transition into fall often sees higher precipitation amounts that can impact recently burned areas. Fire destroys the plants on a hillside that hold the soil together and limits the amount of water that can be infiltrated and instead it runs off. As the rains run off it gathers more and more sediment.

12.2 HAZARD LOCATION

The entire United States experiences landslides, with 36 states having moderate to highly severe landslide hazards. Landslide activity is considered to be localized in Idaho. The USGS is currently updating its research on hazardous landslide processes, including their mechanisms, recurrence, distribution, and probability (http://landslides.usgs.gov).

Landslides are typically a function of soil type and steepness of slope. Soil type is a key indicator for landslide potential and is used by geologist and geotechnical engineers to determine soil stability for construction standards. The best available predictor of where movement of slides and earth flows might occur is the location of past movements. Past landslides can be recognized by their distinctive topographic shapes, which can remain in place for thousands of years. Most landslides recognizable in this fashion range from a few acres to several square miles. Most show no evidence of recent movement and are not currently active. A small proportion of them may become active in any given year, with movements concentrated within all or part of the landslide masses or around their edges. The recognition of ancient dormant mass movement sites is important in the identification of areas susceptible to flows and slides because they can be reactivated by earthquakes or by exceptionally wet weather. In addition, because they consist of broken materials and frequently involve disruption of groundwater flow, these dormant sites are vulnerable to construction-triggered sliding.

The Idaho Transportation Department performs landslide mitigation projects throughout the state, but the majority are located in Boundary and Clearwater Counties.

12.3 PREVIOUS HAZARD OCCURRENCES

Idaho's geology, landscape, climate, soils, and other factors are locally conducive to landslide activity, and numerous landslides occur each year in Idaho. Many of these, though, are small events without well-documented impacts. The Idaho Geological Survey has identified and plotted over 3,000 major landslides in the State. Landslides are also included on local and regional geologic maps and other geologic sources.

12.3.1 Disaster and Emergency Declarations

The following disaster declarations or emergency proclamations related to landslides have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 6 landslide-related events, classified as severe storms, floods, landslides and mudslides
- **Idaho State Emergency Proclamations, 2018 – 2022**: no landslide-related events
- No USDA disaster declarations or proclamations for landslide-related events have been issued relevant to Idaho or any of its counties.

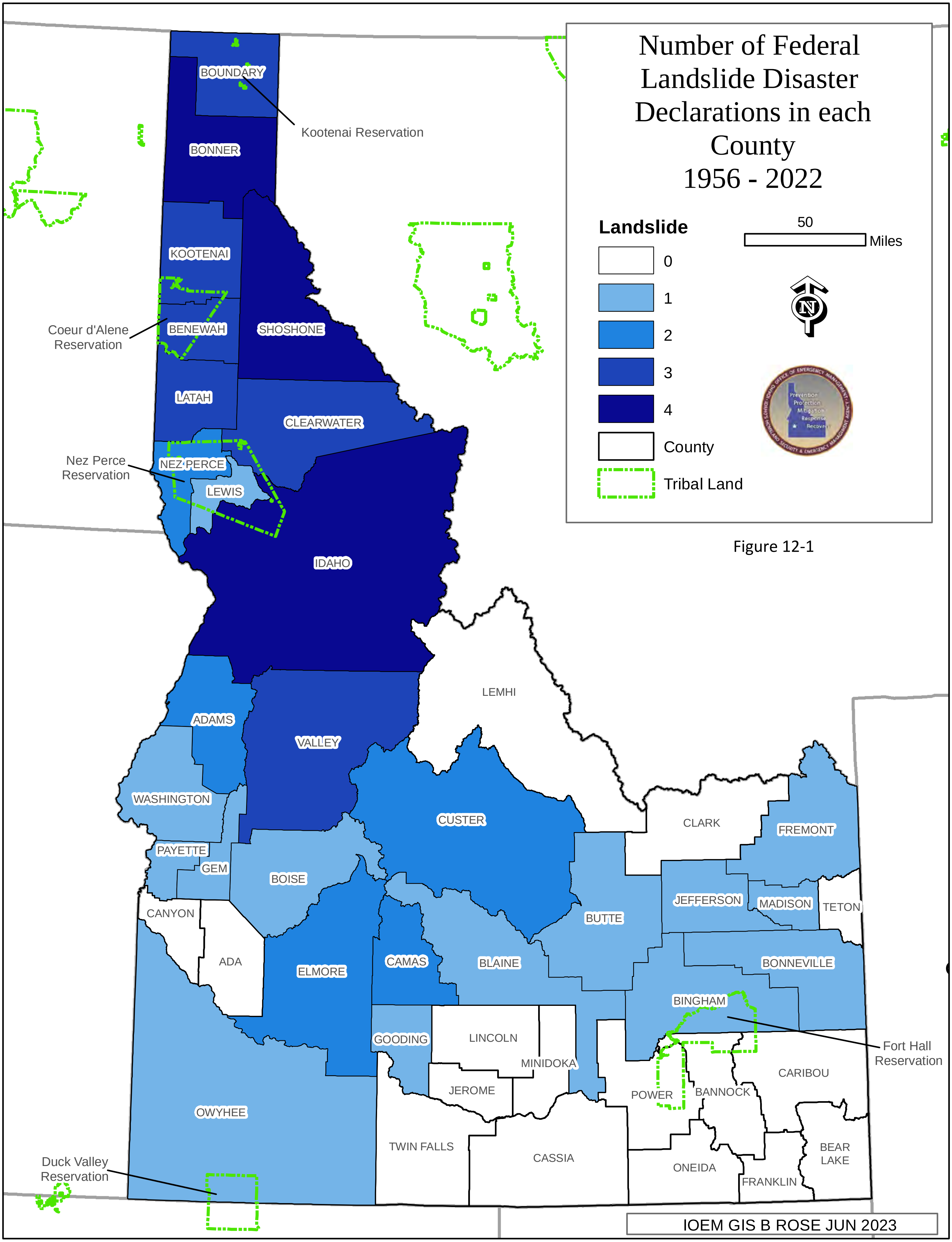
12.3.2 Event History

Hundreds of small landslides occur every year in Idaho that cause little to no damage. However, larger events can cause significant damage or disruption. Table 12-2 lists significant landslide events that impacted the State of Idaho between 2018 and 2022. The distribution across the state is shown in Figure 12-1. Appendix D lists events included in published reports prior to 2018.

Table 12-2. Significant Landslide Events in Idaho (2018 to 2022)

Date	Event Type	Counties Affected	Description
12/27/2022	Mudslide	Nez Perce	Local media reported a small mudslide closing Vineyard Avenue for around 8 hours. Damage was minimal.
8/1/2021	Rockslides and Mudslides	Custer	The Idaho Transportation Department reported numerous rock and mudslides blocking U.S. Highway 93 between Elk Bend and Ellis as a result of heavy rainfall. The roadway was closed for a period of time to allow crews to clear roadways. Area gauge measurements suggested half an inch of rain fell across the U.S. Highway 93 corridor over a 3-hour period.
8/1/2021	Debris Flow	Lemhi	Salmon-Challis National Forest officials reported a 30-foot wide, 3-foot deep sand and dirt debris flow across Salmon River Road, 1.5 miles west of Panther Creek. Another debris flow was reported from the Dutch Oven Creek drainage and was three feet wide, by four feet deep, including two to three boulders. The Salmon River Road was impassable from Panther Creek to Dutch Oven Creek through the morning hours of August 2nd. The Skull Gulch remote weather station, located a few miles northwest of Panther Creek, reported 0.24 inches of rain from 1500 to 1600.
7/1/2021	Rockslide and Mudslide	Clearwater	By 7:10 pm PDT, the Idaho Department of Transport began to receive reports of water, rocks, and mud on U.S. 95 between mile marker 196-204, centered on MM200. This slide briefly closed both directions of the highway.
6/25/2021	Debris Flow	Oneida	On June 25th, video of debris flow running over north bound interstate 15 just north of the Utah border in Oneida county was seen. Radar estimated 2 inches of rainfall in that area resulting in the debris flow and flooding.
7/3/2020	Rockslide	Idaho	Between 28-30 June 1.67 of rain was measured at the Riggins COOP (45.42/ -116.31). Around 10 AM on the 3rd a rockslide was reported near mile marker 188 on U.S. Route 95 in Idaho. This slide closed both lanes of the highway. A bypass was built and opened on the 9th, however instability in the slope continued to hinder repair (which continued through much of the summer).
2/7/2020	Rockslide	Nez Perce	A rockslide was reported to Law Enforcement blocking one lane of Highway 12 near Myrtle.
1/1/2020	Rockslide	Boundary	A BNSF train derailed when a rockslide cut the rail line along the Kootenai River east of Bonners Ferry. Three locomotives were pushed off of the tracks along with 6 rail cars, with one locomotive completely submerged in the Kootenai River.
12/12/2019	Rockslide	Bonner	Idaho Transportation Department reported a rockslide across Highway 200 near Trestle Creek.
8/9/2019	Mud Slide	Blaine	On August 9th a mud slide occurred one mile past the east fort of Baker Creek. Warm Springs Road was impassable from the west of the Hot Springs in Ketchum. 3 to 5 inches of mud covered the road.
4/9/2019	Mud Slides	Lewis; Idaho	Several mud slides were reported over Highway 12 just west of Kamiah on the morning of April 9th. One of the slides completely covered the road and caused the temporary closure of this primary road through the region while crews cleared the debris. This event triggered a Federal Disaster Declaration (DR-4443)
5/20/2018	Debris Flow	Latah	Highway 3 between Juliaetta and Kendrick was cut by a debris flow caused by a slow-moving thunderstorm. The debris was cleared by highway crews and the road was re-opened about an hour later.
3/8/2018	Rockslide	Kootenai	Idaho State Police reported that a rockslide closed both westbound lanes of Interstate 90 near 4th of July Pass.

Source: (NOAA NCEI 2023)


Number of Federal Landslide Disaster Declarations in each County 1956 - 2022
Landslide
0
1
2
3
4
County
Tribal Land
50
Miles
N
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
PAYETTE
GEM
BOISE
CANYON
ADA
ELMORE
CAMAS
BLAINE
BUTTE
CLARK
FREMONT
JEFFERSON
MADISON
TETON
BONNEVILLE
BINGHAM
Fort Hall Reservation
GOODING
LINCOLN
MINIDOKA
JEROME
POWER
BANNOCK
CARIBOU
OWYHEE
TWIN FALLS
CASSIA
ONEIDA
FRANKLIN
BEAR LAKE
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023
Figure 12-1

12.4 PROBABILITY OF FUTURE HAZARD EVENTS

12.4.1 Overall Probability

Landslides are a hazard that has the potential to impact the infrastructure and safety of the people of Idaho. Concerns about landslides are growing throughout Idaho and the United States, due to a changing climate. Landslide impacts could have severe adverse effects on the future wellbeing of Idaho's communities. According to FEMA and NOAA's National Centers for Environmental Information (NCEI) database, Idaho has experienced 13 significant landslides resulting in damage or disruption of infrastructure over the past five years (see Table 12-3).

Table 12-3. Probability of Significant Landslide Events in Idaho

Hazard Type	Events Between 2018 and 2022	Average Frequency
Landslides	13	More than 2 events every year

Landslides are often triggered by other natural hazards such as earthquakes, heavy rain, floods, or wildfires, so landslide probability is often related to the frequency of these other hazards. They typically occur during and after major storms, so the landslide potential largely coincides with the potential for sequential severe storms that saturate steep, vulnerable soils. Until better data is generated specifically for landslide hazards, this severe storm frequency is appropriate for the purpose of ranking risk associated with the landslide hazard.

Landslides are most likely during periods of higher-than-average rainfall. The ground must be saturated prior to the onset of a major storm for significant landslides to occur.

The geophysical processes that contribute to landslides during a particular year are statistically independent of past events. Unfortunately, the short period of recorded and observed landslides and associated conditions that contribute to the risk make it difficult to develop return periods for landslide-prone areas in Idaho. Landslide occurrence is not directly attributed to a specific major meteorological event, such as the 1-percent-annual-chance or 100-year snowfall, though rainfall events are one known cause of events.

12.4.2 Climate Change Impacts

Landslides can result from intense rainfall and runoff events. Projected climate change-associated variance in rainfall events may result in more high-intensity events, which may increase landslide frequency due to wetter wet periods and drier dry periods. While total average annual rainfall may decrease, rainfall is predicted to occur in fewer, more intense precipitation events.

The combination of a generally drier climate in the future, which will increase the chance of drought and wildfires, and the occasional extreme downpour is likely to cause more mudslides and landslides. Climate modeling will be a key component of understanding future landslide risks.

Increased wildfire occurrence associated with climate change escalates the risk of landslide and debris flows in the period following a fire, when slopes lack vegetation to stabilize soils and burned soil surfaces create more rainfall runoff. As climate change affects the length of the wildfire season, it is possible that a higher frequency of large fires may occur in late fall, when conditions remain dry, and then be followed immediately by intense rains early in the winter.

12.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

The U.S. EPA’s Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change’s (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. This SHMP used the ICLUS modeling (Scenario SSP2 + RCP4.5) to prepare statewide and county-specific estimates for Idaho land use in 2020 and 2030.

Appendix E lists the estimated land-use area (square miles) located in the identified landslide hazard area for 2020 and projected area for 2030 by jurisdiction. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029. Changes in land-use are seen in the exurban and rural categories. Statewide there is a projected decline of approximately 30 square miles of land. This decline is the greatest in Teton County, where a reduction of 29 square miles of buildable land is projected; these changes coincide with the increase in higher housing densities, which will place a greater number of people in the hazard area.

Areas directly affected by wildfire and those located below or downstream of burn areas are most at risk for mud flows. Human development within forested areas has increased the risk to life and property as a result to wildfire, which can in turn increase risk from landslides. According to the USGS, post-fire landslide hazards include fast-moving, highly destructive debris flows in years following a wildfire event due to heavy rainfall events; they can occur with little warning, can exert great impulsive loads on objects in their paths, damage structures, and endanger human life (USGS).

A known area of landslide concern for development is the Boise Foothills area. The Terra Nativa subdivision north of Table Rock recreation area and just south of Table Rock road in Boise is evidence of this, as cracks started appearing in homes, roads, and sidewalks in this neighborhood, causing development to halt and many families to evacuate as the ground under the homes was shifting slowly downhill.

Analysis of historical data indicates relatively little damage to structures and does not indicate that development causes more structures to be destroyed by landslides. Past events have impacted transportation corridors, often limiting access to communities for a short time. This needs to be taken into account as development occurs, and possible mitigation measures should be considered. Overall, any development within known or suspected landslide areas will increase the potential for future impacts.

12.5 IMPACT ANALYSIS

12.5.1 Severity

Landslides destroy property and infrastructure and can take the lives of people. Slope failures in the United States result in an average of 25 lives lost per year and an annual cost to society of about $1.5 billion. There are no records In Idaho of fatalities attributed to landslides. The biggest assets at risk of landslides are roads and infrastructure in landslide-prone areas. Landslides can isolate populations due to road closures.

Landslides are often triggered by other natural hazards such as earthquakes, heavy rain, floods or wildfires, so landslide frequency is often related to the frequency of these other hazards. Throughout Idaho, landslides typically occur during and after major storms, so the landslide potential largely coincides with the potential for sequential severe storms that saturate steep, vulnerable soils. Until better data is generated specifically for landslide hazards, this severe storm frequency is appropriate for the purpose of ranking risk associated with the landslide hazard.

Landslides are most likely during periods of higher-than-average rainfall. The ground must be saturated prior to the onset of a major storm for significant landslides to occur.

12.5.2 Warning Time

Landslide velocity can range from inches per year to many feet per second, depending on slope angle, material, and water content. Some methods used to monitor mass movements can provide an idea of the time prior to failure. It is also possible to determine areas at risk during general time periods. Assessing the geology, vegetation, and amount of predicted precipitation for an area can help in these predictions. However, there is no practical warning system for individual landslides. The current procedure is to monitor situations on a case-by-case basis and respond after the event has occurred. Generally accepted warning signs for landslide activity include:

- Springs, seeps, or saturated ground in areas that have not typically been wet before
- New cracks or unusual bulges in the ground, street pavements or sidewalks
- Soil moving away from foundations
- Ancillary structures such as decks and patios tilting and/or moving relative to the main house
- Tilting or cracking of concrete floors and foundations
- Broken water lines and other underground utilities
- Leaning telephone poles, trees, retaining walls or fences
- Offset fence lines
- Sunken or down-dropped roadbeds
- Rapid increase in creek water levels, possibly accompanied by increased soil content
- Sudden decrease in creek water levels though rain is still falling or recently stopped
- Sticking doors and windows or visible open spaces indicating jambs and frames out of plumb
- A faint rumbling sound that increases in volume as the landslide nears
- Unusual sounds, such as trees cracking or boulders knocking together.

12.5.3 Cascading Impacts

Landslides can cause several types of cascading impacts, such as blocking access to roads, which can isolate residents and businesses and delay commercial, public, and private transportation. This could result in economic losses for businesses. Landslides have the ability to block stream channels and waterways, which could result in localized flooding. The eventual release of these blockages would also mirror the effects of a dam, levee or canal breach. Landslides are also known to trigger seiches, which can cause waves in larger bodies of water. This has the ability to negatively affect dams, levees, and canals. A seiche triggered by the 1959 Hebgen Lake earthquake caused water to slosh over the top of the dam, resulting in cracks and erosion. Locations of past landslides do have the ability to increase the immediate area’s susceptibility to future landslides and flooding, due to the removal and transport of trees, vegetation, and other ground materials.

Other potential problems resulting from landslides are power and communication failures. This may affect energy transmission and communication lines, possibly resulting in energy shortages or cyber disruptions. Vegetation or poles on slopes can be knocked over, resulting in possible losses to power and communication lines. Landslides also have the potential of destabilizing the foundation of structures, which may result in monetary loss for residents. From a human-caused perspective, landslides do have the ability to affect energy transmission and communication lines, possibly resulting in energy shortages or cyber disruptions.

Additionally, landslides are more prominent in areas that have been affected by and experienced wildfires. Wildfires, particularly large-scale fires, can dramatically alter the terrain and ground conditions, making land already devastated by fire susceptible to mudflows. Normally, vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water; thus, creating conditions perfect for slides (FEMA 2021). At this time, there is no magnitude scale for landslides.

12.5.4 Environmental Impacts

Landslides have minor environmental impacts compared to several other hazards discussed in this document, but more than avalanches, which have the buffering effects of snow cover. Impacts to the natural environment due to landslides are generally localized in nature. The impacts do not tend to travel beyond the confines of the event, as compared to the potential effects from hazardous material leaks or volcanic ash fall. An exception to this would be seiche effects in a lake due to landslide, where bank vegetation and other resources could be impacted relatively far from the initial event.

Landslides can cover vegetative communities, destroying habitat; however, it is unlikely that the continued existence of rare species or vegetative communities would be jeopardized by landslides, because of the localized nature of the hazard. There is potential for unique historic and archeological resources to be damaged or lost. With respect to geology and soils, landslides can change topography and remove topsoil, but farmland soils are not usually located in the steeper areas where landslides are more common. Landslides have the potential to alter floodplains and drainage patterns. In addition, debris can form dams, causing flooding upstream and disrupting the aquatic habitat.

12.5.5 Local Hazard Mitigation Plan Impacts

Thirty-nine of the hazard mitigation plans prepared for Idaho's counties list landslide as a hazard of concern, and five counties rank it as a high-impact hazard:

- Boise
- Clearwater
- Elmore
- Idaho
- Valley

An additional 14 counties identified landslide as a medium-impact hazard.

Table 12-4 summarizes potential losses to vulnerable structures due to landslide, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 12-4. Landslide Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

Estimated Total Population Exposed	1,757,728
Estimated Number of Structures at Risk	187,608; 2,722.1 miles of roadway; 639 improvements; 998 parcels
Estimated Value of Structures at Risk	$125,820,250,777

12.6 VULNERABILITY OF PEOPLE AND ASSETS

A GIS analysis was performed to evaluate the number of people and assets within the defined hazard area for landslides. The landslide hazard area used for the analysis consists of areas of high incidence as defined by the USGS, based on locations where large numbers of landslides have occurred or that are susceptible to landslides. Results are summarized below.

12.6.1 Total and Socially Vulnerable Populations

While all people located in the landslide hazard area are considered exposed and potentially vulnerable, populations considered most vulnerable include the elderly (persons over the age of 65) and individuals living below the United States Census poverty threshold. These socially vulnerable populations are most susceptible based on a number of factors including their physical and financial ability to react or respond during a hazard, the location and construction quality of their housing, and the ability to be self-sustaining for prolonged periods after an incident because of limited ability to stockpile supplies.

According to the CDC, health threats from landslides include injury caused by rapidly moving debris, injury or illness from broken electrical, water, gas and sewage lines, and inability to access health care due to disrupted roadways. Populations considered most vulnerable include children, the elderly (persons over the age of 65), people with access and functional needs, and individuals experiencing poverty.

Flash flooding or ongoing heavy rains can be precursors to landslide and rockfall events. The concurrent hazard of flooding further disrupts access to roadways and endangers motorists. Landslide and rockfall events can hinder evacuation routes, prevent the delivery of necessary goods to vulnerability populations, and can delay emergency and medical responses to the area. Some residential areas in Idaho that are susceptible to landslides and rockfalls have just one means of ingress and egress, making them highly vulnerable in the event of an evacuation.

The population in the hazard area and percentage of population exposed in the State of Idaho does not include the number of tourists and visitors, or the impacted population located outside of high landslide susceptibility areas. Historic landslide and rockfall events in the state have caused road closures and bridge failures, which isolated residents and prevented access to evacuation routes and medical services. Therefore, the analysis conducted, and figures reported may be underestimating landslide exposure and vulnerability.

Table 12-5 summarizes the vulnerable and total population within the defined hazard area. Detailed results for all counties are provided in Appendix E.

Table 12-5. Population Within the Landslide Hazard Area

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	4,895	1. Teton (1,635)	2. Custer (1,569)	3. Twin Falls (770)
Vulnerable Population in the Hazard Area	229	1. Elmore (133)	2. Clark (96)	n/a
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	4.7%	1. Elmore & Clark (100% each)		n/a

12.6.2 National Risk Index Ratings

According to the National Risk Index, 19 of the state's 44 counties have NRI identified landslide risk rated from very high to relatively moderate. The risk rankings for the highest ranked counties are shown in Table 12-6.

Table 12-6. NRI Ratings for Landslide in Highest-Ranked Idaho Counties

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Elmore County	$1,390,008	Relatively High	Relatively Low	1.31	$2,220,775	99.74
Boundary County	$691,166	Relatively Low	Very Low	1.35	$966,984	98.77
Bonner County	$923,061	Relatively Low	Relatively Moderate	1.02	$840,113	98.58
Idaho County	$569,265	Relatively Moderate	Very Low	1.24	$700,069	98.20
Boise County	$686,339	Very Low	Very Low	0.93	$612,782	97.84
Clearwater County	$286,494	Relatively High	Very Low	1.30	$369,813	96.20
Latah County	$339,662	Relatively Low	Relatively Moderate	1.02	$359,229	96.11

12.6.3 State-Owned or -Leased Facilities

Table 12-7 summarizes the number and estimated replacement cost value of all State-owned or -leased facilities in the defined hazard area. Table 12-8 shows the number of State agencies and counties that have State-owned or -leased facilities in the hazard area. Table 12-9 lists the top three state agencies and counties with State-owned or -leased facilities in the hazard area, by number of facilities and by total estimated replacement cost value. Detailed results for all counties and state agencies are provided in Appendix E.

Table 12-7. Total State Facilities Within the Landslide Hazard Area

	Facilities in the Hazard Area		
	State-Owned	State-Leased	Total
Number of Facilities in the Hazard Area	2	7	**29**
Total Estimated Replacement Cost Value	$30,809,941	$19,369,203	**$50,179,144**

Table 12-8. State Facilities Within the Landslide Hazard Area by State Agency and County

	Total Number of State Agencies with Facilities in the Hazard Area	Total Number of Counties with Facilities in the Hazard Area
State-Owned	3	5
State-Leased	3	5
Total[a]	4	9

a. Total number of agencies or counties with vulnerable facilities may not be equal to the sum of those with state-owned facilities and those with state-lease facilities, as some agencies and counties have both state-owned facilities and state-leased facilities.

Table 12-9. Top Three State Agencies and Counties with State Facilities Within the Landslide Hazard Area

	Greatest Number of Facilities in Hazard Area				Greatest Replacement Cost Value in Hazard Area			
	State Agencies		Counties		State Agencies		Counties	
	Name	Facilities	Name	Facilities	Name	Value	Name	Value
1.	Dept. of Fish & Game	8	Custer	18	Dept. of Parks & Recreation	$19.4 million	Custer	$371.5 million
2.	Dept. of Parks & Recreation	7	Lemhi	7	Division of Military	$10.0 million	Lemhi	$8.4 million
3.	Dept. of Transportation, Division of Military	5 each	Idaho	3	Dept. of Fish & Game	$8.4 million	Caribou	$2.8 million

12.6.4 Highways, Bridges, Dams, and Canals

Table 12-10 summarizes the miles of highway and number of bridges and dams within the defined hazard area statewide, as well as the counties with the greatest number of each. Detailed results for all counties are provided in Appendix E.

Table 12-10. State Highways, Bridges, and Dams Within the Landslide Hazard Area

	Statewide Total	Highest-Ranked Counties		
Miles of Highway	86	1. Custer (38.1)	2. Lemhi (22.6)	3. Idaho (9.8)
Number of Bridges	29	1. Custer (19)	2. Teton (4)	3. Blaine, Clark & Lemhi (2 each)
Number of State-Regulated Dams	6	1. Custer, Elmore & Lemhi (2 each)		
Miles of Canals	68	1. Twin Falls (23)	2. Custer (16)	3. Elmore (15)

12.6.5 Buildable Lands

Table 12-11 summarizes the amount of buildable land within the defined hazard area for 2020. Appendix E provides details on buildable land and ICLUS land use in the hazard area for all counties for 2020 and 2030.

Table 12-11. Buildable Lands Within the Landslide Hazard Area, 2020

	Statewide Total	Highest-Ranked Counties		
Buildable Land in the Hazard Area (acres)	4,285	1. Custer (2,931)	2. Teton (600)	3. Idaho (309)
Hazard Area Buildable Land as % of Total County or State Buildable Land	0.7%	1. Custer (56.5%)	2. Teton (10.8%)	3. Idaho (2.4%)

12.6.6 Community Lifelines

Table 12-12 summarizes the number of community lifelines by type within the defined hazard area. Detailed results for all counties are provided in Appendix E.

Table 12-12. Community Lifelines Within the Landslide Hazard Area

	Number of Lifelines Within the Hazard Area			
	Statewide	Highest-Ranked Counties		
Energy	4	1. Custer (3)	2. Teton (1)	n/a
Food, Water, Shelter	0	n/a		
Health & Medical	0	n/a		
Safety & Security	10	1. Custer (6)	2. Lemhi (3)	3. Idaho (1)
Transportation	2	1. Elmore (2)	n/a	n/a
Total	**16**	**1. Custer (9)**	**2. Lemhi (3)**	**3. Elmore (2)**

12.6.7 Potential Losses Due to a Hazard Event

Although landslides can cause significant damage to State assets, there are no standard generic formulas for estimating associated losses. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the replacement cost value of all State-owned or -leased facilities exposed to the landslide hazard (see Table 12-13). This allows the State to select a range of potential economic impacts based on an estimate of the percentage of damage to these assets. Damage in excess of 50 percent is considered substantial by most building codes and typically requires total reconstruction of the structure.

Table 12-13. Loss Potential of State Facilities for Landslide

	Total Replacement Cost Value of Exposed Facilities	Estimated Loss Potential Based on % Damage		
		10% Damage	30% Damage	50% Damage
State-Owned Facilities	$30,809,941	$3,080,994	$9,242,982	$15,404,971
State-Leased Facilities	$19,369,203	$1,936,920	$5,810,761	$9,684,602
Total	**$50,179,144**	**$5,017,914**	**$15,053,743**	**$25,089,572**

12.7 MITIGATING THE HAZARD

12.7.1 Catalog of Potential Mitigation Alternatives

Table 12-14 summarizes a range of potential alternatives for mitigating the landslide hazard.

Table 12-14. Potential Opportunities to Mitigate the Landslide Hazard

Personal-Scale	Organizational-Scale	Government-Scale
• **Manipulate the hazard:** ❖ Stabilize slope (dewater, armor toe) ❖ Reduce weight on top of slope ❖ Minimize vegetation removal and the addition of impervious surfaces. • **Reduce exposure:** ❖ Locate structures outside of hazard area (off unstable land and away from slide-run out area) • **Reduce vulnerability:** ❖ Retrofit home • **Build local capacity:** ❖ Institute warning system, and develop evacuation plan ❖ Keep cash reserves for reconstruction ❖ Educate yourself on risk reduction techniques for landslide hazards	• **Manipulate the hazard:** ❖ Stabilize slope (dewater, armor toe) ❖ Reduce weight on top of slope • **Reduce exposure:** ❖ Locate structures outside of hazard area (off unstable land and away from slide-run out area) • **Reduce vulnerability:** ❖ Retrofit at-risk facilities • **Build local capacity:** ❖ Institute warning system, and develop evacuation plan ❖ Keep cash reserves for reconstruction ❖ Develop a continuity of operations plan ❖ Educate employees on the potential exposure to landslide hazards and emergency response protocol.	• **Manipulate the hazard:** ❖ Stabilize slope (dewater, armor toe) ❖ Reduce weight on top of slope • **Reduce exposure:** ❖ Acquire properties in high-risk landslide areas. ❖ Adopt land use policies that prohibit the placement of habitable structures in high-risk landslide areas. • **Reduce vulnerability:** ❖ Adopt higher regulatory standards for new development within unstable slope areas. ❖ Armor/retrofit critical facilities against the impact of landslides. • **Build local capacity:** ❖ Produce better hazard maps ❖ Provide technical information and guidance ❖ Enact tools to help manage development in hazard areas: better land controls, tax incentives, information ❖ Develop strategy to take advantage of post-disaster opportunities ❖ Warehouse critical infrastructure components ❖ Develop and adopt a continuity of operations plan ❖ Educate the public on the landslide hazard and appropriate risk reduction alternatives. ❖ Consider the probable impacts of future climate conditions on the risk associated with the landslide hazard

12.7.2 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the landslide hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-002: Develop a statewide approach to modeling and mapping projected future conditions
- Action 2023-003: Coordinate with federal and state agencies to identify gaps to better integrate climate change impacts into flood risk management
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps

Chapter 13. Pandemic

Pandemic

Pandemic is defined as an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people. Organisms that cause pandemics may be transmitted from animals to humans, but the potential to cause a pandemic is increased when organisms are readily transmitted from human to human, especially before a person has any symptoms.

CHANGES SINCE 2018

+1

Federal Disasters

+1

Pandemic Events

STATE IMPACT RATING

Medium (27)

SOCIALLY VULNERABLE POPULATION

21.9%

Of Total Population

384,570

Persons

CLIMATE PROJECTIONS

Over half of known infectious diseases can be aggravated by climate change

Changes in temperature and precipitation can influence seasonality, distribution, and prevalence of vector-borne diseases

CANALS

Pandemic impacts on canals are unknown at this time

COMMUNITY LIFELINES

3,238

Total

Pandemic impacts on these physical state assets are unknown at this time.

State Bridges

State Buildings

State Dams

Miles of State Roads

13. PANDEMIC

13.1 HAZARD DESCRIPTION

Pandemic is defined as an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people. Seasonal epidemics of influenza, however, are not considered pandemics. Simultaneous worldwide transmission of a new influenza strain has defined an influenza pandemic, but whether the severity of illness it causes should be included in the definition of an influenza pandemic is still debated. The severity of any pandemic can be higher when a large number of people in the population lack pre-existing immunity to the causative agent or when a larger proportion of the population is infected. Organisms that cause pandemics may be transmitted from animals to humans, but the potential to cause a pandemic is increased when organisms are readily transmitted from human to human, especially before a person has any symptoms.

An outbreak is defined by the U.S. Centers for Disease Control and Prevention (CDC) as the occurrence of more cases of disease than normally expected within a specific place or group of people over a given period of time. In the State of Idaho, certain health care providers, health care facility administrators, and laboratorians, among others, must report any suspected outbreak or diseases or other health conditions identified in Idaho Administrative Procedures Act (IDAPA) 16.02.10 “Idaho Reportable Diseases” (Idaho Division of Public Health 2022) to their local Public Health District or the Idaho Department of Health and Welfare (IDHW), Division of Public Health, and the Bureau of Communicable Disease Prevention, Epidemiology Program within a specified time frame.

The COVID-19 pandemic alerted the world to how rapidly a disease outbreak or epidemic can become a large-scale pandemic. Many possible communicable disease threats exist—some known and some unknown. This chapter discusses diseases and conditions of concern for Idaho. The following sections describe diseases with potential to become widespread in Idaho without ongoing surveillance and mitigation measures.

13.1.1 COVID-19

Coronavirus Disease 2019 (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus. The virus can spread in small liquid particles from the mouth or nose of infected persons when they cough, sneeze, speak, sing, or breathe. Most people infected with the virus experience mild to moderate respiratory illness and recover without requiring special treatment. However, some become seriously ill and require medical attention. Older adults and those with underlying medical conditions such as cardiovascular disease, diabetes, weakened immune system, chronic respiratory disease, or cancer are more likely to develop serious illness. Anyone at any age can get sick with COVID-19 and become seriously ill or die (World Health Organization 2022).

13.1.2 Ebola

Ebola is a rare and deadly disease caused by infection with one of the Ebola virus species. Ebola viruses are transmitted through direct contact with contaminated blood or body fluids of a person who is sick or has died from Ebola. In Africa, the Ebola virus may be spread as a result of handling wild animals hunted for food. Ebola can cause disease in humans and nonhuman primates (for example, monkeys, gorillas, and chimpanzees). Ebola was first discovered in 1976 near the Ebola River in what is now the Democratic Republic of the Congo and are found in several African countries (CDC 2023). Known outbreaks have appeared sporadically in Africa. There have been no reported cases of Ebola virus disease contracted in the United States, but in 2014, two U.S. residents were infected with Ebola virus while traveling to areas where it is found and were diagnosed in the United States; two healthcare workers who provided care for the first of these patients also became infected with Ebola virus.

13.1.3 HIV

HIV is an abbreviation for human immunodeficiency virus. This viral infection is transmitted from someone who has HIV to another person by exposure to certain body fluids through sexual intercourse, sharing needles or syringes, from an infected mother to child during pregnancy or breastfeeding, and by receiving a blood transfusion, blood products, or organ/tissue transplants that are contaminated by HIV (currently an extremely small risk in the United States). If HIV infection is not treated, HIV severely compromises the immune system and leads to AIDS (acquired immune deficiency syndrome). There is no effective cure for HIV, but HIV can be controlled with proper medical care and antiretroviral therapy. The first official report of what became known as the AIDS epidemic occurred in 1981.

13.1.4 Influenza

Influenza is an infectious viral disease of birds and mammals commonly transmitted through aerosols produced by coughing or sneezing. People who have influenza can have some or all of these symptoms: fever, cough, sore throat, runny nose, muscle aches, headaches, fatigue, and sometimes vomiting and diarrhea. Complications from influenza virus infection can be moderate (e.g., sinus or ear infections) to severe (e.g., pneumonia, inflammation of the heart [myocarditis], inflammation of the brain [encephalitis], failure of multiple organs, and death). Influenza virus strains that were new or had not circulated in a while caused pandemics in the late 20th and 21st centuries (CDC 2018). Influenza type A viruses are found in many other animals and can evolve to infect humans. Vaccines against a novel pandemic influenza will not be available immediately in most pandemics.

13.1.5 Measles

Measles is a serious respiratory disease caused by the measles virus. It can lead to pneumonia, encephalitis (swelling of the brain), and death. Measles is one of the most contagious of all infectious diseases: approximately 90 percent of susceptible people with close contact to someone with measles will get measles. The virus spreads through coughing and sneezing. The measles-mumps-rubella vaccine protects against measles.

13.1.6 Mosquito-Borne Diseases

Mosquito-borne diseases are those spread by the bite of an infected mosquito. Diseases that are spread to people by mosquitoes include Chikungunya, dengue, malaria, Saint Louis encephalitis (SLE), West Nile virus (WNV) disease, and Zika virus disease. Diseases included in this plan update are malaria, SLE, West Nile virus disease, and Zika virus disease.

- **Malaria** is a disease caused by a parasite transmitted by the bite of Anopheles mosquitoes. People with malaria are typically very sick with high fever, chills, sweats, headaches, body aches, general malaise, and nausea and vomiting. Severe malaria may include brain infection, sudden difficulty breathing, heart failure, and kidney failure. Illness and death can usually be prevented with timely, appropriate treatment. About 1,700 cases of malaria are diagnosed in the United States each year. The vast majority of cases in the United States are in travelers and immigrants returning from countries where malaria transmission occurs, many from sub-Saharan Africa and South Asia. Anopheles mosquitoes capable of transmitted malaria exist in the United States, so there is a constant risk that malaria transmission could resume in the United States. Prior to malaria elimination efforts in the United States during 1947–1951, malaria was endemic over much of the United States.
- **Saint Louis encephalitis** is transmitted to humans by the bite of an infected mosquito. Most infected persons have no apparent illness. Early symptoms of those who become ill include fever, headache, nausea, vomiting, and fatigue. Severe disease (inflammation of the brain) occurs more commonly in older adults; in rare cases, long-term disability or death can result. There is no specific treatment for SLE. Most cases of SLE have been in eastern and central United States. No cases of SLE have been reported in Idaho during 2007–2017; however, SLE was detected in mosquitoes in Gem County, Idaho in 2017.
- **West Nile virus** is most commonly spread to people by mosquitoes. About 1 in 5 people who are infected have a fever and other symptoms. About 1 out of 150 infected people develop a serious, sometimes fatal, illness. There are no vaccines to prevent WNV disease in human and no specific medications to treat WNV disease. WNV has been reported from all states in the continental United States.
- **Zika virus** is transmitted by mosquitos (Aedes aegypti and Aedes albopictus), through sex, from an infected pregnant woman to her fetus, and likely by transfusion of tainted blood. Many people infected with Zika virus have no symptoms or only mild symptoms. The most common symptoms are fever, rash, headache, joint pain, red eyes, and muscle pain. Zika infection during pregnancy can cause severe brain defects. It is also linked to miscarriage, stillbirth, and other birth defects. Anyone who lives in or travels to an area where local transmission of Zika virus is occurring can be infected. In the United States, local mosquito-borne transmission of Zika virus has been reported in Miami-Dade County, Florida, and Brownsville, Texas. Zika virus infections in Idahoans have been reported; however, they were not infected in Idaho. The mosquito species known to transmit Zika virus are not found in Idaho, but could be imported (for example, in tires or potted plants) from areas where they occur.

13.1.7 Mumps

Mumps is a contagious disease caused by the mumps virus. It is spread through saliva or mucus from the mouth, nose, or throat through coughing, sneezing or talking, sharing items such as cups or eating utensils, and touching contaminated objects. Mumps typically start with a few days of fever, headache, muscle aches, tiredness, and loss of appetite, followed by swollen and tender salivary glands under the ears on one or both sides. Some people who get mumps have very mild or no symptoms; most people with mumps recover completely in a few weeks. Complications of mumps include inflammation of the testicles, brain, lining of the brain and spinal cord, ovaries, or breasts. Deafness can also occur. There is no specific treatment for mumps. The best way to protect against mumps is to be vaccinated with the measles-mumps-rubella vaccine. Mumps outbreaks can occur in a highly vaccinated population, especially in settings where people are in close contact, such as colleges and camps.

13.1.8 Whooping Cough

Pertussis (whooping cough) is a highly contagious, respiratory disease caused by the pertussis bacterium. Early signs of pertussis resemble those of a cold, after 1-2 weeks, uncontrollable, violent coughing followed by vomiting or exhaustion can occur. Pertussis can cause serious illness in people of all ages but is most dangerous for young babies. About half of babies younger than one year old who get pertussis need hospital care and of those, about 1 in 100 will die. Vaccines that protect against pertussis include DtaP, for babies and children, and Tdap for preteens, teens, and adults.

13.1.9 Plague

Plague is a disease that affects humans and other mammals. It is caused by the bacterium, Yersinia pestis. Humans usually get plague after being bitten by a rodent flea that is carrying the plague bacterium or by handling an infected animal. Historically, plague pandemics have killed millions of people in Asia and Europe (CDC 2021). Today, prompt treatment or prophylaxis with certain antibiotics is effective against plague. Plague was introduced into the United States in 1990 and human plague infections continue to occur in the western United States. Significantly more cases occur in parts of Africa and Asia (CDC 2022). An outbreak of plague among ground squirrels occurred in southwestern Idaho during 2016 and 2017.

13.1.10 Severe Acute Respiratory Syndrome

Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by SARS-associated coronavirus (SARS-CoV). SARS usually begins with a high fever and mild respiratory symptoms that can progress to a condition in which oxygen levels in the blood are too low. SARS was first reported in Asia in February 2003. Over the next few months, the disease spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained. There is no known SARS transmission anywhere in the world.

13.1.11 Tuberculosis

Tuberculosis (TB) is a disease caused by the bacterium Mycobacterium tuberculosis. The bacteria usually attack the lungs, but TB bacteria can attack any part of the body such as the kidney, spine, and brain. TB is spread through the air from one person to another when a person with TB disease of the lungs or throat coughs, sneezes, speaks, or sings. People nearby may breathe in these bacteria and become infected. Not everyone infected with TB bacteria becomes sick. If not treated properly, TB disease can be fatal. TB disease was once the leading cause of death in the United States and is one of the top ten causes of death worldwide. Multidrug-resistant TB is a public health crisis and security threat.

13.1.12 Rabies

Rabies is a viral disease of mammals most often transmitted through the bite of a rabid animal. It infects the central nervous system, ultimately causing disease in the brain and death. Over the last 100 years, rabies in the United States has changed dramatically. More than 90 percent of all animal cases reported annually to CDC now occur in wildlife; before 1960 the majority were in domestic animals. The principal rabies hosts in the United States today are wild carnivores and bats. The number of rabies-related human deaths in the United States has declined from more than 100 annually at the turn of the century to one or two per year in the 1990s. In Idaho, rabies is endemic in bats, but not in terrestrial mammals. Only bat strains of rabies have been documented in Idaho. Most rabid species detected have been bats; however, since 1967, three skunks, three cats, one bobcat, and one horse were found to have rabies, as well as one raccoon, which was imported from Florida. Since 2012, skunk rabies has rapidly spread westward to the Colorado Front Range, illustrating potential for spread into previously non-endemic areas.

13.2 HAZARD LOCATION

A pandemic could affect any part of the State of Idaho. Densely populated areas have greater potential for person-to-person transmission than less densely populated areas. Areas of abundant standing water (including areas used for flood irrigation) which provide a breeding site for mosquitos could be more prone to an outbreak of mosquito-borne diseases.

13.3 PREVIOUS HAZARD OCCURRENCES

13.3.1 Disaster and Emergency Declarations

Known pandemic events that have impacted the State of Idaho and resulted in federal disaster or emergency declarations between 2018 and 2022 are identified in Table 13-1. Appendix D lists events prior to 2018.

Table 13-1. Pandemic Federal and State Declarations (2018 to 2022)

Incident Type	Declared Type	Date Declared	Declaration Number	Counties Affected
Pandemic	Coronavirus	3/2/2020	ID-01-2020	N/A
Biological	COVID-19	4/9/2020	DR-4534-ID	All 44 counties

Source: FEMA 2023

The following disaster declarations or emergency proclamations related to pandemic events have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 1 pandemic-related event, classified as COVID-19.
- **Idaho State Emergency Proclamations, 2018 – 2022**: 1 pandemic-related event, classified as coronavirus.
- No USDA disaster declarations or proclamations related to pandemic-related events have been issued relevant to Idaho or any of its counties.

Figure 13-1 shows the counties affected by these declarations.

13.3.2 Event History

Table 13-2 lists significant pandemic events that impacted the State of Idaho between 2018 and 2022. Appendix D lists events prior to 2018.

Table 13-2. Pandemic in Idaho (2018 to 2022)

Date	Event Type	Counties Affected	Description
March 2020 – Present	COVID-19 Pandemic	Statewide	The first case of COVID-19 in Idaho was detected on March 13, 2020, in Boise. The ongoing COVID-19 global pandemic is confirmed to have infected over 767,000,000 people and has led to the deaths of nearly 7,000,000.

Idaho experiences seasonal influenza yearly. Each year, the Idaho Department and Health and Welfare releases an annual reportable disease summary and updates Idaho reportable disease trends. The annual reports are located on the Department's website.

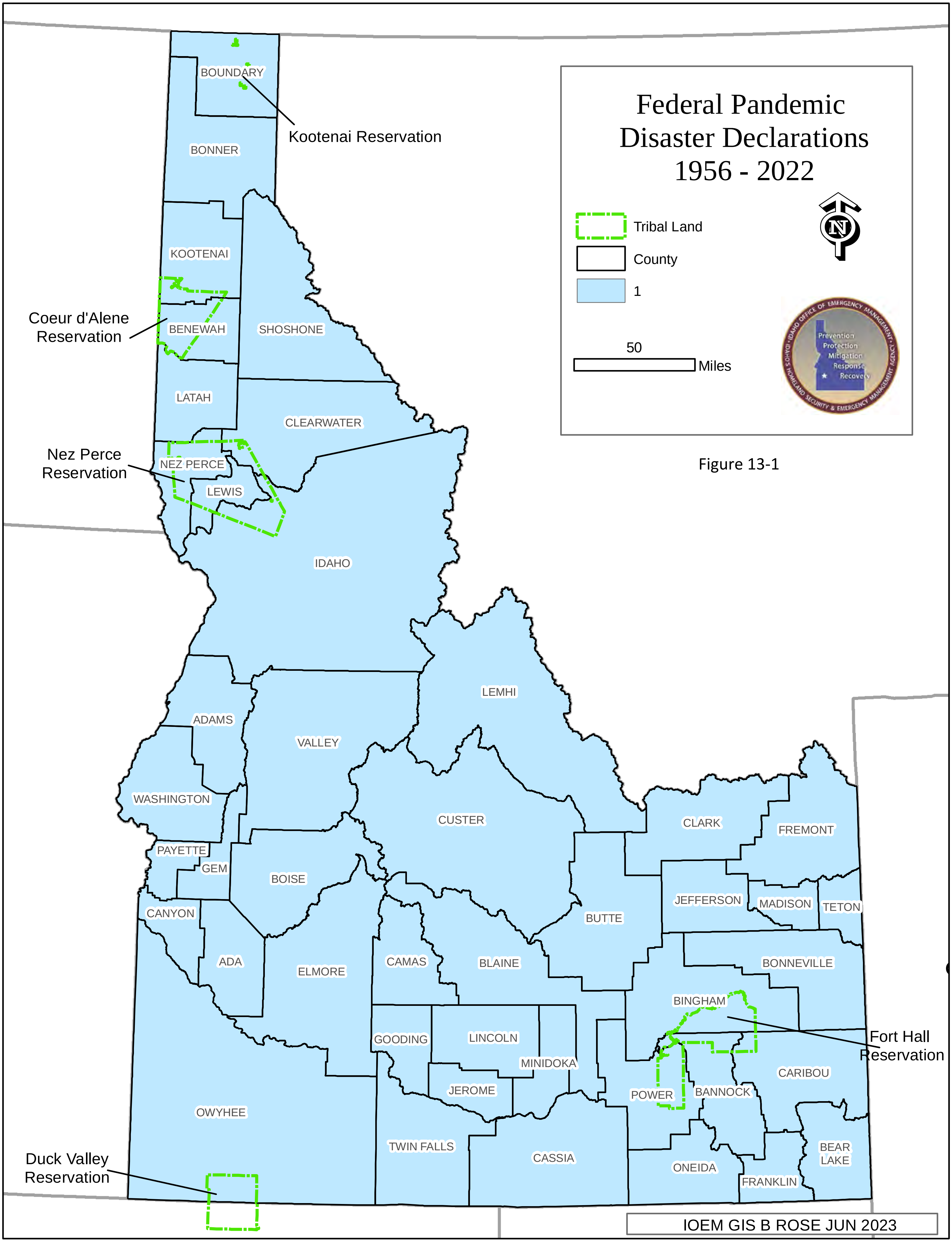

Federal Pandemic Disaster Declarations 1956 - 2022
Tribal Land
County
1
50
Miles
N
Idaho Office of Emergency Management
Idaho's Homeland Security & Emergency Management Agency
Prevention
Protection
Mitigation
Response
Recovery
Kootenai Reservation
Coeur d'Alene Reservation
Nez Perce Reservation
Fort Hall Reservation
Duck Valley Reservation
BOUNDARY
BONNER
KOOTENAI
BENEWAH
SHOSHONE
LATAH
CLEARWATER
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
JEROME
CARIBOU
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
IOEM GIS B ROSE JUN 2023

Figure 13-1

13.4 PROBABILITY OF FUTURE HAZARD EVENTS

13.4.1 Overall Probability

Based on historical pandemic events in Idaho, the State has a high probability of future events occurring within the next 25 years. According to FEMA and the Idaho Department of Health and Welfare, Idaho experienced one multi-year pandemic between 2018 and 2022. It is reasonable to expect similar averages in the future.

13.4.2 Climate Change Impacts

Changes in temperature and precipitation can significantly influence seasonality, distribution, and prevalence of vector-borne diseases (Rocklöv and Dubrow 2020). A changing climate may also create conditions favorable for invasive mosquitoes in Idaho.

13.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can help planners take action to ensure that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential development trends that could affect hazard vulnerability:

- Projected changes in population
- Potential or projected development
- Other identified conditions as relevant and appropriate

The U.S. EPA’s Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change’s Special Report on Emissions Scenarios. Population change projections were made with assumptions regarding fertility, mortality, and immigration, which were then used to drive the land use projections.

Counties that are projected to experience population growth by 2026 and 2029 are shown in Table 3-4. Future population growth will directly impact the State’s vulnerability to pandemics: as populations grow, so will population density, which will increase the chance of transmission of communicable diseases from person to person. High density developments will also increase the State’s vulnerability to pandemics transmitted from person to person, as people live and work closer together.

13.5 IMPACT ANALYSIS

13.5.1 Severity

The severity of an infectious disease pandemic or threat in Idaho varies depending on the organism, the susceptible population, ease of transmission, ability to identify infected persons before they can spread disease, and availability and effectiveness of control measures. Pandemics around the nation have the potential to affect the State’s populated areas. As described in the Idaho Emergency Operations Plan (EOP), a yearlong influenza pandemic without intervention could result in almost 10 million hospitalizations and an estimated 1.9 million

Americans could die. The COVID-19 pandemic infected over 690 million people and caused more than 6.8 million deaths worldwide in just over three years and is still ongoing.

13.5.2 Warning Time

Pandemics could occur with very little warning. Air travel could hasten the spread of a new organism and decrease the time available for early implementation of interventions. Influenza outbreaks are expected to occur simultaneously throughout much of the United States, preventing shifts in human and material resources that usually occur in response to other disasters. Warning time for influenza will depend on the origin of the virus and the amount of time needed to identify the virus.

13.5.3 Cascading Impacts

Cascading impacts are the impacts that result when one type of hazard event triggers one or more other hazard events, which may in turn trigger still others. While pandemic events do not influence any natural hazards, it is possible that a large, long-term event could result in civil disorder. Cascading impacts related to pandemics are related to an outbreak’s direct impact on the population of Idaho. Most estimates of population effects have been done in relation to pandemic influenza. The State’s healthcare systems and critical infrastructure will be impacted. An increase in demand for essential employees, including but not limited to state-employed healthcare workers, will be required to support critical response operations. Economic impacts are likely to occur during a pandemic and may lead to a global recession. Approximately 10 percent of the workforce will be absent at a given time during a pandemic. Without workers to fulfill key roles during a pandemic, cascading effects could include utility failures and other critical infrastructure disruptions. There could also be a reduction in the efficiency of emergency services. Healthcare systems’ ability to respond to pandemic events could be affected. Power outages could cause loss of HVAC and water pressure, inability to sterilize instruments, and loss of refrigeration and ability to cook meals. Staff may be unable to view radiographs using digital systems, register patients, or transport patients and supplies between floors.

The following are other notable cascading impacts associated with the pandemic disease hazard:

- As was seen with the COVID-19 pandemic, these events can cause significant economic impacts that may take decades to correct.
- Disease outbreaks reaching pandemic proportions can cause social impacts on a global scale. Civil disorder, protests, depression, and anxiety are a few of the social impacts of the COVID-19 pandemic.

13.5.4 Environmental Impacts

The environmental impact of an epidemic or pandemic depends on the type of disease. Immediate environmental effects may be related to waste management and water treatment. Indirect environmental effects could occur as a result of population loss and are outside the scope of this document.

Diseases that are transmitted from animals to humans could affect agriculture, possibly resulting in the need for quarantine, testing, depopulation, and mass disposal through burial, composting, or incineration, each of which have potential environmental impacts.

Diseases caused by highly infectious agents or those that persist in the environment can have high environmental impact and high costs from the need to dispose of contaminated waste.

Antivirals and antibiotics used for the treatment of infectious diseases can be excreted into wastewater in a biologically active form and affect microorganisms responsible for wastewater nutrient removal in wastewater treatment plants or rivers. In one model applied to the Thames river catchment, a mild influenza pandemic was projected to have a negligible ecotoxicological hazard, but the fraction of microorganisms potentially affected in moderate and severe pandemics ranged from 0 to 14 percent and 5 to 32 percent, respectively, in wastewater treatment plants, and 0 to 14 percent and 0 to 30 percent, respectively, in rivers (NIH National Library of Medicine 2011).

The following are other environmental impacts as demonstrated by the ongoing COVID-19 pandemic:

- Air pollution dropped suddenly during the COVID-19 lockdown between March 19, 2020, and May 7, 2020. Overall improvement of air and water quality, reduction of noise, and restoration of ecology were all noted during the pandemic.
- An increased demand for single-use plastic products during the pandemic led to more than 8 million tons of pandemic-associated plastic waste being generated globally, with more than 25,000 tons entering the global ocean. Most of the plastic is from medical waste generated by hospitals. Powerful disinfectants end up in water supplies. Microplastics from degrading personal protective equipment (e.g., masks, gloves) can contribute to high concentrations found in fish, water, sediments, soils, and the air.

13.5.5 Local Hazard Mitigation Plan Impacts

Twenty-seven of the hazard mitigation plans prepared for Idaho's counties list pandemic as a hazard of concern, and nine counties rank it as a high-impact hazard:

- Bingham
- Caribou
- Cassia
- Clark
- Franklin
- Fremont
- Lincoln
- Minidoka
- Shoshone

An additional 11 counties identified pandemic as a medium-impact hazard. Local plans do not provide data that can be used to summarize statewide exposure and loss potential of people and structures for the pandemic hazard.

13.6 VULNERABILITY OF PEOPLE AND ASSETS

13.6.1 Total and Socially Vulnerable Populations

All populations in the State of Idaho are susceptible to pandemic events. Populations who are young or elderly or have compromised immune systems are likely to be more vulnerable. The relative ease of world-wide travel in addition to the world's expanding global food industry ensures that all countries are vulnerable to pandemic events at any time. The size and extent of an infected population depends on how easily the illness is spread, mode of transmission, and amount of contact between infected and uninfected individuals. Locations with higher-density populations are more susceptible to outbreaks, as the disease can be transmitted more easily.

Because of concerns about COVID-19, an estimated 41 percent of U.S. adults delayed or avoided medical care, including urgent or emergency care (12 percent) and routine care (32 percent). Avoidance of urgent or emergency care was more prevalent among unpaid caregivers for adults, persons with underlying medical conditions, Black adults, Hispanic adults, young adults, and persons with disabilities (Czeizler, et al. 2020).

Food insecurity can impact those who lose employment during a pandemic, who are not eligible for Supplemental Nutrition Assistance Program benefits due to immigration status, or who may not be able to access food at stores because of supply chain issues or lack of stock. Food banks may be the only option for these families. Mental health impacts were especially noted among young adults and those with a household income of less than $50,000. Mental stress and anxiety may be experienced by both the population directly impacted or first responders. Associated economic impacts include health care costs and lost productivity at work or in the home.

Because the pandemic hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction. Table 13-3 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 13-3. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

At the Idaho Department of Health and Welfare (IDHW), 100 staff are considered state assets to support a pandemic response.

13.6.2 National Risk Index Ratings

The National Risk Index does not include data on hazard events relating to pandemics for the State of Idaho.

13.6.3 Vulnerability of Facilities, Infrastructure and Community Lifelines

Pandemic events will not directly impact State-owned or -leased facilities by causing damage to these assets. However, the functionality of the assets could be impacted if the people who operate the facilities are sick and unable to do so, causing facilities to be temporarily closed, or if the demand for community lifelines increases dramatically. The COVID-19 pandemic of 2020 is assumed to be relevant example of the vulnerability of State assets. That event caused a great surge in the function of critical facilities. The health and medical lifeline was impacted, while the remaining lifelines were operational (see Appendix M).

IDHW has a tool that analyzes the capacities of hospitals, clinics, care facilities, pharmacies, etc. During COVID-19, IDHW provided surge needs assessments per facility in each health district almost daily. The facilities themselves were operational, sometimes at capacity, and had to send patients to other facilities. IDHW coordinated with IOEM on the tracking, supply, storage, and delivery of PPE (gloves, gowns, masks, etc.) The Idaho National Guard assisted with vaccination tracking and other staffing needs, when capacity was reached. The assessments informed state situation reports that were shared with FEMA, which generated regional and national situation reports.

Idaho will continue to coordinate pandemic information and data in future plan updates.

13.6.4 Potential Losses Due to a Hazard Event

Health hazard events are not likely to result in any losses associated with damage or impairment to State assets. All losses from this hazard would be associated with impacts on operations and the economy. The people who staff and maintain State facilities, as well as those served by the facilities, are vulnerable to the hazard. Large rates of infection may result in an increase in the rate of hospitalization, which may overwhelm hospitals and medical facilities and lead to decreased service for those seeking medical care (Gilligan 2021).

Potential statewide economic impacts include unemployment, price increases, and supply chain interruptions (Center on Budget and Policy Priorities 2022). Burnout and workforce shortages may be seen among first responders and public health and healthcare workers. Depending on the industry, worker morbidity and mortality increases, as do workplace disruptions (Centers for Disease Control 2022); (National Library of Medicine 2021); (Peters, et al. 2022). Significant economic disruption can occur due to death, loss of work time, food insecurity, and costs of treating or preventing the spread of a disease.

13.7 MITIGATING THE HAZARD

13.7.1 Catalog of Potential Mitigation Alternatives

Table 13-4 summarizes a range of potential alternatives for mitigating the pandemic hazard.

Table 13-4. Potential Opportunities to Mitigate the Pandemic Hazard

Community-Scale	Organizational-Scale	Government-Scale
• **Manipulate the hazard:** ❖ Insect and other animal abatement • **Reduce exposure and vulnerability:** ❖ Proper hygiene ❖ PPE ❖ Social distancing ❖ Focus on personal health ❖ Immunization ❖ Eliminate or reduce environments on private property that favor mosquito infestation (or other insects and animals) • **Build local capacity:** ❖ Storage of PPE ❖ Storage of supplies and food to reduce need to enter public spaces ❖ Education	• **Manipulate the hazard:** ❖ None • **Reduce exposure and vulnerability:** ❖ PPE ❖ Social distancing, including revising in-person work schedules as possible ❖ Distanced work environment ❖ Regular cleaning of work environment ❖ Immunize employees • **Build local capacity:** ❖ Storage of PPE ❖ Equipment for monitoring ❖ Trainings for staff ❖ Inform employees on human health hazards	• **Manipulate the hazard:** ❖ Insect and other animal abatement • **Reduce exposure and vulnerability:** ❖ PPE ❖ Social distancing ❖ Eliminate or reduce environments on private property that favor mosquito infestation (or other insects and animals) ❖ Distanced work environment ❖ Regular cleaning of work environment ❖ Immunize employees • **Build local capacity:** ❖ Storage of PPE ❖ Equipment for monitoring/treatment ❖ Trainings for staff ❖ Public outreach ❖ Collaborate with county health departments to ensure the health and welfare for the state ❖ Public education and outreach
Nature-based opportunities ❖ There are no identified nature-based solutions to mitigate the impacts from this hazard		

13.7.2 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the pandemic hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects
- Action 2018-006: Create all-hazards publications for public education.

Chapter 14. Radiological Accidents

Radiological Accidents

Radiological or nuclear incidents can occur anywhere so the State of Idaho must plan and be ready for any radiological or nuclear incident, regardless of the scale or location within the state. Due to the nature of radiological particles, Idaho could also be at risk from a neighboring state's radiological or nuclear incident that is carried into the state via multiple pathways.

CHANGES SINCE 2018

+0

Declared Disasters

+0

Radiological Accident Events

STATE IMPACT RATING

Low (4)

SOCIALLY VULNERABLE POPULATION

21.9%

Of Total Population

384,570

Persons

CLIMATE PROJECTIONS

No direct impacts to radiological accidents from changes in the climate

Increased wildfire risk may contribute to radiological accidents if facilities containing radiological materials are impacted by a wildfire

CANALS

8,278

Miles

COMMUNITY LIFELINES

3,238

Total

5,339

State Buildings

1,830

State Bridges

380

State Dams

5,935

Miles of State Roads

14. RADIOLOGICAL ACCIDENTS

14.1 HAZARD DESCRIPTION

Nuclear/radiological incidents can occur anywhere within the United States. The State of Idaho is not immune to these risks, and consequently must plan and be ready for any radiological or nuclear incident, regardless of the scale or location within the state. Due to the nature of radiological particles, Idaho could also be at risk from a neighboring state's nuclear/radiological incident that is carried into the state via multiple pathways. Incidents may occur for a wide variety of reasons and can range significantly in scope and severity.

The most common nuclear/radiological incidents occur because of loss, theft, or mismanagement of relatively minor or low-level radioactive sources or technologically enhanced, naturally occurring radioactive material. Further, natural hazards, such as fires and severe weather, may impact nuclear or radiological facilities resulting in an incident. The 2011 Fukushima Daiichi nuclear disaster is an example of how this could result in a major international nuclear or radiological incident.

Nuclear/radiological incidents can also result from terrorist attempts to acquire or use nuclear threat devices or the nuclear proliferation. Idaho's nuclear or radiological responses can occur as part as the effort to thwart imminent terrorist threats or would occur in response to a nuclear or radiological attack.

Nuclear and radiological facilities include fixed facilities that store nuclear material; those that store or use radioactive material that includes commercial nuclear reactors and fuel cycle facilities (uranium enrichment, fuel fabrication, and disposal); some non-fuel cycle industries (such as radiation source and radiopharmaceutical manufacturers); and other facilities and industries involved in the production, refinement, handling, storage, transportation, or use of nuclear/radioactive materials.

Nuclear threat devices include radiological devices and improvised nuclear devices (INDs). Radiological dispersal devices and radiation exposure devices release radioactive material into the environment or emit radiation as part of criminal activity or an act of terrorism. The radiological harm caused by these devices is principally contamination, and denied use of the contaminated area, perhaps for many years. High radiation exposures are unlikely, but costs associated with remediation and loss of access due to an effective radiological dispersal device could be significant.

In addition, an IND using lost or stolen special nuclear material or introduced into the United States from a program of a nuclear state can achieve a nuclear yield and result in mass destruction of property and radioactive contamination. Even a relatively small nuclear detonation in an urban area could result in tens of thousands of fatalities. A large number of survivors would require medical care, behavioral health and dose assessments given concerns of medically relevant exposure. Massive infrastructure damage and hundreds of square miles of contamination would also be a concern.

Response and Recovery Mission Area activities for minor nuclear/radiological incidents are usually managed at the local level with occasional state and federal assistance as required. Generally, increased regulatory control, safeguards, and security accompany larger, more hazardous radioactive sources or materials, as they pose a greater threat to human health and the environment. However, for those incidents involving federal crimes relative to the theft, illegal acquisition, or use of weapons of mass destruction or that involves federal crimes, including those concerning terrorism, federal law enforcement will lead and coordinate the related law enforcement, investigative, intelligence, and crime scene activities. This law enforcement response is not specific to the amount of material involved, but rather it is applicable based on whether a federal crime has been committed and the threat the material poses for utilization by terrorists.

Even very small amounts of radiological sources can cause significant contamination of the environment without the use of explosives to spread the contamination. Whether this release was intentional (criminal) or accidental; the toll environmentally, economically, and socially can be significant.

14.1.1 Radiation Forms

Radioactivity is energy emitted as particles or waves from spontaneous nuclear transformations in unstable atoms in the formation of new elements. The potential harm that radiation can impose to living organisms and the environment is the motive for tight Federal control of radioactive sources. Radiation can come in two forms: ionizing and non-ionizing.

Non-Ionizing Radiation.

Non-ionizing radiation is electromagnetic radiation (or waves) that lack sufficient energy to ionize atoms or molecules (remove electron bonds from an atom). The danger posed by non-ionizing radiation sources (e.g., lasers, microwave or UV producing machines, and linear accelerators) are injury to the eyes or skin. This type of source can be made inert by shutting off the machine whereby the production of non-ionizing radiation will cease. Emergencies involving non-ionizing radiation are typically confined to the industrial or medical building location of the equipment itself and rarely pose any risk to the general public.

Ionizing Radiation.

Ionizing radiation is energetic waves or particles that have sufficient energy to ionize other atoms (break electron bonds). This results in the biological breakdown of DNA and cellular molecules in all living organisms exposed to radioactivity. Biological effects of exposure to ionizing radiation can range from mild skin erythema to radiation sickness (nausea, vomiting, diarrhea) to death, depending on the radiation dose (the energy absorbed by the body). Ionizing radiation comes in following forms:

- Particles
  - Alpha Particles (positively charged helium nucleus)
  - Beta Particles (a free electron)
  - Neutrons
- Electromagnetic Radiation
  - X-Rays
  - Gamma-Rays

The most commonly encountered radioactive isotopes are from the elements uranium, thorium, cesium, cobalt, iodine, and strontium. These isotopes are commonly found in industrial and medical applications or occur naturally in the environment. Ionizing radiation can pose either a localized risk or a major risk to large populations depending on many contributing factors.

14.1.2 Exposure

Exposure to ionizing radiation means being exposed to the energy from radioactive particles or waves. Once people move away from a radiation source or place sufficient shielding material between them and the source, they are no longer exposed. The biological damage done by radioactive exposure does not continue after the exposure ends.

14.1.3 Contamination

Contamination is the uncontrolled deposition of radioactive substances (solids, liquids, or gases) onto people, equipment, or the environment. Contamination signifies the individual is continually being exposed to ionizing radiation until it has been removed; either by various decontamination processes, or when the body flushes it from their system. Ingestion, inhalation, and injection of radioactive particles into the body can result in a permanent dose to that individual if the body fails to excrete it through natural processes.

14.1.4 Natural Background Radioactivity

Natural radioactivity originates from cosmogonic sources as well as from radioactive elements in the earth's crust. About 340 nuclides have been found in nature, of which about 70 are radioactive and are found mainly among the heavy elements. All elements having an atomic number greater than 80 possess radioactive isotopes, and all isotopes of elements heavier than number 83 (Bismuth) are radioactive (Eisenbud and Gesell 1997).

14.1.5 Man-Made Sources

A small fraction of background radiation comes from human activities. Trace amounts of radioactive elements have dispersed in the environment from nuclear weapons tests and accidents like the one at the Chernobyl nuclear power plant in Ukraine. Nuclear reactors emit small amounts of radioactive elements. Radioactive materials used in industry and even in some consumer products are also a source of small amounts of background radiation (EPA).

14.2 HAZARD LOCATION

Radiological materials are found in many locations. The Nuclear Regulatory Commission (NRC) only requires licenses for sources with activities greater than 10 micro curies. Anyone can go online and purchase industrial button sources (instrument check sources) of multiple isotopes and have them shipped to their home. While the quantity and activity of the radioactive material in these sources is small, they could still be used for nefarious activities. Also, individuals may be able to acquire naturally occurring materials like ore directly or from online sources.

Thorium and uranium are examples of naturally occurring radioactive elements that are used as nuclear fuels. A variety of industries (e.g., oil/gas extraction industries and community drinking water treatment) that process natural material create the unintended concentration of natural radioactivity—this is referred to as technologically enhanced naturally occurring radioactive material (TENORM). Because TENORM is concentrated natural radioactive material, it can pose a radiological risk to humans and environment, however the risk is small. Incidents using these materials have a high probability of occurrence, but low probability of major impact.

Technologically produced radioactive material is generated by nuclear reactors or high energy particle accelerators, and relatively high levels of ionizing EM radiation are produced using x-ray machines. Nearly all industrial sources are licensed through the NRC. In Idaho, as of a 2017 report, there are 81 NRC licensed sources (see Table 14-1). These sources, along with TENORM sources, could pose a large risk to the public if mishandled or lost by the generating facilities. While there are strict guidelines for the storage and security of these sources, fires, natural disasters, etc. could result in unintended exposure and contamination of buildings and neighborhoods surrounding where the sources are stored.

Table 14-1. NRC Licensed Sources in Idaho

Industrial	Medical	Academic	Other	Total
39	19	3	20	81

Radioactive materials are often encapsulated inside a sealed container so that the radiation they produce may be used with reduced probability of uncontained radioactive contamination. These sealed sources can be manually breached, leading to high contamination and exposure levels.

Technologically produced sources are used extensively in medical and industrial applications. These sources have the highest probability of being involved in a radiological incident, due to the large quantities in medical facilities and the high frequency with which they are shipped or transported on local roads. They could pose a high risk of overall impact depending on isotope and half-life.

Many of the medical use isotopes have short half-lives, and most produce a high enough dose rate to be hazardous even in the short-term. Industrial uses like that of a soil density gauge are common for road construction. These devices commonly use a Cs-137 encapsulated source which has a half-life of 30.17 years. This is an example of a highly radioactive source that would stay active for a long time making it a public and environmental hazard.

The Idaho National Laboratory (INL) in eastern Idaho performs many activities involving nuclear technologies and radioactive materials including handling of radioactive waste. As one of DOE’s multi-purpose science laboratories, the INL conducts long-term programs for DOE or other funding sources. The INL site covers 890 square miles located in Butte, Bingham, Bonneville, Clark, and Jefferson counties. Work involving radioactive materials is conducted at INL on-site locations as well as in facilities in Idaho Falls. Work at the INL has included evaluation and storage of nuclear fuels, transportation of radioactive nuclear materials, management of radioactive waste, and operation of a wide variety of nuclear reactors like the Advanced Test Reactor which is used for nuclear fuel and materials testing capabilities for military, federal, university, and industry. Butte County is the only local mitigation plan listing historical frequencies of a nuclear incident due to the INL being located within the county boundaries.

While the INL facilities are primarily in the southeastern part of the State of Idaho, there are many other facilities throughout the state that have licensed radioactive sources. Additionally, radiological incidents that happen in surrounding states can also be carried into Idaho through multiple environmental and economic pathways. For these reasons, the risk for radiological emergencies exists throughout the entire state.

14.3 PREVIOUS HAZARD OCCURRENCES

An example of radiological contamination using TENORM occurred in 2014 in Ada County Idaho. An individual was collecting uranium and thorium ore, grinding it up, and trying to chemically activate and produce uranium yellow cake to sell online. This resulted in a multi-million-dollar EPA cleanup of this individual's apartment and storage units. Given that these materials were natural occurring, or below NRC license limits, these activities went unnoticed for a long period of time until NRC was notified about this individual attempting to ship a box into another country. This is an example of how small quantities of material can still lead to large cleanup operations and a potential public hazard. While no members of the general public were exposed to these materials, an apartment fire could have drastically changed this scenario and its impact on surrounding neighborhoods.

The use of phosphate ore processing slag as fill material in southeast Idaho required an extensive remedial response, and the Salmon River Uranium Development site also required remediation. Incidents involving manmade radioactivity in industrial applications have been infrequent and generally have had minimal impact to the general public. Improper control of industrial radioactive sources has occurred in several counties in Idaho. Scrap yards and waste disposal facilities are likely places for improperly handled industrial sources to be discovered. Most of these facilities attempt to exclude hazardous/radioactive materials, and some have basic radiation detection instruments. However, detection is not assured, and not all facilities are diligent. To date, these incidents have not resulted in any known exposure of the general public.

The most significant nuclear incident in Idaho occurred at the INL in 1961 at the Stationary Low-Power Reactor Number One (SL-1), a small Army prototype reactor that had been running since 1958. It is believed that a central control rod was withdrawn beyond the safe limit, causing a large power surge. The resulting explosion destroyed the reactor, released large amounts of radioactivity, and took the lives of three reactor operators. Many industry-wide improvements followed. Exposure limits to individuals were curtailed, the basic design of the reactor was changed to prevent physical rod removal, and additional safety levels were added (Touran 2022). There have been no unplanned releases that resulted in measurable radioactivity outside the site boundaries. Past practices have resulted in intentional releases and detection of radioactivity at low levels in the air and groundwater beyond the INL site boundary. Also, past solid waste disposal practices included burial and sub-surface storage of transuranic/mixed transuranic waste, which has been targeted for the ongoing remediation work.

The Department of Environmental Quality Oversight Program (DEQ-OP) monitors radiation levels within the INL, at boundary locations, and at distant cities. They monitor air, soil, water, and vegetation. Also, they have 9 real-time gamma monitoring stations available for public viewing at www.idahoop.org. The EPA's RadNet system monitors the United States' air, precipitation, and drinking water to track radiation in the environment. In Idaho, there are two RadNet systems, one in Boise and one in Idaho Falls.

14.3.1 Disaster and Emergency Declarations

No FEMA, USDA, or State disaster declarations or proclamations related to radiological accidents have been issued relevant to Idaho or any of its counties

14.3.2 Event History

No past events have been recorded related to radiological accidents relevant to Idaho or any of its counties.

14.4 PROBABILITY OF FUTURE HAZARD EVENTS

There are no identified TENORM issues in Idaho, although there is a relatively high potential for them, given the extractive industries operating in the state (and surrounding states) and the occurrence of uranium and thorium ore deposits in the state. Radioactive sources are used in a wide variety of industrial and consumer applications including soil density/moisture gauges, smoke detection, well logging, weld inspection, and radio luminescent devices. Incidents involving manmade radioactivity in these applications have occurred sporadically, so the future rate of occurrence of incidents involving industrial radioactive sources can't be projected on the basis of past experience. However, future incidents should be anticipated. The most prevalent use of radioactive material in Idaho is for nuclear medicine. Hospitals and clinics in every region use radioactive isotopes for diagnostics and treatment. Medical isotopes are typically transported by common carrier either by air or road. Typically, nuclear medical applications involve the use of relatively large amounts of short-lived radioactivity. Incidents involving radiopharmaceuticals could result in unintended exposures but are not likely to pose a long-lasting hazard.

As previously discussed, the INL is a DOE nuclear research and development facility that is managed and operated for DOE by private contractors. The INL Cleanup Project (ICP) is responsible for decontamination, demolition, decommissioning, waste management, and remediation of INL site facilities. Ongoing ICP projects include preparing and shipping remote-handled transuranic waste for disposal, exhuming, preparing, and shipping targeted transuranic waste for disposal, and the Integrated Waste Treatment Unit. The Integrated Waste Treatment Unit will process the remaining tank farm waste at INL. It currently is undergoing testing. The treatment unit is funded through DOE/EM and is operated to prepare and ship mixed transuranic waste for disposal at the Waste Isolation Pilot Plant. The Advanced Mixed Waste Treatment Project may serve as a DOE system-wide resource for processing waste to meet Waste Isolation Pilot Plant acceptance criteria. Future laboratory operations are expected to be similar to recent past operations. Operations of the Advanced Mixed Waste Treatment Project are expected to be reduced as specific projects are completed. Shipments from these facilities to the Waste Isolation Pilot Plant pose a low risk for emergency due to the strict requirements for the vessels they are shipped in.

Safe transport will remain a small concern as nuclear spent fuel shipments continue in Idaho. Fuel shipments are transported by rail in containment vessels that undergo strict accident proof testing; these shipments pose little to no actual risk to the general public. No accidents have been reported in transporting spent fuel in Idaho.

14.4.1 Future Changes that May Impact State Vulnerability

There are no land-use regulations that restrict building around facilities that handle radioactive materials or generate EM radiation. Mobile radiation sources (e.g., radiography or soil moisture/density gauges) are designed so that they may be transported, and the NRC has strict guidance on the storage of these devices when not in use.

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections.

The risk from radiological incidents is expected to remain the same; however, there may be an increase in the population impacted if incident locations are in areas of projected growth. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029. The INL is located in Butte and Bonneville Counties; two counties with projected population growth.

14.5 IMPACT ANALYSIS

14.5.1 Severity

All sources of energy pose some risk to human health or environmental quality. Radiation protection standards for humans, embodied in regulations that U.S. nuclear facilities must adhere to, exceed ample protection for other species and for ecosystems. Each year, U.S. residents receive an average dose from natural background radiation of about 3.1 mSv (310 mrem). From medical procedures, it adds about another 3.1 mSv for a total of about 6.2 mSv (620 mrem) per year. The NRC is the primary agency for regulating radioactive materials and ensuring public safety. The NRC set a radiation dose limit of 1 mSv (100 mrem) in a year and 0.02 mSv (2 mrem) in an hour for a member of the public from regulated radiation sources; however, the agency excludes natural and medical uses of ionizing radiation (U.S. NRC 1991).

Exposure to high levels of radiation is known to cause cancer and, at very high levels, radiation poisoning and even death. But the effects on human health from very low doses of radiation—such as exposure to varying levels of background radiation does not significantly affect cancer incidence (U.N. SCEAR 2000).

Nuclear incidents refer to incidents involving (1) release of significant levels of radioactive materials or (2) exposure of workers or the general public to radiation. Primary concerns following a nuclear incident or accident are impact on public health from direct exposure to a radioactive plume; inhalation of radioactive materials; ingestion of contaminated food, water, and milk; and long-term exposure to deposited radioactive materials in the environment that may lead to either acute (radiation sickness or death) or chronic (cancer) health effects.

The severity of radiological accidents is highly deterministic depending on; the activity level of the isotope, the type of energy released, the quantity of material released, the exposure level to the public and emergency workers, and the environmental and biological pathways affected. The general public's sensitivity to radiological issues can make even the smallest accident seem greater than it is. The Idaho Department of Environmental Quality INL Oversight Program (DEQ-OP) in Idaho Falls is the State radiological asset. They have the capability to characterize all radiological hazards and environmental/public impact, as well as providing emergency response capabilities statewide.

The U.S. Centers for Disease Control and Prevention (CDC) developed the Radiation Hazard Scale as a tool for communication in a radiological emergency. This tool (see Table 14-2) provides a frame of reference for relative hazards of radiation. It is designed for use only in radiation emergencies and is applicable to short-term exposure durations (CDC 2021).

Table 14-2. Description of the Radiation Hazard Scale Categories

Category	Description
5	Category 5 means that radiation doses are dangerously high and potentially lethal. High doses of radiation can cause massive damage to organs of the body and kill the person. The exposed person loses white blood cells and the ability to fight infections. Diarrhea and vomiting are likely. Medical treatment can help, but the condition may still be fatal in spite of treatment. At extremely high doses of radiation, the person may lose consciousness and die within hours.
4	Category 4 means that radiation doses are dangerously high and can make people seriously ill. Radiation doses are not high enough to cause death, but one or more symptoms of radiation sickness may appear. Radiation sickness, also known as Acute Radiation Syndrome (ARS), is caused by a high dose of radiation. The severity of illness depends on the amount (or dose) of radiation. The earliest symptoms may include nausea, fatigue, vomiting, and diarrhea. Symptoms such as hair loss or skin burns may appear in weeks.
3	Category 3 means that radiation doses are becoming high enough where we may expect increased risk of cancer in the years ahead for people who are exposed. Leukemia and thyroid cancers can appear in as few as 5 years after exposure. Other types of cancer can take decades to develop. Studies have shown that radiation exposure can increase the risk of people developing cancer. This increased risk of cancer is typically a fraction of one percent. The lifetime risk of cancer for the population due to natural causes is approximately 40%. The increase in risk of cancer from radiation depends on the amount (or dose) of radiation, and it becomes vanishingly small and near zero at low doses of radiation.
2	Category 2 means that radiation levels in the environment are higher than the natural background radiation for that geographic area. However, these radiation levels are still too low to observe any health effects. When radiation levels are higher than what we normally have in our natural environment, it does not necessarily mean that it will cause us harm.
1	Category 1 means that radiation levels in the environment are within the range of natural background radiation for that geographic area. Low amounts of radioactive materials exist naturally in our environment, food, air, water, and consequently in our bodies. We are also exposed to radiation from space that reaches the surface of the Earth. These conditions are natural, and this radiation is called natural background radiation.

Source: (CDC 2021)

14.5.2 Warning Time

The warning time for an incident occurring will vary and depends on the nature and scope of the incident. Facilities that handle radioactive material or any place where radiation-producing equipment is used, the radiation tri-foil sign must be displayed. This sign is used as a warning to protect people from being exposed to radioactivity (U.S. DHSS - REMM 2023).

14.5.3 Cascading Impacts

The secondary impacts associated with radiological incidents include those impacting the health of the community and environment. Depending on the severity of exposure, impacts may include temporary illness or injury, permanent medical conditions, or death. Secondary impacts have the potential to occur regardless of whether naturally occurring or man-made. From a human-caused perspective, it is possible that small or large-scale radiological incidents could initiate civil disturbances.

14.5.4 Environmental Impacts

The impact on the environment that a radiological event will have depends on where the event occurs and the amount of radiological material released. Animals, plants, and other wildlife in the surrounding areas of the event can see devastating impacts. Radiation pollution within waterways also accumulates within fish and other aquatic organisms, and runoff from radiation within the soil causes additional contamination.

Environmental impacts of incidents involving radioactive materials are generally similar to impacts caused by other hazardous materials (See Section 11.5.4). A large release (accidental air emission or spill) that causes soil contamination could result in radiation exposure and uptake of radioactive material into plants and animals living on the contaminated soil or eating the effected vegetation. The environmental and health impacts of a release that is large enough to cause concern for protection of the general public would be evaluated by the Idaho Department of Environmental Quality with help from the Federal Radiological Monitoring and Assessment Center, and other State of Idaho agencies. Cleanup of small releases would avoid environmental impacts that might otherwise occur through the terrestrial environment and food chain, including runoff to surface waters. Monitoring of species is performed periodically to identify any effects in the ingestion pathways.

Snake River Plain Aquifer concerns were addressed and protected through the 1995 Settlement Agreement between the State of Idaho, DOE, and U.S. Navy which prioritized removal of stored fuel. Recycled fissionable materials for the U.S. Navy and liquid radioactive waste from about 100 reactors nationwide were processed into dry, calcined waste. Solid waste – contaminated tools, clothes, trash – stored above ground in containers or buried in trenches posed the greatest threat to the Snake River Aquifer.

14.5.5 Local Hazard Mitigation Plan Impacts

While eight of the hazard mitigation plans prepared for Idaho’s counties list radiological accidents as a hazard of concern, none of the counties ranked radiological accidents as a high-impact hazard.

Additionally, none of the counties identified radiological accidents as a medium-impact hazard. Local plans do not provide data that can be used to summarize statewide exposure and loss potential of people and structures for the radiological accident hazard.

14.6 VULNERABILITY OF PEOPLE AND ASSETS

14.6.1 Total and Socially Vulnerable Populations

The accidental or intentional release of radiological materials or radiation may threaten public health, property, and the environment, especially those identified as highly vulnerable. Highly vulnerable populations include the elderly (persons over the age of 65), the young, pregnant women and people who are ill or immunocompromised.

There are no commercial nuclear power plants within the State of Idaho. However, the Idaho National Laboratory (INL) is the site of the first nuclear power plant in the U.S. Plans to expand and update this power plant is underway and expected to be fully operational by 2023 (U.S. Energy Administration 2023).

Although Idaho has many renewable resources which produce much of the state’s electricity, power plants such as the one previously mentioned are still operational. Especially older power plant systems, which have a higher risk for malfunction and radiological accidents.

Because the radiological accident hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction.Table 14-3 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 14-3. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

14.6.2 National Risk Index Ratings

The National Risk Index does not include data on hazard events relating to radiological accidents for the State of Idaho.

14.6.3 Vulnerability of Facilities, Infrastructure and Community Lifelines

All State-owned or -leased assets, critical facilities, and community lifelines are exposed to radiological release.

14.6.4 Potential Losses Due to a Hazard Event

Radiological accidents are not likely to result in any losses associated with damage or impairment to State assets. All losses from this hazard would be associated with impacts on the economy, based on impaired operations.

14.7 MITIGATING THE HAZARD

14.7.1 Catalog of Potential Mitigation Alternatives

Table 14-4 summarizes a range of potential alternatives for mitigating the radiological accident hazard.

Table 14-4. Potential Opportunities to Mitigate the Radiological Accident Hazard

Community-Scale	Organizational Scale	Government-Scale
Manipulate the hazard: ❖ None **Reduce exposure and vulnerability:** ❖ Increase distance between nuclear plants and development **Build local capacity:** ❖ Personal planning for potential events	**Manipulate the hazard:** ❖ None **Reduce exposure and vulnerability:** ❖ Increase distance between nuclear plants and development **Build local capacity:** ❖ Conduct training for emergency response	**Manipulate the hazard:** ❖ None **Reduce exposure and vulnerability:** ❖ Increase inspections of nuclear facilities and transport vehicles ❖ Identify shelters and evacuation routes in the event of an accident **Build local capacity:** ❖ Develop and implement emergency plans for facilities ❖ Conduct training for response ❖ Public outreach
Nature-based opportunities: ❖ There are no nature-based solutions identified to mitigate this hazard.		

14.7.2 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the radiological accidents hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects
- Action 2018-006: Create all-hazards publications for public education.

Chapter 15. Severe Weather

Severe Weather

Severe weather events described in this plan are atmospheric disturbances that can include winter storms, lightning, hail, straight-line winds, and tornadoes. They range in size, duration, and intensity but all severe weather events have the potential to impact people, structures, and the environment.

CHANGES SINCE 2018

+1
Declared Disasters

+13
Severe Weather Events

STATE IMPACT RATING

High (39)

SOCIALLY VULNERABLE POPULATION

21.9%
Of Total Population

384,570
Persons

CLIMATE PROJECTIONS

An increase in severe storms is anticipated as a result of a changing climate, including intense rain and snowfall, powerful winds, and more destructive hailstorms

CANALS

8,278
Miles

COMMUNITY LIFELINES

3,238
Total

5,339
State Buildings

1,830
State Bridges

380
State Dams

5,935
Miles of State Roads

15. SEVERE WEATHER

15.1 HAZARD OVERVIEW

A severe storm is an atmospheric disturbance that results in one or more of the following phenomena: strong winds and large hail, thunderstorms, tornadoes, rain, snow, freezing rain, or other mixed precipitation. Of the 54 Presidential Disaster declarations in Idaho since 1956, 11 have been attributed to include “storms” or “severe” storms. This chapter includes details for winter storms, lightning, hail, straight-line winds, and tornadoes.

15.1.1 Winter Storms

Winter storms range widely in size, duration, and intensity. These storms may impact a single community or a multi-state area and can last hours or days. The severity of storms can range from a small amount of dry snow to a large, blanketed area of wet snow and ice. Generally, winter storms are characterized by low temperatures and blowing snow.

A severe winter storm is defined as one that drops 4 or more inches of snow during a 12-hour period, or 6 or more inches during a 24-hour span. A blizzard is a winter storm with winds exceeding 35 mph accompanied by snow or blowing snow and reduced visibility. Strong winds can lower the effective temperature and the resulting apparent temperature is called “wind chill.” An ice storm occurs when damaging accumulations of ice are expected during freezing rain situations, or when cold rain freezes immediately on contact with the ground, structures, and vegetation. Significant accumulations (1/4 inch of ice or greater) of ice pull down trees and utility lines resulting in loss of power and communication (NWS 2023).

The principal hazards associated with severe winter storms are:

- Snow and/or ice accumulation
- Blowing snow
- Extreme cold
- Significant reduction of visibility

15.1.2 Thunderstorm

A thunderstorm is a convective rain event that includes thunder and lightning. A thunderstorm is classified as “severe” when it contains one or more of the following: hail of least 1 inch diameter, winds gusting in excess of 50 knots (58 mph), or a tornado.

Three factors cause thunderstorms to form: moisture, rising unstable air (air that keeps rising when disturbed), and a lifting mechanism to provide the disturbance. The sun heats the surface of the earth, which warms the air above it. If this warm surface air is forced to rise (hills or mountains can cause rising motion, as can the interaction of warm and cold air or wet and dry air), it will continue to rise if it weighs less and stays warmer than the air around it. As the air rises, it transfers heat from the surface of the earth to the upper levels of the atmosphere also referred to as the process of convection. The water vapor it contains begins to cool and it condenses into a cloud. The cloud eventually grows upward into areas where the temperature is below freezing. Some of the water vapor turns to ice and some of it turns into water droplets. Ice particles usually have positive charges, and rain droplets usually have negative charges. When the charges build up, they are discharged in a bolt of lightning, which causes the sound waves heard as thunder. Thunderstorms have three stages (see Figure 15-1):

- The *developing stage* of a thunderstorm is marked by a cumulus cloud that is being pushed upward by a rising column of air (updraft). The cumulus cloud soon looks like a tower (called towering cumulus) as the updraft continues to develop. There is little to no rain during this stage but occasional lightning. The developing stage lasts about 10 minutes.
- The thunderstorm enters the *mature stage* when the updraft continues to feed the storm, but precipitation begins to fall out of the storm, and a downdraft begins (a column of air pushing downward). When the downdraft and rain cooled air spread out along the ground, they form a gust front, or a line of gusty winds. The mature stage is the most likely time for hail, heavy rain, frequent lightning, strong winds, and tornadoes. The storm occasionally has a black or dark green appearance.
- Eventually, a large amount of precipitation is produced, and the updraft is overcome by the downdraft beginning the *dissipating stage*. At the ground, the gust front moves out a long distance from the storm and cuts off the warm moist air that was feeding the thunderstorm. Rainfall decreases in intensity, but lightning remains a danger.

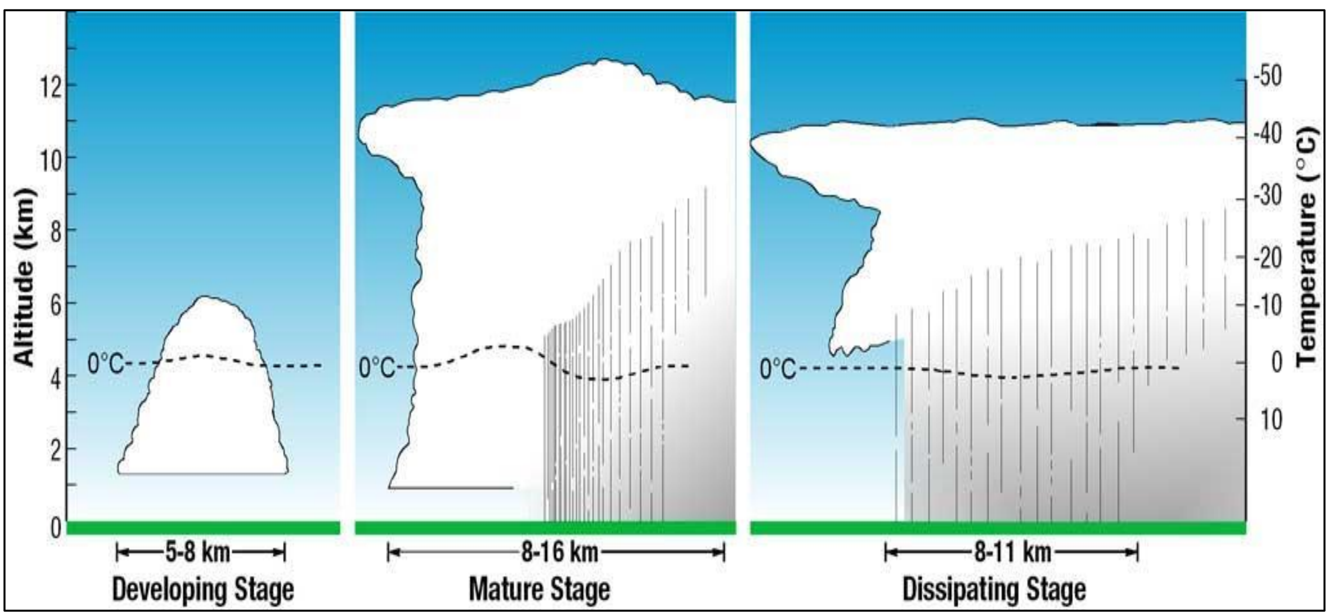


Figure 15-1. Thunderstorm Life Cycle

There are four types of thunderstorms:

- **Single-Cell Thunderstorms** usually last 20 to 30 minutes. A true single-cell storm is rare, because the gust front of one cell often triggers the growth of another. Most single-cell storms are not usually severe, but a single-cell storm can produce a brief severe weather event. When this happens, it is called a pulse severe storm.
- **Multi-Cell Cluster Storm** is the most common type of thunderstorm. The multi-cell cluster consists of a group of cells, moving as one unit, with each cell in a different phase of the thunderstorm life cycle. Mature cells are usually found at the center of the cluster and dissipating cells at the downwind edge. Multi-cell cluster storms can produce moderate-size hail, flash floods, and weak tornadoes. Each cell in a multi-cell cluster lasts only about 20 minutes; the multi-cell cluster itself may persist for several hours. This type of storm is usually more intense than a single cell storm.
- **Multi-Cell Squall Line**, or squall line, consists of a long line of storms with a continuous well-developed gust front at the leading edge. The line of storms can be solid, or there can be gaps and breaks in the line. Squall lines can produce hail up to golf ball size, heavy rainfall, and weak tornadoes, but they are best known as the producers of strong downdrafts. Occasionally, a strong downburst will accelerate a portion of the squall line ahead of the rest of the line. This produces what is called a bow echo. Bow echoes can develop with isolated cells as well as squall lines. Bow echoes are easily detected on radar but are difficult to observe visually.
- **Supercell Storm** is a highly organized thunderstorm that poses a high threat to life and property. It is similar to a single-cell storm in that it has one main updraft, but the updraft is extremely strong, reaching speeds of 150 to 175 mph. Supercells are rare. The main characteristic that sets them apart from other thunderstorms is the presence of rotation. The rotating updraft of a super-cell (called a mesocyclone when visible on radar) helps the super-cell to produce extreme weather events, such as giant hail (more than 2 inches in diameter), strong downbursts of 80 mph or more, and strong to violent tornadoes.

Typical thunderstorms are 15 miles in diameter and last an average of 30 minutes. An estimated 100,000 thunderstorms occur each year in the United States, with approximately 10 percent of them classified as severe. During the warm season, thunderstorms are responsible for most of the rainfall.

15.1.3 Lightning

Lightning is defined by the NWS as “a visible electrical discharge produced by a thunderstorm. The discharge may occur within or between clouds, between the cloud and air, between a cloud and the ground or between the ground and a cloud.” A lightning discharge may be over 5 miles in length, generate temperatures over 50,000°F, and carry 50,000 volts of electrical potential. Lightning is most often associated with thunderstorm clouds, but lightning can strike as far as 5 to 10 miles from a storm. The vigorous movement of air within a thunderstorm result in a buildup of electrical charge. This charge is released in a sudden discharge, the lightning “bolt” familiar to most. The average discharge of lightning carries enough electricity to light a 100-watt light bulb for more than 3 months. Sound waves caused by the rapid heating and cooling of air near the lightning are heard as thunder.

Lightning may strike in several distinct ways:

- **Direct Strike**—The most dangerous; the person or structure is a direct path for lightning to seek ground.
- **Side Strike**—Similar to a direct strike, but lightning diverts to an alternate path from the initial ground point.

- **Conducted Strike**—The electrical current may be carried some distance from the initial ground point if the lightning strikes electrically conductive material (including electrical and electronic equipment).
- **Other**—The lightning strike may induce secondary discharges by altering the electrical potential between adjacent structures, through the earth's surface, or in electrical equipment.

In the United States, an average of 300 people are injured and 80 people are killed by lightning each year. Based on information measured by the Vaisala Corporation, the State of Idaho received 2.12 cloud-to-ground lightning flashes per square mile in 2021 (Vaisala 2021).

15.1.4 Hail

Hail is almost invariably associated with thunderstorms. The NWS definition of "hail" is precipitation falling from a cumulonimbus cloud in the form of irregular pellets or balls of ice more than 5 mm in diameter. Hail is a product of thunderstorms and their dynamic internal winds. Air cycles vertically through the storm mass, known as a "cell." At the earth's surface, air is warmed and rises through the cell. Hail forms inside a thunderstorm where there are strong updrafts of warm air and downdrafts of cold air. If a water droplet is picked up by the updrafts, it can be carried well above the freezing level. Water droplets freeze when temperatures reach 32°F or colder. As the frozen droplet begins to fall, it may thaw as it moves into warmer air toward the bottom of the thunderstorm. However, the droplet may be picked up again by another updraft and carried back into the cold air and re-freeze. As it reaches the higher atmosphere, it cools and drops back to the surface, replacing warm air rising from the base of the cell. This ongoing cycle captures and carries water droplets up to a height where freezing occurs. The resultant ice particles grow during each up and down cycle within the storm cell. When the ice particles become too heavy to be carried by the rising air, they fall to the ground as hail. Hail is produced in a wide range of sizes and falls in varied quantities. Most hail is small, less than two inches in diameter. Hail 1 inch or greater in diameter is sufficient to classify a thunderstorm as "severe."

15.1.5 Straight-Line Winds

The term "straight-line winds" is used to distinguish common, non-rotating winds from tornado related winds. Straight-line winds are responsible for most thunderstorm wind damage, with wind speeds more than 100 miles per hour on occasion. A "downburst" is a small area of rapidly descending air beneath a thunderstorm. Downbursts can have wind velocities equal to that of a strong tornado and can be extremely dangerous to aviation and cause significant damage to some buildings (NWS 2017).

Straight-line winds are experienced in all parts of the United States and can also be referred to as high, strong, and thunderstorm winds. Areas that experienced the highest wind speeds are coastal regions ranging from Texas to Maine, and the Alaskan coast; however, exposed mountain areas can experience winds as high as those along the coast. Wind begins with differences in air pressure causing rough horizontal movement of air from uneven heating of the earth's surface. Wind occurs at all scales, from local breezes lasting a few minutes to global winds resulting from solar heating of the earth. Effects from high winds include downed trees and power lines, and damage to roofs, windows, etc.

Like tornadoes, strong straight-line winds are generated by thunderstorms and can cause similar damage. Straight-line wind speeds can approach 150 mph, equivalent to those in an F3 tornado. Two categories of straight-line winds are "downbursts" and "derechos." A downburst is a small area of rapidly descending rain and rain cooled air beneath a thunderstorm. The winds produced from a downburst often travel in one direction, and the worst damage is usually on the forward side of the downburst (NWS 2023).

Derechos are created by the merging of many thunderstorm cells into a cluster or solid line extending for many miles. The width of such a storm can range from 20 to 65 miles, and the length can reach 100 miles or more. In extreme cases, these storms can create maximum wind gusts of 150 mph and are capable of producing small tornadoes. Damaging straight-line winds are much more common than tornadoes, and their damage is often incorrectly attributed to tornadoes. Derechos are not common in Idaho, averaging less than one per year, while downbursts associated with straight-line winds occur more frequently.

15.1.6 Tornadoes

Tornadoes develop from severe thunderstorms. Tornadoes are nature's most violent storms and can cause fatalities and devastate neighborhoods in seconds. A tornado appears as a rotating, funnel shaped cloud spinning like a top, that extends from a thunderstorm to the ground with whirling winds that can reach from 40 to over 300 miles per hour. The tornado itself can move across the ground at up to 70 miles per hour. Damage is generally confined to a narrow path (approximately one quarter mile), but the tornado may travel over and devastate a large distance (typically up to 10 miles, but 200-mile tracks have been reported). Tornadoes can be on the ground ranging from an instant to several hours. The average time for a tornado to reach the ground is about five minutes (National Severe Storms Laboratory (NSSL) 2023).

Idaho has a low risk of tornadoes compared to states in the Midwest region and Southern United States. There are, on average, 5 reported tornadoes per year in Idaho, with most being EF-0 or EF-1 with minimal damage reported (NOAA 2022). Idaho has experienced tornadoes on occasion, which have produced significant damage, injury, or death. Multiple tornadoes may occur during a single storm, resulting in highly destructive events.

15.2 HAZARD LOCATION

15.2.1 Winter Storms

Past winter storm disasters have been focused in the western and northern portions of Idaho, but severe winter storms are possible throughout the State. Table 15-1 presents the winter storm hazard ranking for Idaho's 44 counties.

15.2.2 Thunderstorm

Thunderstorm and hail events can and do occur across the entire state. Severe thunderstorm watches and warnings are issued by the local NWS office. The NWS will update the watches and warnings and will notify the public when they are no longer in effect. Watches and warnings for thunderstorms in Idaho are as follows: Severe Thunderstorm Warning: Issued when a thunderstorm is imminent or occurring producing wind gusts of greater than 58 mph and/or hail greater than one inch in size; Severe Thunderstorm Watch: Issued when conditions are favorable for severe thunderstorm development within the next two to six hours; and Severe Weather Statement: Provides follow-up information regarding severe thunderstorms or tornadoes that are occurring or have occurred (FEMA 2023).

15.2.3 Lightning

The entire State of Idaho is exposed to some degree of lightning hazard, though exposed points of high elevation have significantly higher frequency of occurrence.

Table 15-1. Winter Storm Risk Impact and Probability for Counties in Idaho

PROBABILITY / IMPACT	LOW	MEDIUM	HIGH
LOW (GREEN)			
MEDIUM (YELLOW)		Ada Bannock Bear Lake Bingham Bonneville Butte Cassia Franklin Jefferson Owyhee Shoshone Twin Falls	
HIGH (RED)		Minidoka	Adams Benewah Blaine Boise Bonner Boundary Caribou Camas Canyon Clark Clearwater Custer Elmore Fremont Gem Gooding Idaho Jerome Latah Lemhi Lewis Lincoln Madison Nez Perce Oneida Payette Power Teton Valley Washington

Definitions for Probability:

High = Situated in winter storm patterns, severity and duration of storms, proximity to higher elevations
Medium = Situated in less severe storm patterns, lower elevations, shorter duration of storms
Low = Normally mild winter seasons, infrequent winter storms

Definitions for Impact:

High = Population congestion and concentration, transportation corridors and power delivery significantly disrupted, agricultural operations hampered or damaged, susceptibility to hardships caused by cold, excessive snow and wind, vulnerable population
Medium = More dispersed population, transportation corridors more easily maintained, population acclimatized towards and experienced in severe weather
Low = Population adapted to severe winter weather, transportation corridors regularly maintained, situated in milder climate patterns.

Source: Idaho Office of Emergency Management

15.2.4 Hail

The entire State of Idaho is exposed to hail as a component of thunderstorm events. Hail causes $1 billion in damage to crops and property each year in the United States. Hail occurs most frequently in the southern and central plain states. However, since hail often occurs in conjunction with thunderstorms, the potential for hail damage exists throughout the United States (Scully 2023).

15.2.5 Straight-Line Winds

Straight-line winds may be encountered anywhere that storms can form. Events that present the most risk are often the result of thunderstorms. Figure 15-2 shows the wind zones across the United States. Idaho falls under Zone I, which states a maximum wind speed of 130 mph. It should be noted that areas along the Montana border are termed a ‘Special Wind Region’, where wind speed anomalies are known to exist. These Special Wind Regions harbor winds that may be substantially higher than Zone I wind speeds.

Source: (FEMA n.d.)

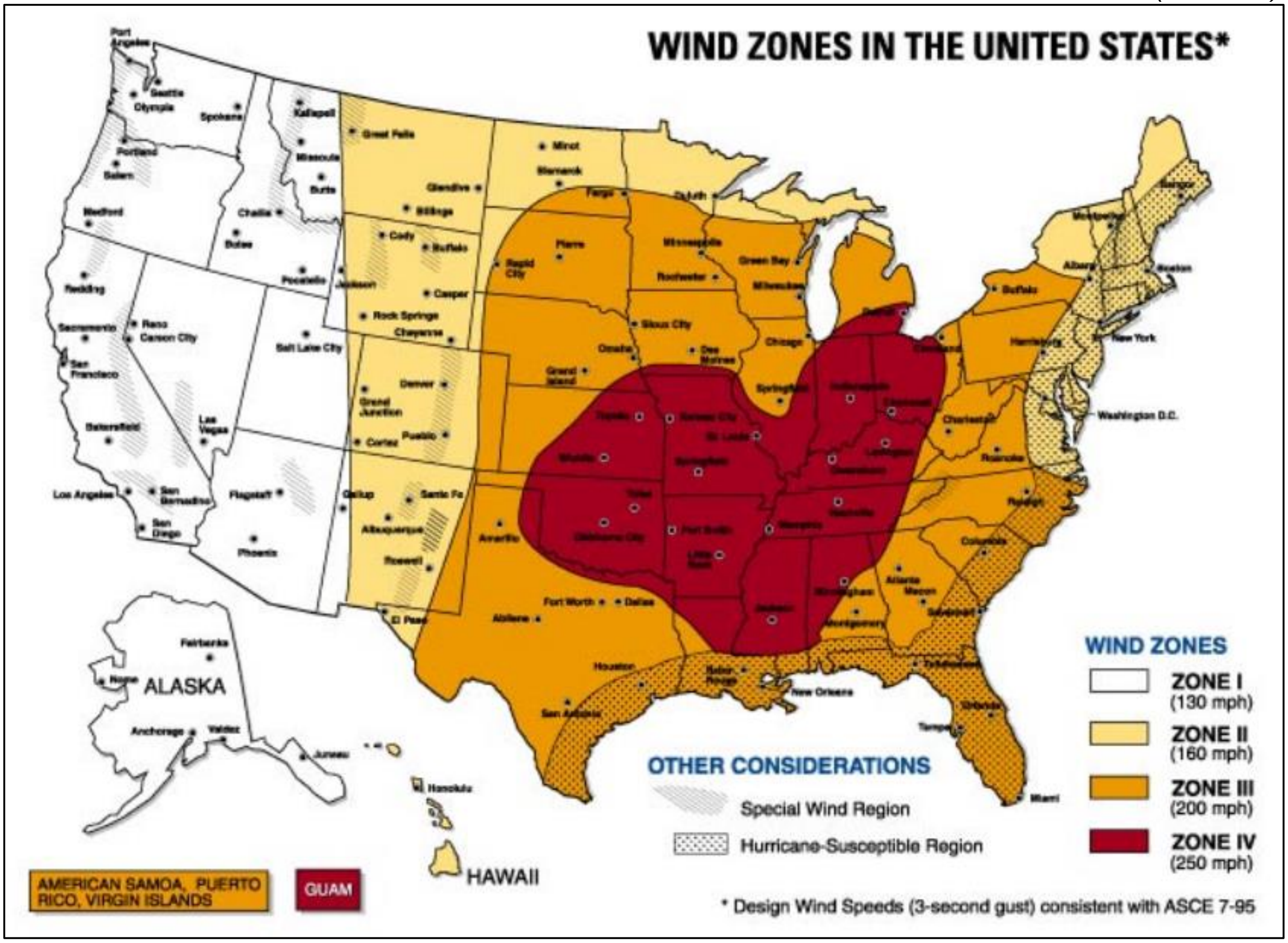


Figure 15-2. Wind Zones in the United States

Real-time mapping can also be used to see wind hazard locations. Figure 15-3 shows an example wind map from July 22, 2023, with wind speed and direction around the state.

15.2.6 Tornadoes

The United States experiences more tornadoes than any other country. In a typical year, approximately 1,000 tornadoes affect the United States. The peak of the tornado season is April through June, with the highest concentration of tornadoes in the central United States. Figure 15-4 shows the annual average number of tornadoes between 2012 and 2021 for the United States. According to this figure, Idaho experienced an average of two tornadoes each year. However, based on the number of tornadoes that occurred in Idaho between 1950 and 2023 (217 events); Idaho can expect to experience an average of three tornadoes each year (SPC 2023).

Source: (Windy.com 2023)

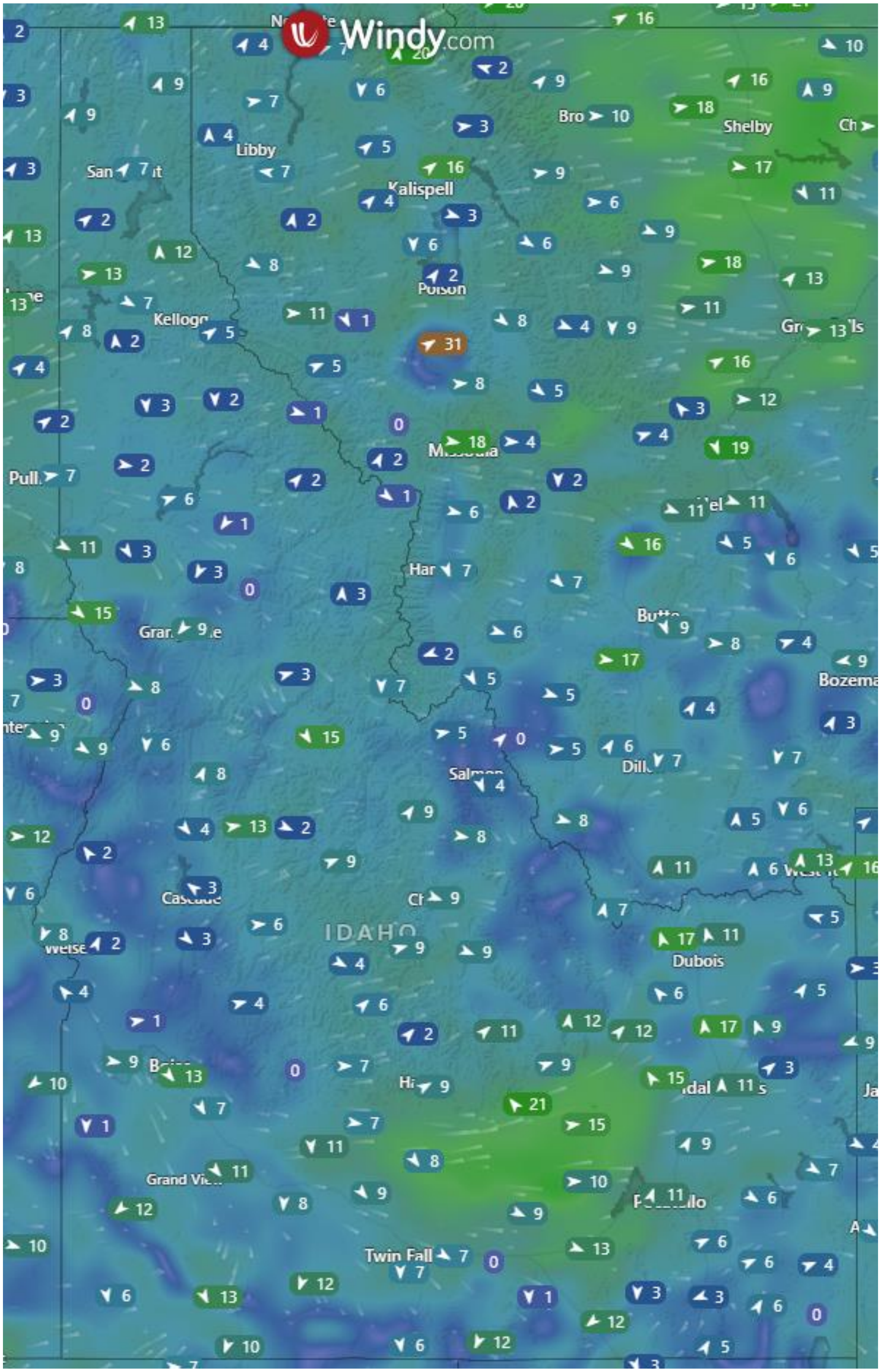


Figure 15-3. Example Wind Speed and Direction Map for Idaho

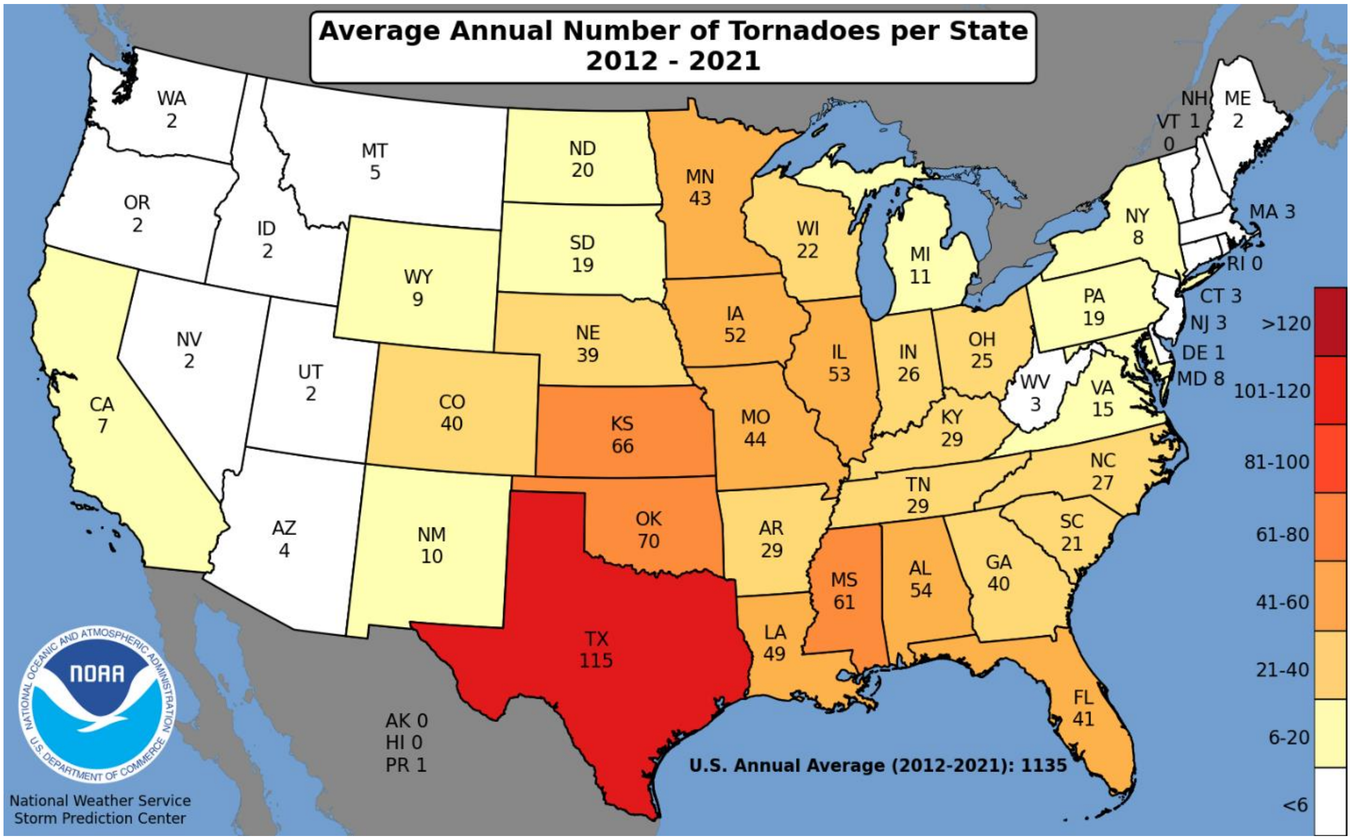


Figure 15-4. Average Number of Tornadoes in the United States (2012-2021)

15.3 PREVIOUS HAZARD OCCURRENCES

15.3.1 Disaster and Emergency Declarations

Known severe weather events that have impacted the State of Idaho and resulted in federal disaster or emergency declarations between 2018 and 2022 are identified in Table 15-2. Figure 15-5 shows counties affected by these declarations. Appendix D lists events prior to 2018.

Table 15-2. Severe Weather-Related Federal and State Declarations (2018 to 2022)

Incident Type	Declaration Title	Date Declared	Federal or State Declaration Number	Counties Affected
N/A	Winter Storm	2/25/2019	ID-01-2019	N/A
Severe Storm	Straight-line winds	3/4/2021	DR-4589-ID	Benewah County; Bonner County; Kootenai County; Shoshone County

Source: (FEMA 2023)

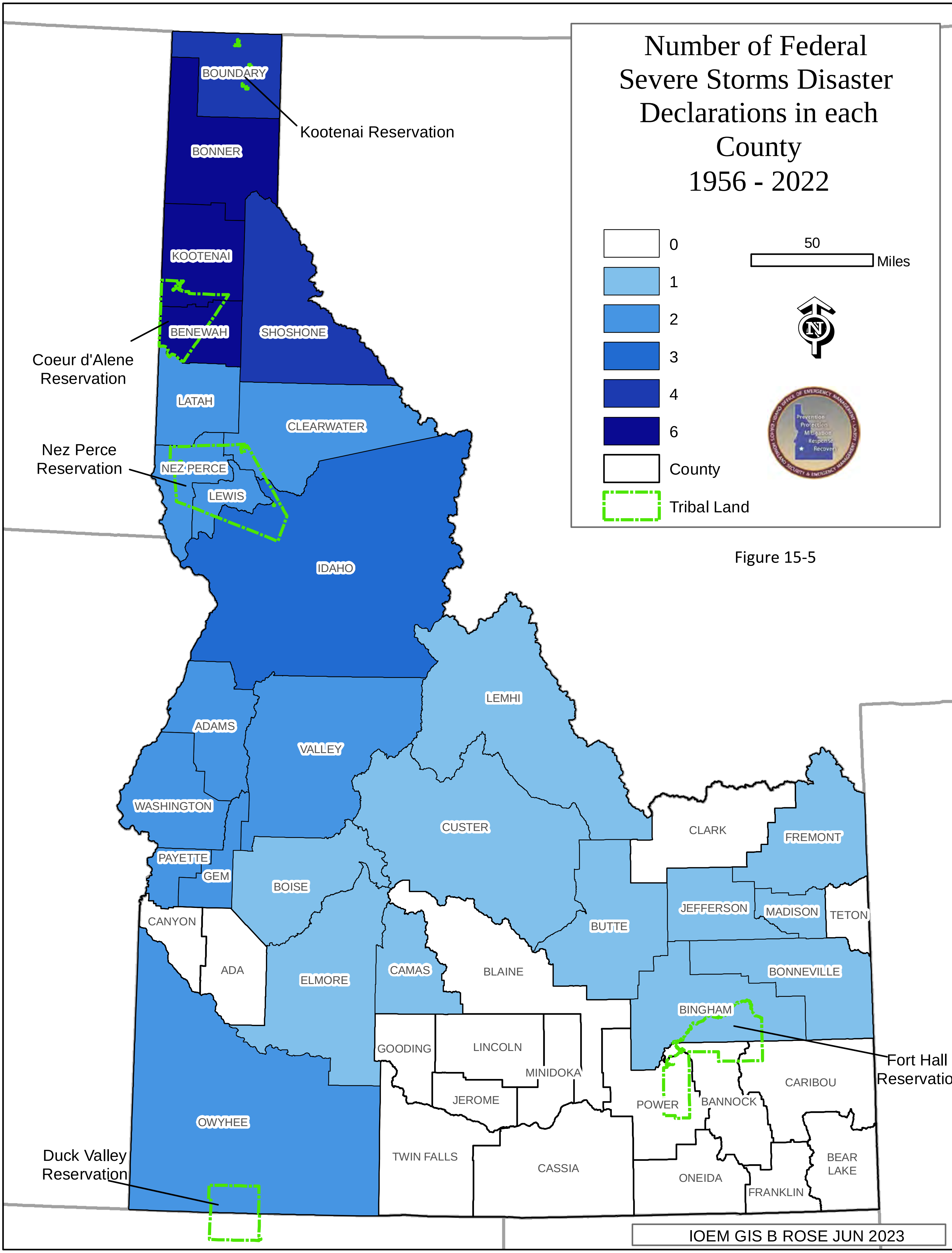

Number of Federal Severe Storms Disaster Declarations in each County 1956 - 2022
0
1
2
3
4
6
County
Tribal Land
50
Miles
N
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
BENEWAH
SHOSHONE
Coeur d'Alene Reservation
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
CANYON
JEFFERSON
MADISON
TETON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
Fort Hall Reservation
JEROME
POWER
BANNOCK
CARIBOU
OWYHEE
TWIN FALLS
CASSIA
ONEIDA
FRANKLIN
BEAR LAKE
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023

Figure 15-5

The following disaster declarations or emergency proclamations related to severe weather have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 9 severe storm-related events, classified as straight-line winds, severe storms, flooding, mudslides, heavy rains, and snow melt.
- **Idaho State Emergency Proclamations, 2018 – 2022**: 1 severe weather event classified as winter storms.
- No USDA declarations or proclamations related to severe weather-related events have been issued relevant to Idaho or any of its counties.

15.3.2 Event History

Table 15-3 lists significant severe weather events that impacted the State of Idaho between 2018 and 2022. Due to the significant number of events, the table includes only events that caused at least $10,000 in property/crop damages, or a tornado strength rating ≥ EF0 resulting in subsequent damage costs. Appendix D lists events prior to 2018.

Table 15-3. Severe Weather Events in Idaho (2018 to 2022)

Date	Event Type	Counties/Regions Affected	Description
12/27/2022	Winter Weather	Upper Snake River Plain	A quick burst of freezing rain created black ice conditions on local roadways. At least 29 accidents were reported and overpass closure. Associated damage totaled $25,000.
11/27/2022	Winter Storm	Fremont County; Clark County	Heavy snow and wind gusts caused several accidents on U.S. Hwy 20 and road closures. maximum widespread wind gusts were reported at 45 mph. Associated damage totaled $25,000.
4/10/2022	Winter Storm	Cassia County	Whiteout conditions caused 0.24-mile visibility and a maximum of 66 mph winds. Several accidents occurred on I-84, including 12 semi-trucks and road closures. Nine people were transported to hospitals. Associated damage totaled $200,000.
3/16/2022	Winter Weather	Upper Snake River Plain	Brief heavy snowfall caused slush build up and caused several accidents on I-15. Associated damage totaled $15,000.
3/8/2022	Winter Storm	Caribou County	Cold air and strong winds resulted in a maximum snow total of 16 inches. Multiple accidents occurred on U.S. Route 26, including a semi-truck. Associated damage totaled $10,000.
1/7/2022	Winter Storm	Fremont County; Clark County	Whiteout conditions including 40 mph winds resulted in a 40-vehicle crash on U.S. Hwy 20, included in the crash was a semi-truck, several ambulances, and police vehicles. Associated damage totaled $100,000.
1/3/2022	Winter Storm	Franklin County; Oneida County	Heavy snow combined with 40 mph winds resulted in several accidents on I-15. The event led to the closure of Oneida School District 351. Associated damage totaled $15,000.
2/11/2021	Winter Storm	Wood River Foothills	Widespread snow and wind occurred across southeast Idaho causing multiple accidents on State Hwy 75. Winds were reported at 40 mph and the accidents resulted in several people being transported to the Ketchum hospital. Associated damage totaled $10,000.
2/4/2021	Winter Storm	Franklin County; Oneida County	Heavy snow and sever winds caused several accidents on I-15. A maximum snow total of 6.5 inches and 40 mph winds were reported. Associated damage totaled $15,000.

Date	Event Type	Counties/Regions Affected	Description
12/21/2020	Winter Weather	Boundary County; Bonner County; Kootenai County; Benewah County; Latah County; Nez Perce County; Lewis County; Idaho County; Clearwater County; Shoshone County	The Northern Panhandle received 24-hour rainfall totals up to 0.25-0.80, resulting in black ice conditions. One fatality and one injury were reported due to accidents on Hwy 95 caused by black ice conditions. Associated damage totaled $10,000.
5/26/2019	Tornado	Bingham County	A tornado with an F scale of EF0 downed several trees of varying sizes. Maximum wind speeds were recorded at 85 mph with a path width of 50-100 yards. Large hail was also reported. Associated damage totaled $1,000.
4/15/2019	Winter Weather	Freemont County	Heavy snow resulting in 2-4 inches caused dangerous road conditions resulting in several auto accidents including a semi-truck roll-over on U.S. Hwy 20. Associated damage totaled $10,000.
3/29/2019	Winter Weather	Lower Snake River Plain	Reduced visibility from heavy snow squalls and icy roads resulted in nearly two dozen accidents on I-15 and interstate closure for an hour. Several individuals were transported to Portneuf Medical Center. Associated damage totaled $20,000.
1/6/2019	Winter Weather	Clearwater County; Idaho County	Strong winds and heavy snow resulted in damage costs of $10,000. Peak wind gusts were reported at 59 mph and a maximum snow total of 12 inches.
6/21/2018	Tornado	Butte County	A tornado with an F scale of EF0 caused damage to wheel lines, farm supplies, and a shed. Several trees were also uprooted. Associated damage totaled $3,000.
5/31/2018	Tornado	Bingham County	A tornado with an F scale of EF1 crossed portions of the Idaho National Laboratory. Damage to fences and roadway signs was recorded. Large hail, high winds, and heavy rain were also recorded. Associated damage totaled $300.

Source: (NOAA NCEI 2023)

Note: With severe storm documentation for Idaho being so extensive, not all sources have been identified or researched. Additionally, loss and impact information for many events could vary depending on the source. Therefore, this table may not include all events that have occurred in the state and the accuracy of monetary figures discussed is based only on the available information identified during research for this 2023 SHMP update.

15.4 PROBABILITY OF FUTURE HAZARD EVENTS

15.4.1 Overall Probability

According to NOAA, the State of Idaho has experienced over 4,200 severe weather events between 1956 and 2022, as summarized in Table 15-4. Based on historical records, the State of Idaho has experienced 9 FEMA declarations associated with severe storms since 1956. The state can experience a major event that leads to a FEMA declaration once every 8 years. Looking at all severe weather events, there have been 4,248 events between 1956 and 2022. Based on this data, the State of Idaho may experience between an estimated 63 high wind events each year (NOAA 2023).

Overall, the State can expect to at least experience similar average frequency of these events in the future, with the possibility of an increase in frequency due to the impacts from climate change.

Table 15-4. Probability of Future Severe Weather Events in Idaho

Hazard Type	Events Between 1956 and 2022	Average Frequency
Winter Storms	777	11 events per year
Winter Weather	150	2 events per year
Thunderstorm	1,926	28 events per year
Lightning	61	1 event per year
Hail	1,044	15 events per year
Straight-Line Winds (strong wind)	73	1 event per year
Tornadoes	217	3 events per year

Source: (NOAA NCEI 2023)

15.4.2 Climate Change Impacts

Providing projections of future climate change for a specific region is challenging. Shorter term projections are more closely tied to existing trends, making longer term projections even more challenging. The further out a prediction reaches the more subject to changing dynamics it becomes. Climate change is already impacting water resources, and resource managers have observed the following:

- Historical hydrologic patterns can no longer be solely relied upon to forecast the water future.
- Precipitation and runoff patterns are changing, increasing the uncertainty for water supply and quality, flood management, and ecosystem functions.
- Extreme climatic events will become more frequent, necessitating improvement in flood protection, drought preparedness, and emergency response.

The climate of Idaho is changing. Records have shown that over the past 100 years, the State has seen an increase in temperature of around two degrees (°F). In the coming years, it is predicted that streams will be warmer, populations of several fish species will decline, wildfires will become more common, deserts may expand, and water may be less available for irrigation (Environmental Protection Agency 2016). Additionally, Idaho may see an increase in the frequency and intensity of some extreme weather such as droughts, floods, frosts, cloudiness, frequency of extreme temperature events, and the intensity of fire and pest outbreaks. The most recent climate models show average temperatures in Idaho will increase by 6-11°F by 2100 (depending on the climate mitigation model utilized), decreased statewide snowpack, decreased fuel moisture, an increase in drought, and increased degraded air quality from increased smoke (Abatzoglou, Marshall and Harley 2021).

In addition to a warming climate, Idaho has been impacted by El Niño and La Niña. El Niño is a weather pattern that is characterized by unusually warm ocean temperatures along the equator in the Pacific Ocean and has important consequences for weather and climate over the United States. El Niño in general acts to tilt the odds toward wetter and cooler than average conditions across much of the south, and towards drier and warmer conditions in many of the northern regions. El Niño typically brings below normal temperatures and less precipitation to Idaho. This can impact the rain and snowfall, impacting the State’s water supply (Boise State Public Radio 2015).

La Niña refers to persistent colder than normal sea surface temperatures across the central and eastern equatorial Pacific and brings cooler and wetter weather patterns to the northwest United States. This brings more snow to Idaho during La Niña events; however, as the snow melts, the potential for flooding, ice jams, mudslides, and avalanches increase.

Much of the water needed for agriculture, public supplies and other uses comes from mountain snowpack, which melts in the spring and summer and runs off into rivers and fills reservoirs. As the climate warms, it is predicted that less precipitation falls as snow, and more snow will melt during the winter months. Diminishing snowpack may also shorten ski season and other forms of winter tourism and recreation.

15.4.3 Future Changes that May Impact State Vulnerability

Any new development could be affected by lightning. This new development would equate to an increase in vulnerability and in potential losses, although historical data seems to show that these increased losses would be minimal. However, when a lightning strike results in a wildfire, this pattern would not hold true. The wildfire section in this chapter provides more detail on this issue.

Hail can have a devastating impact on crops, although the timing of the storm in relation to the maturity of the crop greatly influences the amount of damage.

As long as development trends continue to focus on mitigation measures as they relate to severe storms, increased development may not correlate to an increase in potential losses.

All future development will be affected by severe storms. The ability to withstand impacts lie in sound land use practices and consistenct enforcement of codes and regulations for new construction. Land use policies identified in comprehensive plans within a specified jurisdiction may also address many of the secondary impacts (flood, landslide, wildfire, etc.) of severe storm events. Jurisdictions with the capability to plan for and mitigate losses to these secondary hazards, will be well equipped to deal with future growth and the associated impacts of severe storm events.

The threat of wind and tornado events does not appear to have affected the occurrence of development in Idaho. Any new development could be affected by these hazards and will increase the State’s vulnerability and potential losses for an event.

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

15.5 IMPACT ANALYSIS

15.5.1 Severity

Winter Storms

The magnitude or severity of a severe winter storm depends on several factors including a region’s climatological susceptibility to snowstorms, snowfall amounts, snowfall rates, wind speeds, temperatures, visibility, storm duration, topography, time of occurrence during the day and week (e.g., weekday versus weekend), and time of season.

The NWS operates a widespread network of observing systems such as geostationary satellites, Doppler radars, and automated surface observing systems that feed into the current state-of-the-art numerical computer models to provide a look into what will happen next, ranging from hours to days. The models are then analyzed by NWS meteorologists who then write and disseminate forecasts. In Idaho, the NWS criteria (National Weather Service – Pocatello, Idaho) for issuing winter storm and accompanying hazardous condition notifications to the public are:

- **Avalanche Warning**—Issued by Sawtooth National Forest Avalanche Center when snowpack conditions indicate the potential for significant avalanches.
- **Blizzard Warning**—Winds of at least 35 mph and falling/drifting snow frequently reduce visibility to less than ¼ mile, for 2 hours or more.
- **Freezing Rain/Drizzle Advisory**—Freezing rain/drizzle that is occurring or imminent that may lead to life threatening circumstances.
- **Ice Storm Warning**—Ice accumulations of at least ¼ inch are expected over the next 24 hours.
- **Snow Advisory**—(Snake Plain Only) 3 to 5 inches of snow accumulation expected in the next 24 hours.
- **Winter Storm Warning**—Heavy snow in combination with wind, freezing rain, or wind chill is occurring or expected. Snowfall typically greater than six inches in the valleys and greater than 10 inches in the mountains over the next 24 hours. Sleet accumulations of greater than ¾ inches expected over the next 24 hours.
- **Winter Storm Watch**—Potential exists for a blizzard, heavy snowfall, ice storm, and/or strong winds within the next 96 hours.
- **Winter Weather Advisory**—A combination of snow, wind, freezing rain, etc. that will create inconvenience but not reach warning criteria. Blowing/drifting snow is occurring or imminent that will cause significant travel problems (Pocatello Weather Forecast Office 2012).

Aspects of a snowstorm’s magnitude can be measured in inches of snow accumulation and wind speeds. For winter storm disaster declarations, a county must have experienced a record or near record snowfall (or meet FEMA’s contiguous county criteria). A record snowfall is defined by FEMA as one that meets or exceeds the highest record snowfall within a county over a 1, 2, 3 day or longer period of time, as published by the NCDC. A near record snowfall means a snowfall that approaches, but does not meet or exceed, the historical record snowfall within a county as published by the NCDC; FEMA generally considers snowfall within 10 percent of the record amount to be a near record snowfall.

In 2001, the NWS implemented an updated wind chill temperature index (see Figure 15-6). This index describes the relative discomfort or danger resulting from the combination of wind and temperature. Wind chill is based on the rate of heat loss from exposed skin caused by wind and cold. As the wind increases, it draws heat from the body, driving down skin temperature and eventually the internal body temperature.

Winter weather affects the entire State of Idaho and brings the threats of blizzards and snow, wind chill, frostbite and hypothermia, ice and road hazards, flooding, and power outages. Winter storm conditions and cold waves can be one of the deadliest types of weather. Cold temperatures can put an extra strain on your heart; heavy exertion (shoveling snow, clearing debris, etc.) can increase a person’s risk of a heart attack. Accumulation of ice has the potential of causing collapse of trees, utility poles, and communication towers. Ice can disrupt communications and power for days. Even small amounts of ice can create dangerous conditions for motorists and pedestrians.

Temperature (°F)

Wind (mph) Calm	40	35	30	25	20	15	10	5	0	-5	-10	-15	-20	-25	-30	-35	-40	-45
5	36	31	25	19	13	7	1	-5	-11	-16	-22	-28	-34	-40	-46	-52	-57	-63
10	34	27	21	15	9	3	-4	-10	-16	-22	-28	-35	-41	-47	-53	-59	-66	-72
15	32	25	19	13	6	0	-7	-13	-19	-26	-32	-39	-45	-51	-58	-64	-71	-77
20	30	24	17	11	4	-2	-9	-15	-22	-29	-35	-42	-48	-55	-61	-68	-74	-81
25	29	23	16	9	3	-4	-11	-17	-24	-31	-37	-44	-51	-58	-64	-71	-78	-84
30	28	22	15	8	1	-5	-12	-19	-26	-33	-39	-46	-53	-60	-67	-73	-80	-87
35	28	21	14	7	0	-7	-14	-21	-27	-34	-41	-48	-55	-62	-69	-76	-82	-89
40	27	20	13	6	-1	-8	-15	-22	-29	-36	-43	-50	-57	-64	-71	-78	-84	-91
45	26	19	12	5	-2	-9	-16	-23	-30	-37	-44	-51	-58	-65	-72	-79	-86	-93
50	26	19	12	4	-3	-10	-17	-24	-31	-38	-45	-52	-60	-67	-74	-81	-88	-95
55	25	18	11	4	-3	-11	-18	-25	-32	-39	-46	-54	-61	-68	-75	-82	-89	-97
60	25	17	10	3	-4	-11	-19	-26	-33	-40	-48	-55	-62	-69	-76	-84	-91	-98

Frostbite Times: 30 minutes; 10 minutes; 5 minutes

Figure 15-6. National Weather Service Wind Chill Chart

The NWS operates a widespread network of observing systems including geostationary satellites, Doppler radars, and automated surface observing systems that feed into the current state-of-the-art numerical computer models to provide a look into what will happen next, ranging from hours to days. The models are then analyzed by NWS meteorologists who then write and disseminate forecasts.

Thunderstorm

Thunderstorm and hail events can and do occur across the entire state. Severe thunderstorm watches and warnings are issued by the local NWS office. The NWS will update the watches and warnings and will notify the public when they are no longer in effect. Watches and warnings for thunderstorms in Idaho are as follows:

- Severe Thunderstorm Warning—Issued when a thunderstorm is imminent or occurring producing wind gusts of greater than 58 mph and/or hail greater than one inch in size.
- Severe Thunderstorm Watch—Issued when conditions are favorable for severe thunderstorm development within the next two to six hours.
- Severe Weather Statement—Provides follow-up information regarding severe thunderstorms or tornadoes that are occurring or have occurred.

Lightning

The entire State of Idaho is exposed to some degree of lightning hazard; exposed points at high elevation have significantly higher frequency of occurrence. Each strike has the potential to injure people and damage property. Cloud to ground lightning strikes occur with much less frequency in the northwestern U.S. than in other parts of the country (Figure 15-7). The National Lightning Detection Network reported an average of 77,232 strikes per year in Idaho from 2007-2016 (about one per square mile), while Florida received an average of 1,193,735 strikes per year (20 per square mile) during the same period.

Source: (Vaisala 2021)

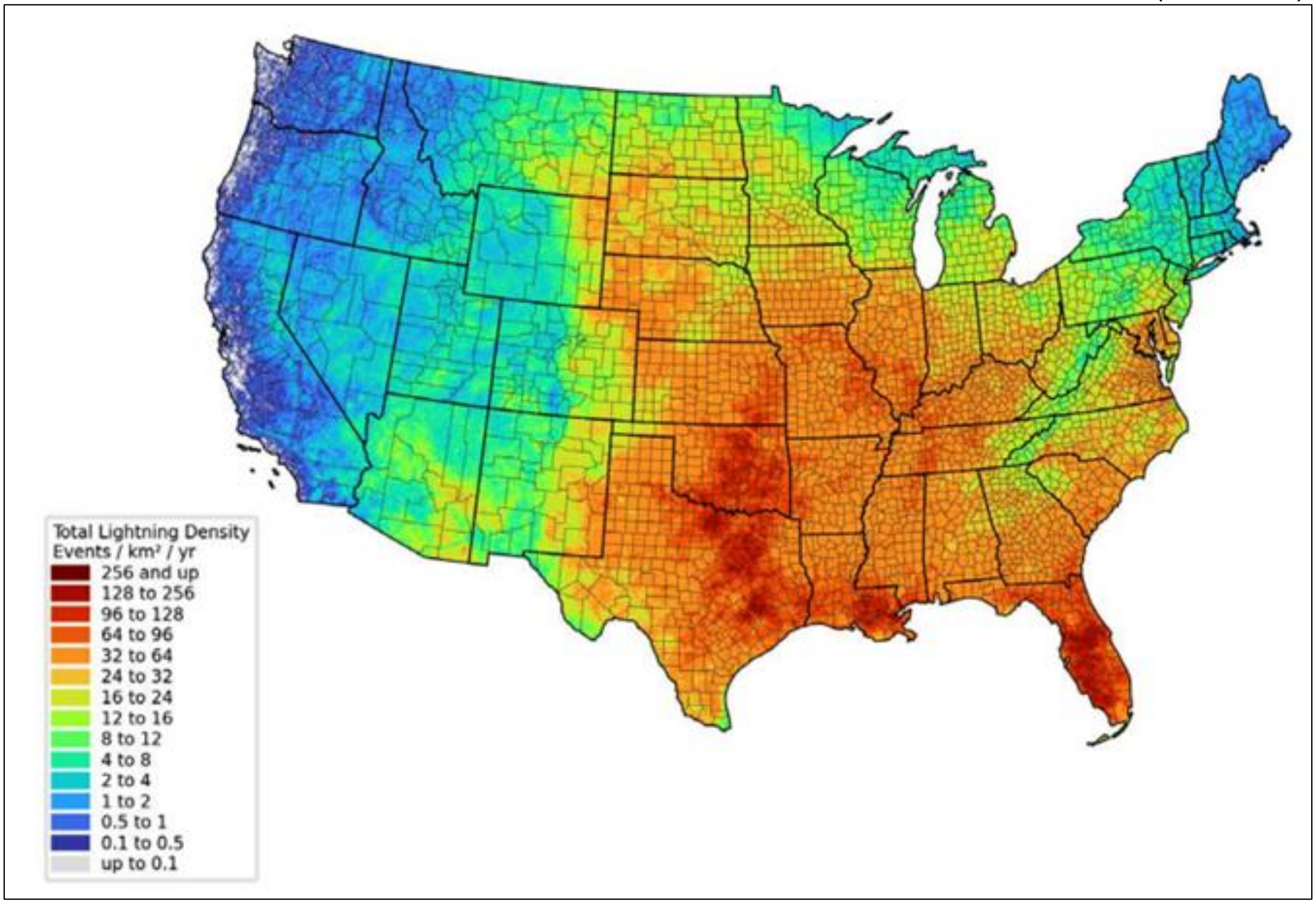


Figure 15-7. Vaisala Flash Density Map, 2015 to 2020

Lightning severity is typically assessed based on property damage and life safety (injuries and fatalities). Since lightning accompanies thunderstorms, it can be assumed that lightning occurs more often than damage is reported. Severe storm warnings are not issued based on lightning, and lightning does not determine severe storms but can be present as a part of severe storms. Approximately 90 deaths and 400 injuries are caused by lightning in the United States each year.

The National Weather Service does not have a severity scale for lightning. The extent of lightning depends upon the severity of the storm. Lightning becomes more hazardous when there are positive strikes. While a single point of lightning can cause damage and even death, when equated to severe storms the extent of a lightning event can be very wide ranging, especially if there are multiple lightning strikes in one area.

Hail

The severity of hail is measured by duration, hail size, and geographic extent. All of these factors are directly related to thunderstorms, which create hail. There is wide potential variation in these severity components. The most significant impact of hail is damage to crops. Hail also has the potential to damage structures and vehicles during hailstorms. The State has a relatively low potential for significant hail events, based on previous records. The size of hail is estimated by comparing it to a known object. Most hailstorms are made up of a variety of sizes, and only the very largest hailstones pose serious risk to people, when exposed. Figure 15-8 shows different sizes of hail and the comparison to real world objects. Figure 15-9 shows a quarter-sized hail ball that fell near Mountain Home in June 2022.

Source: National Weather Service (NWS) 2023

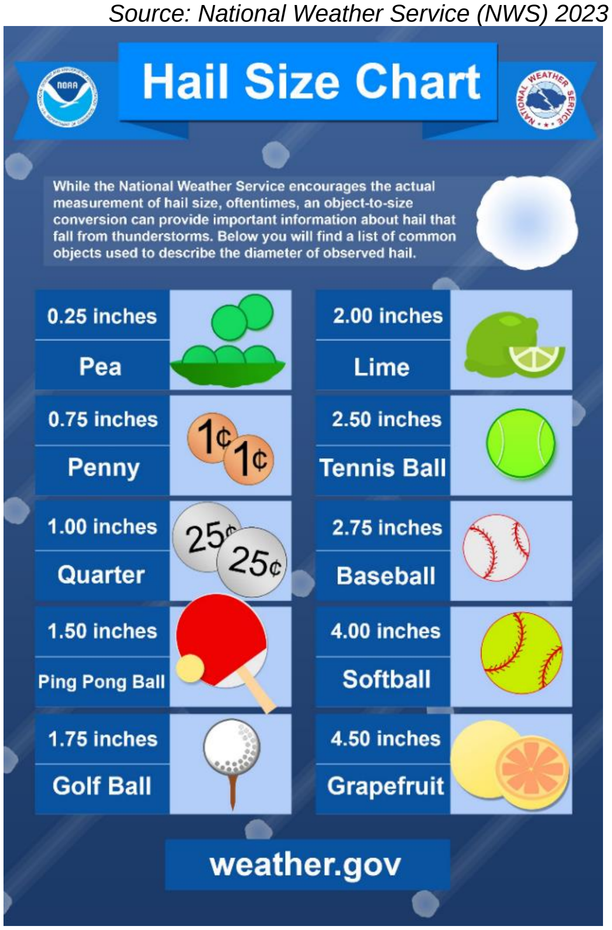


Figure 15-8. Hail Size Chart

Photo courtesy of an NWS Employee

Figure 15-9. Severe Hail found near Mountain Home, Idaho on June 5, 2022

Straight-Line Winds

Windstorms can be a frequent problem throughout the State of Idaho and have been known to cause damage to utilities. The predicted wind speed given in wind warnings issued by the National Weather Service is for a one-minute average; gusts may be 25 to 30 percent higher. Lower wind speeds typical in the lower valleys are still high enough to knock down trees and power lines and cause other property damage. Mountainous sections experience much higher winds under more varied conditions.

Straight-line winds of concern are "high winds," defined by the NWS as "sustained wind speeds of 40 mph or greater lasting for one hour or longer, or winds of 58 mph or greater for any duration." Figure 15-10 shows the annual average wind speeds at 80 meters across Idaho. Table 15-5 provides the descriptions of winds used by the NWS.

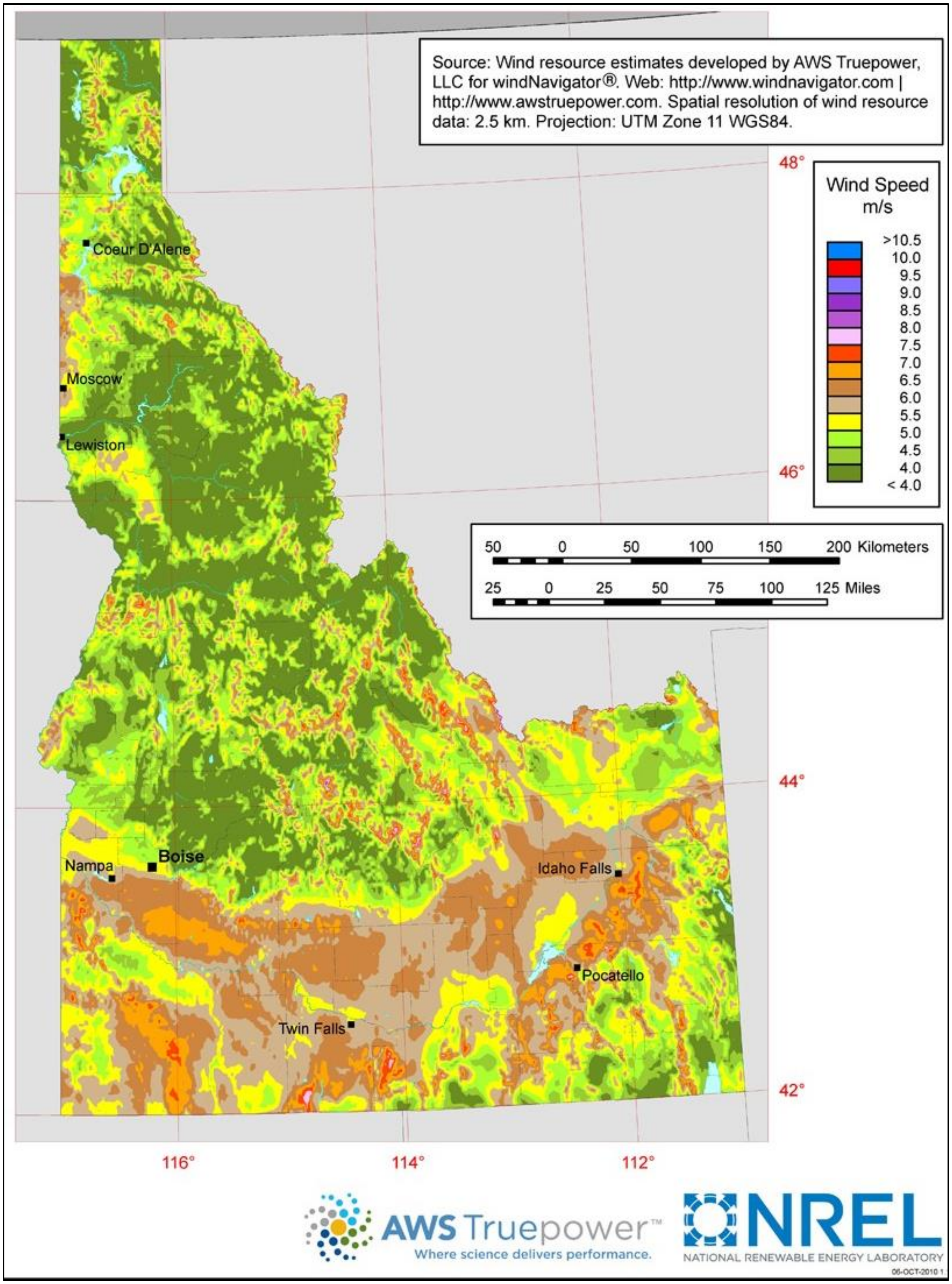


Figure 15-10. Idaho Average Wind Speed at 80 Meters

Table 15-5. NWS Wind Descriptions

Descriptive Term	Sustained Wind Speed (mph)
Strong, dangerous, or damaging	≥40
Very Windy	30-40
Windy	20-30
Breezy, brisk, or blustery	15-25
None	5-15 or 10-20
Light or light and variable wind	0-5

Source: NWS 2010

Tornadoes

The magnitude or severity of a tornado was originally categorized using the Fujita Scale (F-Scale) or Pearson Fujita Scale introduced in 1971. This used to be the standard measurement for rating the strength of a tornado. The F-Scale categorized tornadoes by intensity and area and was divided into six categories, F0 (gale) to F5 (incredible). Table 15-6 explains the F-Scale categories.

Table 15-6. Fujita Damage Scale

Scale	Wind Estimate (mph)	Typical Damage
F0	< 73	Light damage. Some damage to chimneys; branches broken off trees; shallow-rooted trees pushed over; sign boards damaged.
F1	73-112	Moderate damage. Peels surface off roofs; mobile homes pushed off foundations or overturned; moving autos blown off roads.
F2	113-157	Considerable damage. Roofs torn off frame houses; mobile homes demolished; boxcars overturned; large trees snapped or uprooted; light-object missiles generated; cars lifted off ground.
F3	158-206	Severe damage. Roofs and some walls torn off well-constructed houses; trains overturned; most trees in forest uprooted; heavy cars lifted off the ground and thrown.
F4	207-260	Devastating damage. Well-constructed houses leveled; structures with weak foundations blown away some distance; cars thrown and large missiles generated.
F5	261-318	Incredible damage. Strong frame houses leveled off foundations and swept away; automobile-sized missiles fly through the air in excess of 100 meters (109 yards); trees debarked; incredible phenomena occur.

Source: National Weather Service Storm Prediction Center

The Enhanced Fujita Scale (EF-Scale) is now the standard used to measure the strength of a tornado. It is used to assign tornadoes a ‘rating’ based on estimated wind speeds and related damage. When tornado related damage is surveyed, it is compared to a list of Damage Indicators (DI) and Degree of Damage (DOD), which help better estimate the range of wind speeds produced by the tornado. From that, a rating is assigned, similar to that of the F-Scale, with six categories from EF0 to EF5, representing increasing degrees of damage. The EF-Scale was revised from the original F-Scale to reflect better examinations of tornado damage surveys. This new scale considers how most structures are designed (NOAA 2008). Figure 15-11 lists the relationship between EF ratings, wind speed, and expected tornado damage.

Source: *(Service 2011)*

EF Rating	Wind Speeds	Expected Damage
EF-0	65-85 mph	'Minor' damage: shingles blown off or parts of a roof peeled off, damage to gutters/siding, branches broken off trees, shallow rooted trees toppled.
EF-1	86-110 mph	'Moderate' damage: more significant roof damage, windows broken, exterior doors damaged or lost, mobile homes overturned or badly damaged.
EF-2	111-135 mph	'Considerable' damage: roofs torn off well constructed homes, homes shifted off their foundation, mobile homes completely destroyed, large trees snapped or uprooted, cars can be tossed.
EF-3	136-165 mph	'Severe' damage: entire stories of well constructed homes destroyed, significant damage done to large buildings, homes with weak foundations can be blown away, trees begin to lose their bark.
EF-4	166-200 mph	'Extreme' damage: Well constructed homes are leveled, cars are thrown significant distances, top story exterior walls of masonry buildings would likely collapse.
EF-5	> 200 mph	'Massive/incredible' damage: Well constructed homes are swept away, steel-reinforced concrete structures are critically damaged, high-rise buildings sustain severe structural damage, trees are usually completely debarked, stripped of branches and snapped.

Figure 15-11. Enhanced Fujita Damage Scale

15.5.2 Warning Time

The NWS issues watches and warnings for high windstorms, tornadoes, and severe thunderstorms that may cause damaging winds. Like the prediction of thunderstorms and other severe weather events, the NWS can provide accurate forecasts several days prior to an event. The following provides details regarding warning time for severe weather events.

Winter Storms

Winter weather related Warnings, Watches and Advisories are issued by local National Weather Service offices (National Weather Service n.d.)

- Warnings
  - ➢ Blizzard Warnings: Means severe winter weather conditions that are expected or are occurring. Blizzard Warnings are issued for frequent gusts greater than or equal to 35 mph accompanies by

falling and/or blowing snow, frequently reducing visibility to less than ¼ mile for three hours or more.
  - Winter Storm Warnings: Issued for a significant winter weather event including snow, ice, sleet or blowing snow or a combination of these hazards.
  - Ice Storm Warnings: Issued for ice accumulation of around ¼ inches or more.
  - Wind Chill Warnings: Issued for a combination of very cold air and strong winds that will create dangerously low wind chill values. This level of wind chill can result in frostbite and lead to hypothermia.
  - Lake Effect Snow Warnings: Issued when widespread or localized lake induced snow squalls or heavy showers are expected to produce significant snowfall accumulation. Lake effect snow usually develops in narrow bands and impacts a limited area. These bands can produce heavy snow with sudden restrictions in visibility. Driving conditions may become hazardous at times.

- Watches
  - Winter Storm Watches: Issued when conditions are favorable for significant winter storm events (heavy sleet, snow, ice storm, blowing snow, or a combination of events).
  - Wind Chill Watches: Issued when there is the potential for a combination of extremely cold air and strong winds to create dangerously low wind chill values.

- Advisories
  - Winter Weather Advisories: Issued when snow, blowing snow, ice, sleet, or a combination of these is expected but conditions should not be hazardous enough to meet warning criteria.
  - Wind Chill Advisories: Issued when low wind chill temperatures are expected but will not reach local warning criteria. Extremely cold air and strong winds will combine to generate low wind chill readings.
  - Lake Effect Snow Advisories: Issued for widespread or localized lake effect snowfall accumulation (and blowing snow) remaining below warning criteria. Some localized snow bands will be intense enough to produce several inches in areas with sudden restrictions in visibility.

Thunderstorms

Meteorologists can often predict the likelihood of thunderstorms which produce lightning. This can give several days' notice of the possibility of lightning. However, the exact time and location of lightning cannot be predicted.

Lightning

Meteorologists can forecast the likelihood of intense lightning activity, but it is impossible to forecast individual strikes due to the widespread, frequent, and random occurrence of each event. Computer forecast models can predict the likelihood of lightning occurrences over an hour's notice. Most accurate lightning predictions are made through current weather patterns for the next hour (NOAA n.d.).

Hail

Like high wind events and thunderstorms, meteorologists can forecast the potential of hailstorms, often giving several hours of notice that hail may form. In addition, meteorologists can give live updates during severe weather to indicate areas that are experiencing or will experience hail. Since hailstorms often occur as part of other events, such as thunderstorms, forecasts indicating the potential for hailstorms may be available several days in advance.

Straight-Line Winds

High wind advisories, watches, and warnings are issued by the NWS according to the following criteria (Pocatello Weather Forecast Office 2012):

- **Wind Advisory**—Issued for Snake Plain only; winds between 30 and 39 mph and/or gusts between 45 and 57 mph not associated with thunderstorms, below 7,000 feet.
- **High Wind Warning**—Issued when sustained winds of greater than 40 mph and/or gusts of greater than 58 mph for at least one hour are imminent or occurring and are not associated with thunderstorms.
- **High Wind Watch**—Issued when there is a potential for winds of greater than 40 mph and/or gusts of greater than 58 mph and are not associated with thunderstorms.

Tornadoes

Tornado watches and warnings are issued by the local NWS office. For the State of Idaho, tornado warnings are issued when a tornado (a rotating column of air from a thunderstorm in contact with the ground) is occurring or imminent. A tornado watch is issued when conditions are favorable for tornadoes within the next two to six hours (Pocatello Weather Forecast Office 2012).

The current average lead time for tornado warnings is 13 minutes. Occasionally, tornadoes develop so rapidly that little, if any, advance warning is possible (NOAA 2013; FEMA 2013).

15.5.3 Cascading Impacts

Winter Storms

The aftermath of a winter storm can have an impact on a community or region for days, weeks or even months. Winter storms can bring cold temperatures, floods, storm surge, closed and/or blocked roadways, downed utility lines, and power outages. Secondary hazards resulting from winter storms can also include structural damage (snow and ice load), wind damage, impact to life safety, disruption of traffic, loss of productivity, economic impact, loss of ability to evacuate, taxing first responder capabilities, service disruption (power, water, etc.), and communication disruption. Heavy snow and ice can knock out heat, power, and communication services, sometimes lasting for several days. People may be in their homes without utilities or other services. Pipes and water mains can break as well.

Thunderstorm

Severe storms do influence many other hazards, mainly due to the associated precipitation that accompanies those events. Rainfall, hail, and snowfall from storms play a major role in the hazard of flooding, where rainfall amount, intensity, and duration can correlate with the impacts of a flood event. This flooding can also then increase the likelihood of dam, levee, and canal failures. Precipitation, as well as the associated freeze and thaw cycles that storms can create, are also major causes of landslides, through several mechanisms. This is also true for avalanches, where snow loading or rain on snow events can trigger a slide.

Lightning

Lightning caused 47 percent of wildfires in the Eastern Idaho Interagency Fire Center service area in the 20 years between 2000 and 2020 (Easter Idaho Interagency Fire Center n.d.). The timing of these lightning caused events mirrors the seasons when thunderstorms are most prevalent. Lightning could also damage communication towers and transmission cables, possibly resulting in power or communication disruptions.

Hail

Hailstorms, like many of the other hazards discussed, are often accompanied by other severe weather. One secondary effect of hailstorms is the damage to critical infrastructure which in turn may lead to utility failure. Additionally, extreme hailstorms impact traffic routes and may lead to transportation accidents.

Straight-Line Winds and Tornadoes

High wind and tornado events could impact the initiation of other hazards. Wildfires could be ignited by downed or damaged electrical transmission systems. From a human caused perspective, a high wind or tornado event could produce hazardous material releases, cyber disruptions, or energy shortages, although these would most likely be smaller scale events. It is also possible that a large-scale tornado could cause localized civil disturbances.

Tornadoes can also occur anywhere thunderstorms form. Although no data currently exists to help identify regions of particular risk, records of past wind and tornado events provide useful information in this regard.

Tornadoes are nature's most violent storms. Every state in the United States is at some risk from tornadoes. However, tornadoes are not a common occurrence in the State of Idaho. If a major tornado were to strike within the populated areas of the State, damage could be widespread. Businesses could be forced to close for an extended period or permanently, fatalities could be high, many people could be homeless for an extended period, and routine services such as telephone or power could be disrupted. Buildings could be damaged or destroyed.

15.5.4 Environmental Impacts

Winter Storms

Although limited, impacts resulting from winter storms through snow, sleet, and freezing rain can be seen to have adverse effects on crops and vegetation. Winter storms resulting in snowfall extremes also impact certain regions of the State. According to NOAA, Bannock County received a 3-day snowfall extreme in 2018, resulting in 22.5 inches of snow cover (Information 2023). However, due to rising temperatures, snowfall extremes have decreased as a proportion of winter precipitation is falling in the form of freezing rain (Agency 2022). Thus, dampening the impacts caused by winter storms and increasing those for other extreme precipitation events.

Thunderstorm

Severe thunderstorms can lead to substantial environmental and economic impacts as they can give rise to supercells, derechos, tornadoes, and wildfires. Thunderstorms coupled with strong surface heating and moisture, can produce local intense precipitation in distinct regions of the State (ex. Eastern Idaho) (Abatzoglou, Marshall and Harley 2021). Although uncommon, catastrophic events can cause damage to forest areas which are habitat for many threatened or endangered species including the grizzly bear, woodland caribou, and lynx (Agriculture n.d.). In addition to the severity of these events, precipitation has increased in spring and decreased in summer seasons, which can influence crops and natural resources (Idaho, Idaho CLimate-Economy Impacts Assessment 2021).

Lightning

Lightning strikes themselves have unsubstantial environmental impacts. Isolated, small scale environmental impacts include damaged or killed trees and damage to historic structures. Far more substantial are indirect impacts from the ignition of wildfire that can result from lightning. Lightning season coincides with dry season. Major concerns are “dry thunderstorms” or “dry lightning storms,” which can produce lightning and high winds with no rain to extinguish or mitigate resulting fires. Environmental impacts due to wildfire are addressed in another section of this Plan.

Hail

The loss of crops or livestock due to hail can have far-reaching economic effects (detailed more under “Vulnerability”). Damage to trees from hail or heavy snowfall can have a relatively short-term alteration of the visual landscape, but the long-term recovery of natural resources from these effects is likely.

Straight-Line Winds and Tornadoes

Impacts to vegetation and wildlife from tornadoes and high winds can include damage and death; however, it is unlikely that such events would jeopardize the existence of rare species or vegetative communities throughout the State. The loss of crops or livestock can have far reaching economic effects. Tree blow downs can alter the visual landscape and dramatically change the local vegetation. Fallen trees can create dams, causing flooding upstream and disruption of aquatic habitats. Tornadoes and high winds can damage historic structures, particularly roofs, requiring restoration activities. Tornadoes and high winds are unlikely to impact geologic features; however, soils and farmlands could be impacted, particularly in dry seasons. Blowing dust can impact vegetation and structures. Tornadoes and high winds can temporarily halt recreational activities and damage parks.

15.5.5 Local Hazard Mitigation Plan Impacts

Forty-four of the hazard mitigation plans prepared for Idaho’s counties list severe weather as a hazard of concern, and 33 counties rank it as a high-impact hazard:

- Ada
- Adams
- Bannock
- Bear Lake
- Benewah
- Bingham
- Bonner
- Bonneville
- Boundary
- Camas
- Canyon
- Caribou
- Cassia
- Clearwater
- Elmore
- Franklin
- Fremont
- Gem
- Idaho
- Jerome
- Kootenai
- Lemhi
- Lewis
- Lincoln
- Madison
- Nez Perce
- Oneida
- Payette
- Power
- Shoshone
- Teton
- Twin Falls
- Washington

An additional 10 counties identified severe weather as a medium-impact hazard.

Table 15-7 summarizes potential losses to vulnerable structures due to severe weather, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 15-7. Severe Weather Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

Estimated Total Population Exposed	1,839,103
Estimated Number of Structures at Risk	158,173; 11,868 improvements; 24,846 parcels
Estimated Value of Structures at Risk	$207,001,369,109

15.6 VULNERABILITY OF PEOPLE AND ASSETS

15.6.1 Total and Socially Vulnerable Populations

Because the entire population of the state is exposed and vulnerable to severe weather, the exposed population in socially vulnerable communities is equal to the total population. Vulnerable populations are the elderly, low income or linguistically isolated populations, people with life threatening illnesses, and residents living in areas that are isolated from major roads. Power outages from severe weather can be life-threatening to those dependent on electricity for life support and are a significant concern. These populations face isolation and exposure during severe weather events and could suffer more secondary effects of the hazard.

Certain areas are more vulnerable to certain severe weather events because of their geographic location and local weather patterns. For example, people living at higher elevations with large stands of trees or nearby powerlines may be more susceptible to wind damage and loss of power. It is common for trees to be uprooted, signs and utility poles to be overturned, debris to be carried by strong winds and for residential roofs to be blown off.

After severe weather events, residents may be displaced or require temporary to long-term sheltering. Vulnerable populations, such as the elderly, low-income and linguistically isolated populations, are most susceptible to severe weather. This vulnerability is based on several factors, including their physical and financial ability to react or respond during a hazard and the location and construction quality of their housing. Other risk factors include that power outages can be life-threatening to people dependent on electricity for life support. Because these vulnerable populations face various forms of isolation, they are more at risk for secondary effects from severe weather hazards.

Because the severe weather hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction. Table 15-8 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 15-8. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

15.6.2 National Risk Index Ratings

According to the National Risk Index, 9 of the state's 44 counties have NRI identified winter weather risk rated from relatively high to relatively moderate. The risk rankings for the highest ranked counties are shown in Table 15-9.

Table 15-9. Winter Weather

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Bonner County	$409,969	Relatively Low	Relatively Moderate	1.02	$443,861	90.48
Ada County	$413,403	Very Low	Very High	0.84	$370,617	88.54
Blaine County	$328,397	Relatively Moderate	Relatively Low	1.00	$352,404	88.13
Canyon County	$269,123	Relatively High	Relatively Moderate	1.18	$320,091	86.89

According to the National Risk Index, 15 of the state's 44 counties have NRI identified lightning risk rated from relatively high to relatively low. The risk rankings for the highest ranked counties are shown in Table 15-10.

Table 15-10. Lightning

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Canyon County	$757,227	Relatively High	Relatively Moderate	1.18	$905,551	93.59
Ada County	$943,257	Very Low	Very High	0.84	$855,371	93.178
Bonneville County	$197,458	Relatively Moderate	Very High	1.06	$213,214	70.59
Bannock County	$179,816	Relatively High	Relatively Moderate	1.10	$205,381	69.85

According to the National Risk Index, 7 of the state's 44 counties have NRI identified hail risk rated from relatively moderate to relatively low. The risk rankings for the highest ranked counties are shown in Table 15-11.

Table 15-11. Hail

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Bonneville County	$515,048	Relatively Moderate	Very High	1.06	$562,598	81.80
Ada County	$218,064	Very Low	Very High	0.84	$195,359	62.58
Canyon County	$138,076	Relatively High	Relatively Moderate	1.18	$163,099	59.21
Bingham County	$113,682	Relatively Moderate	Relatively Moderate	1.26	$143,604	56.02
Bannock County	$89,639	Relatively High	Relatively Moderate	1.10	$103,101	48.99
Madison County	$89,269	Relatively Low	Relatively Moderate	1.04	$96,527	47.40
Twin Falls County	$78,347	Relatively Moderate	Relatively Moderate	1.21	$95,998	47.27

According to the National Risk Index, 13 of the state's 44 counties have NRI identified strong wind risk rated from relatively moderate to relatively low. The risk rankings for the highest ranked counties are shown in Table 15-12.

Table 15-12. Strong Wind

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Ada County	$1,184,170	Very Low	Very High	0.84	$1,064,493	81.41
Bannock County	$604,689	Relatively High	Relatively Moderate	1.10	$685,408	69.32
Bonneville County	$544,226	Relatively Moderate	Very High	1.06	$593,915	64.46
Minidoka County	$248,042	Relatively High	Very Low	1.39	$365,039	48.23
Bingham County	$252,000	Relatively Moderate	Relatively Moderate	1.26	$317,953	43.74
Twin Falls County	$248,544	Relatively Moderate	Relatively Moderate	1.21	$304,662	42.15

According to the National Risk Index, 1 of the state's 44 counties has NRI identified tornado risk rated as relatively low. All other counties had a very low risk rating. The risk rankings for the highest ranked counties are shown in Table 15-13.

Table 15-13. Tornadoes

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Ada County	$570,028	Very Low	Very High	0.84	$518,087	30.63
Canyon County	$248,896	Relatively High	Relatively Moderate	1.18	$297,996	23.16
Kootenai County	$272,636	Relatively Low	Relatively Moderate	1.07	$296,203	23.13
Bonneville County	$196,834	Relatively Moderate	Very High	1.06	$214,773	19.63
Bannock County	$159,102	Relatively High	Relatively Moderate	1.10	$184,840	17.91

According to the National Risk Index, 12 of the state's 44 counties have NRI identified ice storm risk rated from relatively high to relatively low. The risk rankings for the highest ranked counties are shown in Table 15-14.

Table 15-14. Ice Storms

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Ada County	$599,815	Very Low	Very High	0.84	$539,195	88.47
Kootenai County	$382,053	Relatively Low	Relatively Moderate	1.07	$420,251	85.14
Canyon County	$273,115	Relatively High	Relatively Moderate	1.18	$324,148	81.97
Twin Falls County	$109,188	Relatively Moderate	Relatively Moderate	1.21	$134,342	64.69
Bonner County	$72,440	Relatively Low	Relatively Moderate	1.02	$79,981	53.66

According to the National Risk Index, 29 of the state's 44 counties have NRI identified cold wave risk rated from very high to relatively moderate. The risk rankings for the highest ranked counties are shown in Table 15-15.

Table 15-15. Cold Wave

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Kootenai County	$4,120,227	Relatively Low	Relatively Moderate	1.07	$4,435,120	99.45
Jefferson County	$2,297,793	Very Low	Relatively Moderate	1.15	$2,808,667	98.40
Bingham County	$2,020,998	Relatively Moderate	Relatively Moderate	1.26	$2,566,932	98.02
Bonneville County	$2,368,145	Relatively Moderate	Very High	1.06	$2,490,932	97.80
Madison County	$1,606,944	Relatively Low	Relatively Moderate	1.04	$1,605,704	95.95
Bannock County	$1,313,650	Relatively High	Relatively Moderate	1.10	$1,485,392	95.51

15.6.3 Vulnerability of Facilities, Infrastructure and Community Lifelines

All State-owned or -leased assets, critical facilities and community lifelines are exposed to severe weather. Loss of utilities and closed roadways are the most common issue with severe weather events. Impacts on transportation lifelines affect both short-term (e.g., evacuation activities) and long-term (e.g., day-to-day commuting and goods transport) transportation needs. The utility infrastructure can also suffer damage, resulting in widespread power outages. The interruption of power, water, wastewater, hospital services, and other emergency services has cascading impacts on the State's population and all forms of economic activity.

Critical facilities and community lifelines that are exposed to severe weather are likely to experience functional downtime associated with loss of power following these events, which could increase the net impact of these events. Additionally, the impacts of road closures during severe storm events can cause functional downtime due to inaccessibility of locations and/or ability of employees to come to work.

15.6.4 Potential Losses Due to a Hazard Event

Depending on the severity and duration of the severe weather event, damage to State assets can include roof damage from wind, structural damage from downed trees, and power outages. State infrastructure can be impacted by debris and downed trees/power lines, causing road closures, power outages, and limiting access to emergency personnel.

Loss estimations for the severe weather hazards profiled in this assessment are not based on damage functions, because no such damage functions have been generated. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the replacement cost value of all State-owned or -leased facilities (see Table 15-16). This allows the State to select a range of potential economic impacts based on an estimate of the percentage of damage to these assets. Damage in excess of 50 percent is considered substantial by most building codes and typically requires total reconstruction of the structure.

Table 15-16. Loss Potential of State Facilities for Severe Weather

	Total Replacement Cost Value	Estimated Loss Potential Based on % Damage		
		10% Damage	30% Damage	50% Damage
State-Owned Facilities	$11,382,558,264	$1,138,255,826	$3,414,767,479	$5,691,279,132
State-Leased Facilities	$3,390,608,124	$339,060,812	$1,017,182,437	$1,695,304,062
Total	**$14,773,166,388**	**$1,477,316,639**	**$4,431,949,916**	**$7,386,583,194**

15.7 MITIGATING THE HAZARD

15.7.1 Catalog of Potential Mitigation Alternatives

Table 15-17 summarizes a range of potential alternatives for mitigating the severe weather hazard.

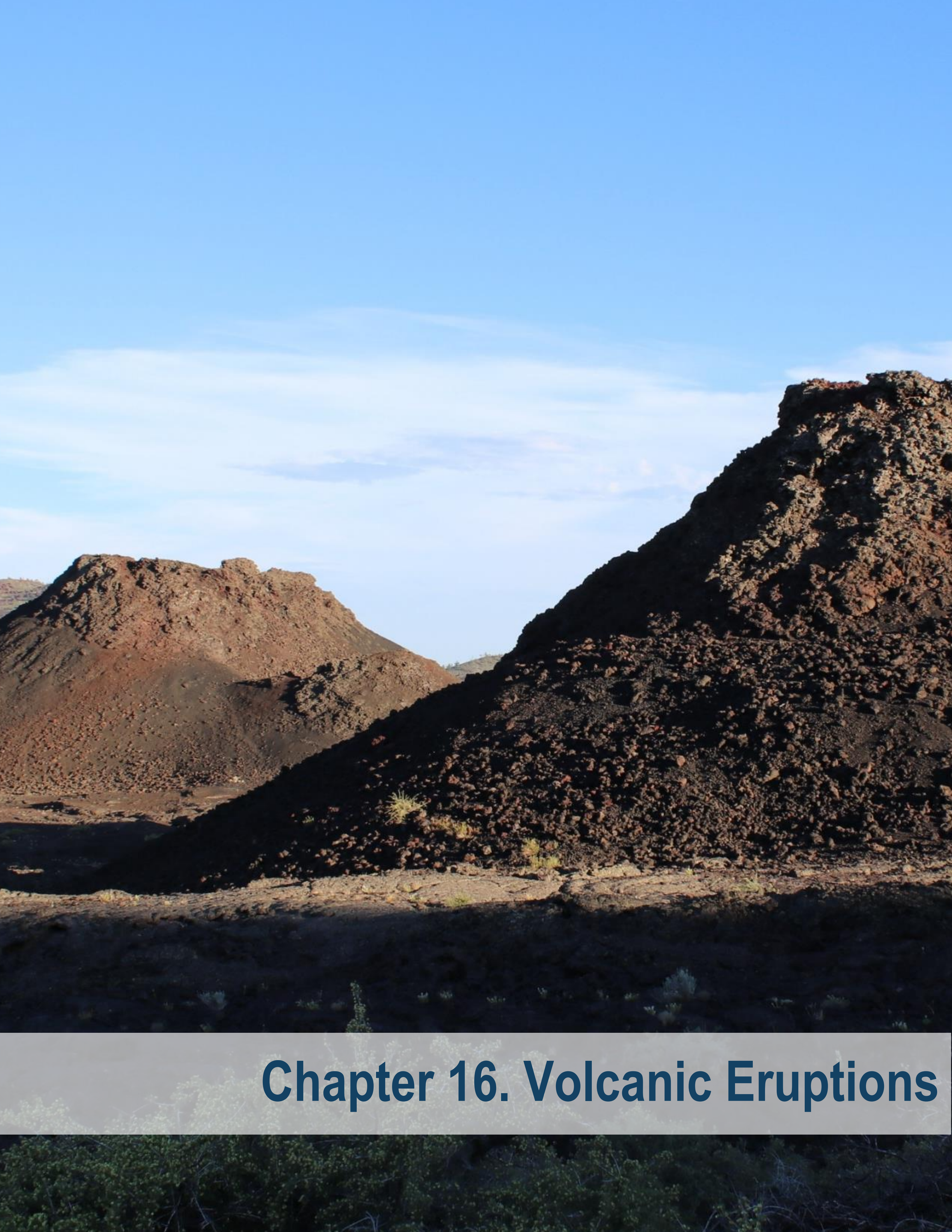
15.7.2 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the severe weather hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-002: Develop a statewide approach to modeling and mapping projected future conditions
- Action 2023-003: Coordinate with federal and state agencies to identify gaps to better integrate climate change impacts into flood risk management
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps

Table 15-17. Potential Opportunities to Mitigate the Severe Weather Hazard

Personal-Scale	Organizational-Scale	Government-Scale
Manipulate the hazard: ❖ None **Reduce exposure:** ❖ None **Reduce vulnerability:** ❖ Insulate house ❖ Provide redundant heat and power ❖ Insulate structure ❖ Plant appropriate trees near home and power lines (“Right tree, right place” National Arbor Day Foundation Program) **Build local capacity:** ❖ Trim or remove trees that could affect power lines ❖ Promote 72-hour self-sufficiency ❖ Obtain a NOAA weather radio. ❖ Obtain an emergency generator.	**Manipulate the hazard:** ❖ None **Reduce exposure:** ❖ None **Reduce vulnerability:** ❖ Relocate critical facilities (such as power lines) underground ❖ Reinforce critical facilities (such as power lines) to meet performance expectations ❖ Install tree wire **Build local capacity:** ❖ Trim or remove trees that could affect power lines ❖ Create redundancy ❖ Equip facilities with a NOAA weather radio ❖ Equip vital facilities with emergency power sources.	**Manipulate the hazard:** ❖ None **Reduce exposure:** ❖ Develop an urban heat island reduction program that includes an urban forest program or plan **Reduce vulnerability:** ❖ Harden infrastructure such as locating utilities underground ❖ Trim trees back from power lines ❖ Designate snow routes and strengthen critical road sections and bridges **Build local capacity:** ❖ Support programs such as “Tree Watch” that proactively manage problem areas through the use of selective removal of hazardous trees, tree replacement, etc. ❖ Establish and enforce building codes that require all roofs to withstand snow loads ❖ Increase communication alternatives ❖ Modify land use and environmental regulations to support vegetation management activities that improve reliability in utility corridors. ❖ Modify landscape and other ordinances to encourage appropriate planting near overhead power, cable, and phone lines ❖ Provide NOAA weather radios to the public ❖ Consider the probable impacts of future climate conditions on the risk associated with the extreme weather hazard ❖ Review and update heat response plan in light of future climate condition (heat events) projections



Chapter 16. Volcanic Eruptions

Volcanic Eruptions

Currently there are no active volcanoes in Idaho, but there are three active and potentially active areas of volcanic activity are most likely to have direct effects on Idaho: the Snake River Plain, particularly the "Craters of the Moon" area in south-central Idaho; the Yellowstone Caldera, which overlaps Idaho, Wyoming, and Montana; and the Cascade Mountains to the west.

CHANGES SINCE 2018

+0
Declared Disasters

+0
Volcanic Eruption Events

CANALS

8,278
Miles

STATE IMPACT RATING

Low (10)

SOCIALLY VULNERABLE POPULATION

21.9%
Of Total Population

384,570
Persons

CLIMATE PROJECTIONS

Projected changes in wind and rainfall frequency and intensity may alter the dispersion of volcanic ash and gas emissions, adversely impacting human, animal, and plant health

COMMUNITY LIFELINES

3,238
Total

5,339
State Buildings

1,830
State Bridges

380
State Dams

5,935
Miles of State Roads

16. VOLCANIC ERUPTIONS

16.1 HAZARD DESCRIPTION

A volcano is a vent in the earth's crust through which magma, rock fragments, gases and ash are ejected from the earth's interior. Over time, accumulation of these erupted products on the earth's surface creates a volcanic mountain. There are a wide variety of hazards related to volcanoes and volcanic eruptions. Volcanic hazards may be divided into two categories based on the range of their impact from the eruptive center or active vent. Proximal hazards have an impact limited to a distance of 30 miles or less from the active vent. Distal hazards have an impact far beyond the active vent.

Not all volcanic activity will result in all of the hazards listed here. The nature of the lava (rhyolitic or basaltic—rhyolitic lava tends to result from explosive events, and basaltic lava tends to result from non- explosive events and has a lower viscosity (i.e., is more fluid) than rhyolitic lava), the history of eruptions at the site, the presence of groundwater, and other factors influence the size, character, and duration of the eruption and the resultant hazards.

16.1.1 Proximal Hazards

Lava Flows

Lava flows are pouring or oozing collections of lava extruded from vents. These flows can destroy all structures in their paths and start forest fires, but they advance relatively slowly, so they seldom endanger people. Lava flows damage or destroy everything in their paths by burying, crushing, or burning. Large areas of productive and/or developable lands may be lost to lava flows. They can also generate additional hazards by damming or diverting streams.

Pyroclastic Flows

Pyroclastic flows are avalanches of hot ash, rock fragments, and gas that move down the sides of a volcano during explosive eruptions or lava dome collapses. These flows can be as hot as 1,500oF and move at speeds of up to 100 to 150 miles per hour. They are capable of knocking down and incinerating everything in their paths. Such flows tend to follow valleys and are generally restricted to the immediate vicinity of the volcano. Lower-density pyroclastic flows, called pyroclastic surges, can easily overflow ridges hundreds of feet high.

Lahars and Debris Avalanches

Lahars are mud or debris flows, composed mostly of eruptive materials, on the flanks of a volcano. These flows can travel at 20 to 40 miles per hour and cover long distances. Debris avalanches are rapid downhill movements of rock, snow, and/or ice. They range from small movements of loose debris on the surface of a volcano to massive collapses of the entire summit or side of a volcano. Debris avalanches on volcano slopes are triggered when eruptions, heavy rainfall, or large earthquakes cause these materials to break free and move downhill.

Volcanic Gases

Volcanoes emit a number of potentially toxic gases, both during and between eruptions. The majority of the gas is water vapor (steam), derived from recent precipitation and groundwater. Other common volcanic gases include carbon dioxide, sulfur dioxide, hydrogen sulfide, hydrogen, and fluorine.

Toxic gases can have both short-term effects and long-term effects on human lives and the natural environment. Carbon dioxide is heavier than air and can be trapped in low areas in concentrations that are deadly to people and animals. Sulfur dioxide is a respiratory poison and also reacts with atmospheric water to create acid rain, causing corrosion and harming vegetation. Hydrogen sulfide is a highly toxic respiratory poison. Fluorine is a highly toxic respiratory poison and can be absorbed onto volcanic ash particles that later fall to the ground, poisoning livestock grazing on ash-coated grass and also contaminating domestic water supplies.

Tephra

Tephra consists of solid and molten rock fragments, ranging in size from large "bombs" (from fist-sized to over 3 feet in diameter) to fine dust. The largest rock fragments usually fall back to the ground within 2 miles of the vent. Tephra deposits can pose a risk to lives and structures if they accumulate in a thickness sufficient to collapse roofs. More commonly, they reduce visibility and clog vehicle air filters, posing a hazard on highways. Deposits can topple or short-circuit electric transformers and power lines and clog other infrastructure such as water and sewage treatment facilities. Tephra clouds also commonly generate lightning that can interfere with electrical and communication systems and start fires. The fine material is extremely slippery, hampering driving and walking, and can damage the lungs of small infants, the elderly, and those with respiratory problems.

16.1.2 Distal Hazards

Eruption Columns and Clouds

Eruption Columns and Clouds are created when small fragments (less than about 0.1 inch across) of volcanic glass, minerals, and rock are released during explosive eruptions and rise high into the air. Eruption columns can grow rapidly and reach more than 12 miles above a volcano, forming an eruption cloud. Large eruption clouds can extend hundreds of miles downwind, resulting in falling ash over enormous areas; the wind carries the smallest ash particles the farthest. Recent volcanic eruptions in Iceland caused tens of millions of dollars in losses to European counties due to travel restrictions, airline cancellations, and lost tourism.

Ashfall

As an eruption cloud drifts downwind from the volcano, the material that falls from the cloud typically forms a thinner layer. Though called "ash," volcanic ash is not the product of combustion. It is hard, does not dissolve in water, is extremely abrasive and mildly corrosive, and conducts electricity when wet. Communities far from the actual eruption may be seriously disrupted by ashfall. The volcanic ash in an eruption cloud can pose a serious hazard to aviation; engines of jet aircraft have suddenly failed after flying through clouds of even, thinly dispersed material. The weight of ashfall can collapse buildings.

16.2 HAZARD LOCATION

Currently there are no active volcanoes in Idaho, but there is evidence of several types of volcanoes. According to the U.S. Geological Survey (USGS), three active and potentially active areas of volcanic activity are most likely to have direct effects on Idaho: the Snake River Plain, particularly the "Craters of the Moon" area in south-central Idaho; the Yellowstone Caldera, which overlaps Idaho, Wyoming, and Montana; and the Cascade Mountains to the west. The Snake River Plain and the Yellowstone Caldera have not had eruptions within the past 2,000 years, but Yellowstone is being particularly closely watched because of seismicity and ground deformation in recent decades.

There are more than a dozen potentially active volcanoes in the Cascade Mountains (see Figure 16-1). Composite volcanoes are the most likely to have a far-reaching impact, as they tend to erupt more explosively and over longer periods of time (tens to hundreds of thousands of years) than other types of volcanoes found in the Cascades. Mount St. Helens and Mount Shasta are examples of composite volcanoes in the Cascade Mountains.

Source: (USGS 2023)

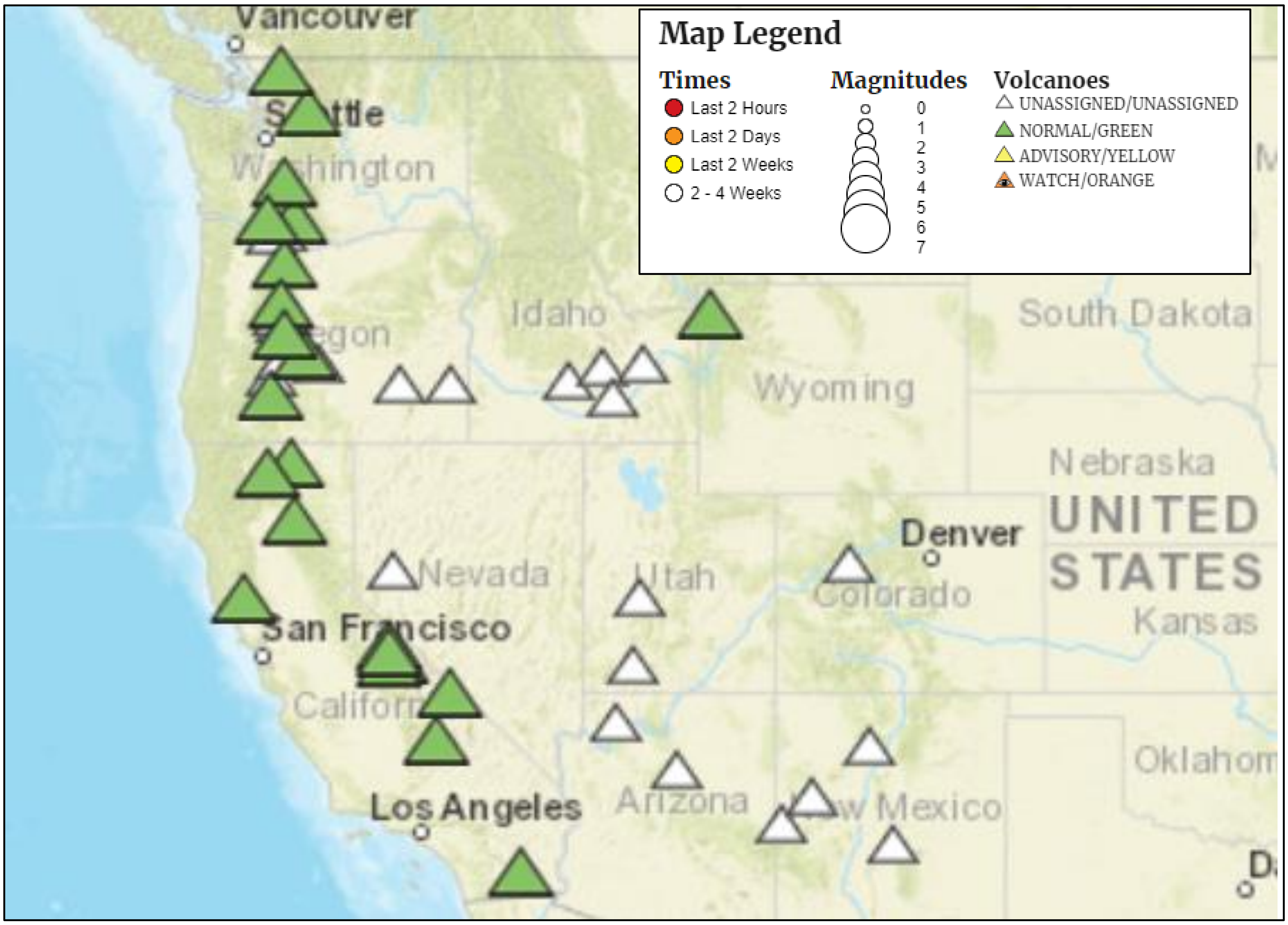


Figure 16-1. Potentially Active Volcanoes in the Western United States

The distance and area over which volcanic ash is dispersed is strongly controlled by wind conditions with distance and altitude from the vent, but also by the size, shape and density of the ash particles, and the style and magnitude of the eruption. These factors mean that ash falls are typically deposited in the direction of prevailing winds during the eruption and thin with distance. Forecasting ash dispersion and the deposition ‘footprint’ is typically achieved through numerical simulation (Jenkins, et al. 2014).

USGS modeling of the potential ashfall from an eruption of the Yellowstone Caldera shows that most of the continental United States would experience some level of ashfall and that all of Idaho would see depths of at least and inch and possible more than 3 feet (see Figure 16-2).

Source: (USGS 2014)

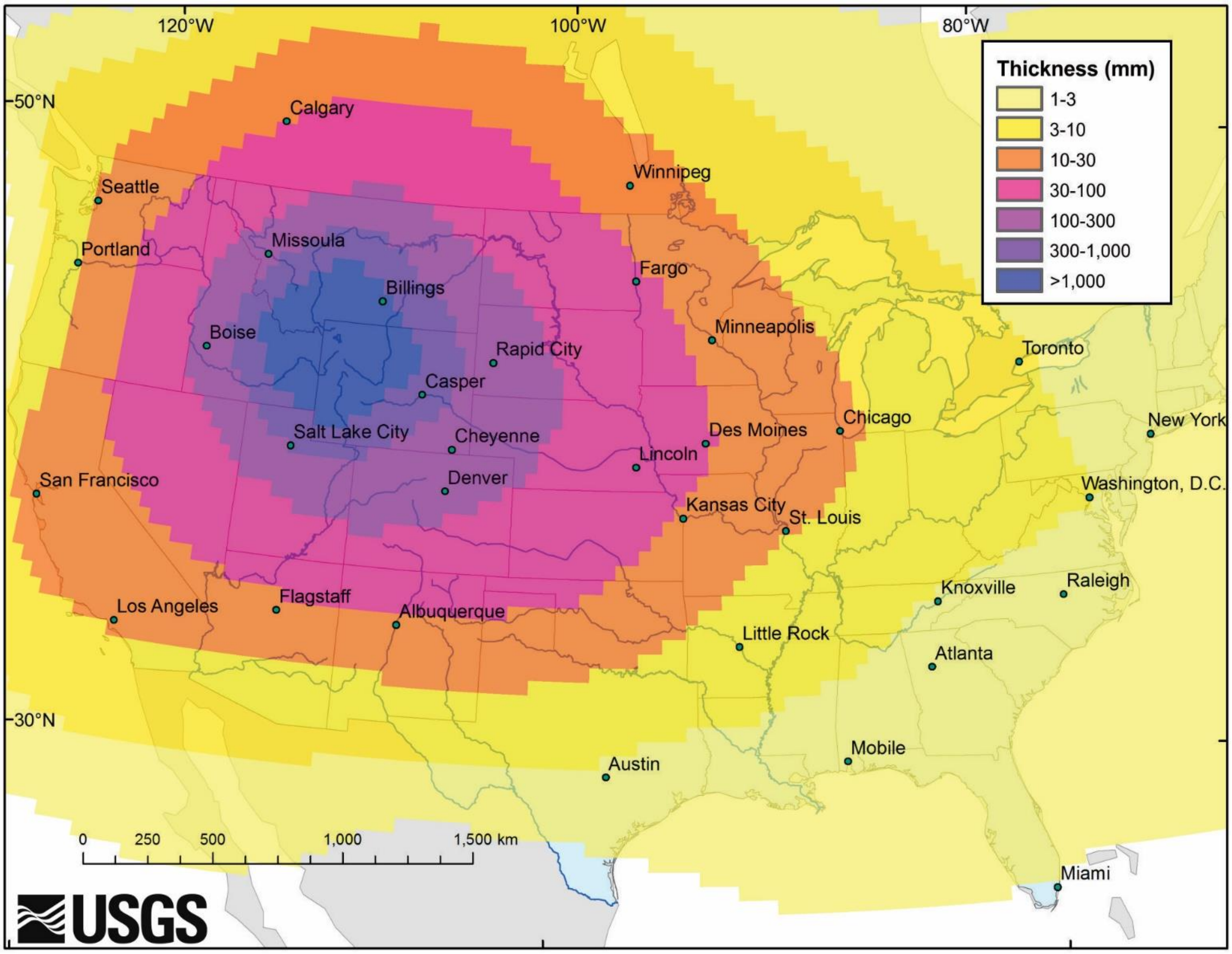


Figure 16-2. USGS Estimate of Ashfall from Potential Eruption of Yellowstone Supervolcano

If a large eruption of a composite volcano in the Cascade Mountains were to occur, Idaho would likely experience distal impacts. Effects from the 1980 Mount St. Helens eruption can serve as an example of potential effects from future volcanic eruptions in the northwest region. This eruption was measured at 5 on the VEI scale. Roughly half of Idaho experienced ashfall from this event, and portions of the State experienced some of the event’s highest concentrations of ashfall (see Figure 16-3).

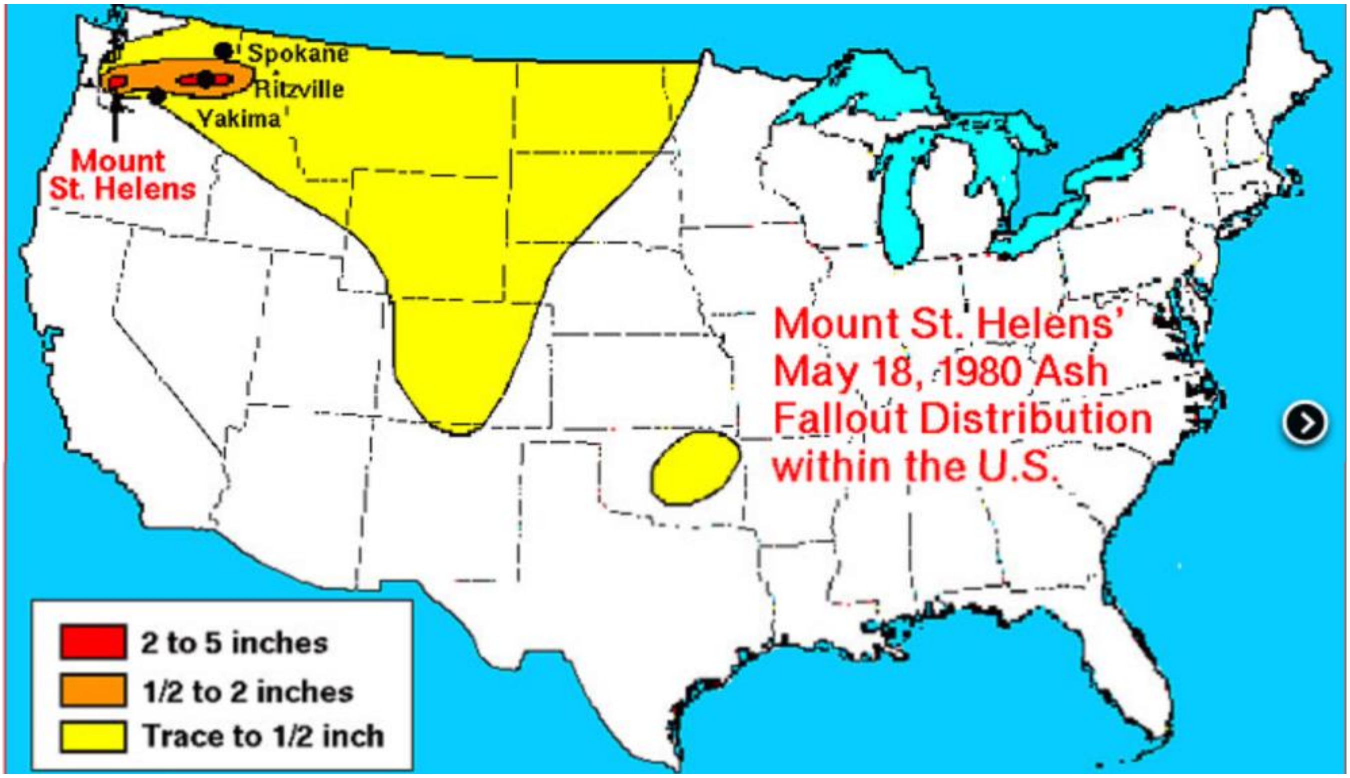


Figure 16-3. Mt. St. Helens Ash Fallout Distribution

16.3 PREVIOUS HAZARD OCCURRENCES

16.3.1 Disaster and Emergency Declarations

The following disaster declarations or emergency proclamations related to volcanic events have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 1 volcanic-related events, classified as volcanic eruption (Mt. St. Helens).
- No USDA or State disaster declarations or proclamations related to volcanic-related events have been issued relevant to Idaho or any of its counties.
- Figure 16-4 shows counties affected by these declarations.

16.3.2 Event History

No past events have been recorded or issued related to volcanic-related events relevant to Idaho or any of its counties over the past five years.

The only significant volcanic event in Idaho during recorded history was ashfall from the eruption of Mount St. Helens in 1980 (detailed below). The area has seen extensive volcanic activity in the more distant past, however. Within the Snake River Plain, the Craters of the Moon lava field had extensive flows up to 2,000 years ago, and the Boise area experienced large lava flows 1 million years ago. The Gem Valley area in southeastern Idaho has also been volcanically active; the last eruptive activity occurred about 30,000 years ago.

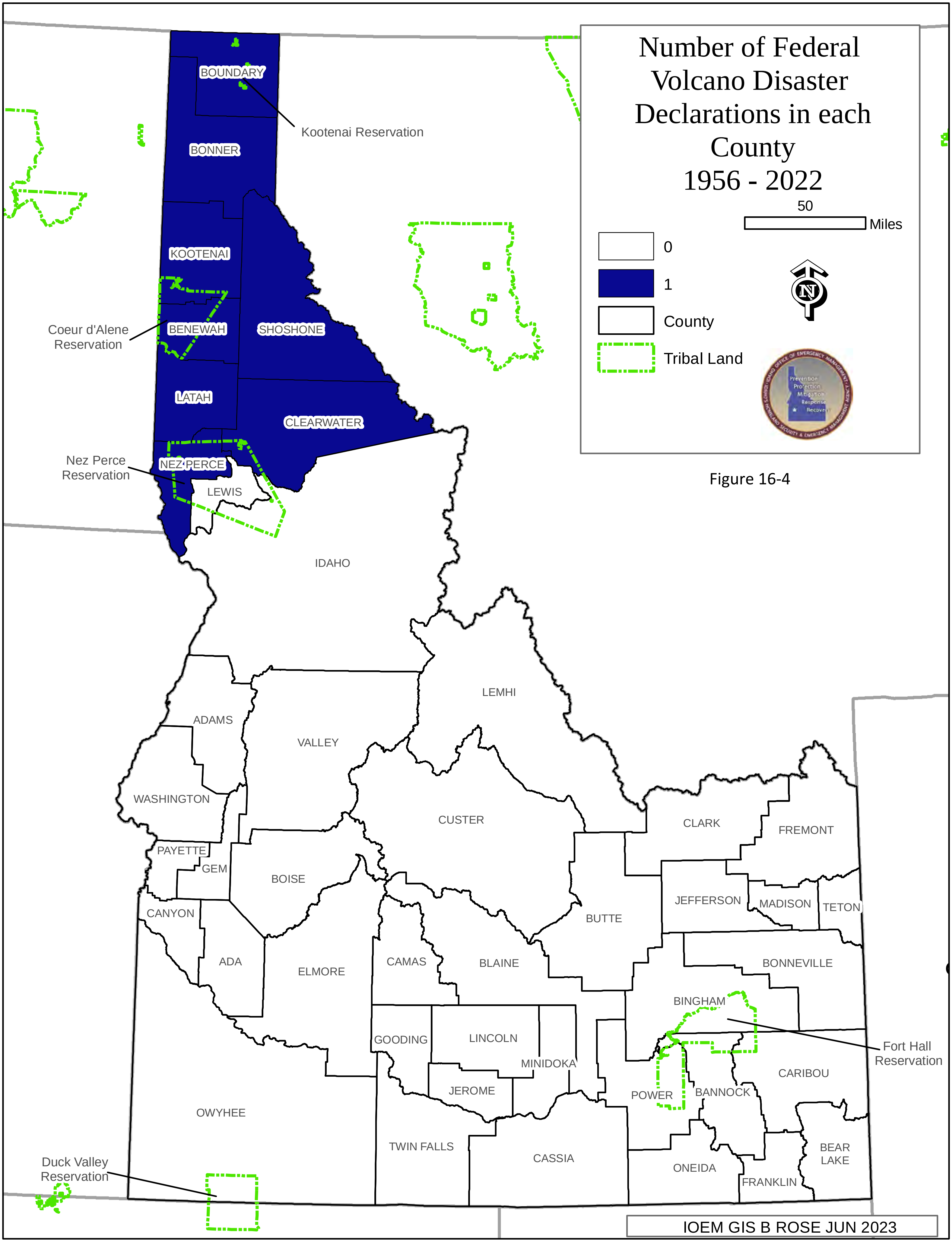

Number of Federal Volcano Disaster Declarations in each County 1956 - 2022
50 Miles
0
1
County
Tribal Land
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
Fort Hall Reservation
CARIBOU
JEROME
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
Duck Valley Reservation
FRANKLIN
IOEM GIS B ROSE JUN 2023

Figure 16-4

In the Yellowstone region, major explosive eruptions occurred 2, 1.3, and 0.6 million years ago. The most recent eruptions, 75,000-150,000 years ago, produced thick lava flows. With respect to Cascadian eruptions, an average of two eruptions occur per century—the most recent were at Mount St. Helens, Washington (1980-86), and Lassen Peak, California (1914-17). Although not the case with this most recent eruption at Lassen Peak, Rockland Ash from an eruption at Lassen 600,000 years ago can be found in southern Idaho.

16.4 PROBABILITY OF FUTURE HAZARD EVENTS

16.4.1 Overall Probability

Based on historical records, the State of Idaho has experienced 1 FEMA declaration associated with volcanoes since 1956. The state can experience a major event that leads to a FEMA declaration once every 69 years.

Overall, the State can expect to at least experience similar average frequency of these events in the future, with the possibility of an increase in frequency due to the impacts from climate change.

Idaho faces two likely future volcanic hazard scenarios that have a low probability of occurring based on past explosive eruptions. One is distal hazards from volcanic activity in the Cascades, and the other is proximal as well as distal hazards from the Yellowstone Caldera.

Volcanic eruptions generally occur only after significant warning. Volcano monitoring can detect and measure changes caused by magma movement beneath the volcano. This movement will typically lead to swarms of earthquakes, swelling or subsidence of a volcano’s summit or flanks, or release of volcanic gases from the ground and vents. Monitoring can project volcanic activity within a time frame of days to months. Longer-term hazard projection is more difficult and is generally dependent on analyses of past activity.

The USGS operates five volcanic observatories, including one in the Yellowstone region and one in the Cascades region. These observatories maintain websites and issue warnings as well as weekly updates on volcanic activity. In 2010, the Yellowstone Volcano Observatory developed protocols for a geologic hazard response in the Yellowstone region. The report states, “Within the next few decades, large and moderate earthquakes and hydrothermal explosions are certain to occur. Volcanic eruptions are less likely, but are ultimately inevitable in this active volcanic region.” Similarly, the Cascades Volcano Observatory produces hazard assessments for the multitude of volcanoes in the Cascades.

16.4.2 Climate Change Impacts

Climate change is not expected to increase the probability of volcanic eruptions. However, when volcanic eruption does occur, climate change could impact the consequences of volcanic events. As the atmosphere warms due to climate change, the plumes of ash and gas emitted by large volcanic eruptions will rise higher. Climate change will also accelerate the transport of volcanic material—in the form of small, shiny droplets called volcanic sulfate aerosols—from the tropics to higher latitudes. For large eruptions, the combined effect of these phenomena will cause the haze created by volcanic aerosols to block more sunlight from reaching Earth’s surface, ultimately amplifying the temporary cooling caused by volcanic eruptions (University of Cambridge 2021).

16.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development
- Projected changes in population
- Other identified conditions as relevant and appropriate.

The U.S. EPA's Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change's (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029.

It is anticipated that the human exposure and vulnerability to volcanic impacts will be similar to what currently exists. All future development has the potential of being impacted by ash fall generated from a volcanic event. While this potential impact on the built environment is not considered to be significant, the economic impact on industries that rely on machinery and equipment such as agriculture or civil engineering projects could be significant. The extent of this hazard is difficult to gauge because it is dependent upon many variables, so the ability to institute land use recommendations based on potential impacts of this hazard is limited. While the impacts of volcanic hazards are sufficient to warrant risk assessment for emergency management purposes, the impacts are not considered to be sufficient to dictate land use decisions.

Because volcanic eruptions tend to be far apart in time, it is unlikely that the threat of their effects will be considered in overall development trends. When an eruption does occur, economic activity can be stymied even far from the center of activity, as evidenced by the disruption to flight schedules in the wake of the 2010 Iceland volcanic eruption. If an eruption occurs within Idaho, developable land can be lost to lava flows, as in the Craters of the Moon volcanic field.

16.5 IMPACT ANALYSIS

16.5.1 Severity

The Volcanic Explosivity Index (VEI) is one way to describe the relative size of explosive volcanic eruptions (see Figure 16-5). Scores range from 0 to 8, with each number representing an increase in magnitude from the previous number by a factor of approximately ten. Several factors are taken into consideration to determine the magnitude, including the volume of erupted pyroclastic material (for example, ashfall, pyroclastic flows, and other ejecta), height of eruption column, duration in hours, and qualitative descriptions. VEI does not necessarily relate to the amount of sulfur dioxide injected into the atmosphere, which is critical in determining the climatic impacts of an eruption.

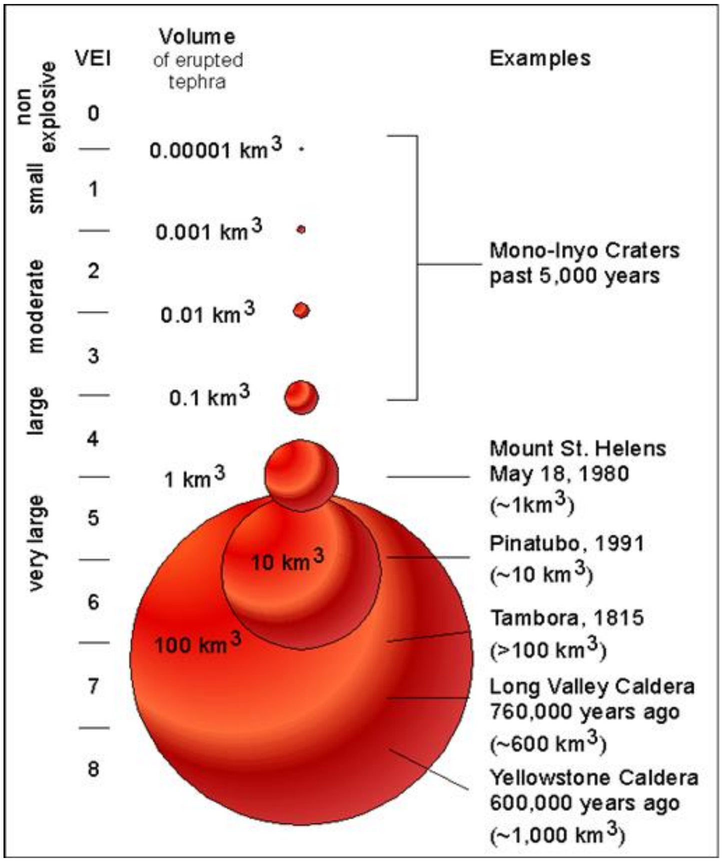


Figure 16-5. Volcanic Explosivity Index

A 1-inch-deep layer of ash weighs an average of 10 pounds per square foot, posing danger of structural collapse. Ash is harsh, acidic, and gritty, and it has a sulfuric odor. Ash may also carry a high static charge for up to two days after being ejected from a volcano. When an ash cloud combines with rain, sulfur dioxide in the cloud combines with the rainwater to form diluted sulfuric acid that may cause minor, but painful burns to the skin, eyes, nose, and throat.

16.5.2 Warning Time

The USGS operates five volcanic observatories, including one in the Yellowstone region and one in the Cascades region. These observatories maintain websites and issue warnings as well as weekly updates on volcanic activity.

The best warning of a volcanic eruption is one that specifies when and where an eruption is likely and what type and size eruption should be expected. Such accurate predictions are sometimes possible but still rare. The most accurate warnings are those in which scientists indicate an eruption is probably only hours to days away, based on significant changes in a volcano’s earthquake activity, ground deformation, and gas emissions. Experience from around the world has shown that most eruptions are preceded by such changes over a period of days to weeks. A volcano may begin to show signs of activity several months to a few years before an eruption. However, warnings that specify months or years in advance when it might erupt are extremely rare.

16.5.3 Cascading Impacts

A volcanic event would certainly have a large impact and influence over many of the hazards that pose a risk to the State. The location of the eruption would dictate these impacts. For a repeat event in the Cascade Range, ashfall would be the main cause for concern. The secondary hazards associated with volcanic eruptions are mudflows and landslides and possibly seismic activity in the region of the eruption. This could increase susceptibility for avalanches, by depositing a weak layer in the snowpack. An ashfall event could also affect the short-term storm patterns. Ashfall from volcanoes may cause impacts to critical infrastructure and lead to energy outages. The electrical generation, transmission and distribution networks can experience:

- Supply outages from insulator flashover caused by ash contamination
- Controlled outages during ash cleaning
- Line breakage due to ash loading
- Abrasion and corrosion of exposed equipment
- Disruption of generation facilities

Ashfall can also affect water supplies by physically disrupting or damaging water sources and components of water supply, treatment, and distribution systems. The deposition of ash into surface waters can also change its physical and chemical characteristics (Wilson, et al. 2012). Additionally, the movement of magma upward during an eruption could initiate seismic events.

A Yellowstone event would pose the greatest threat to the State and has the ability to increase the risk posed by many of the natural hazards. The largest impact would relate to human-caused hazards, such as a cyber disruption and hazardous material due to ashfall and negative effects of the ash accumulation, dramatically increasing the likelihood of all to occur. “When volcanic ash accumulates on buildings, its weight can cause roofs to collapse, killing and injuring people. A dry layer of ash 4 inches thick weighs 120 to 200 pounds per square yard, and wet ash can weigh twice as much. The load of ash that different roofs can withstand before collapsing varies greatly—flat roofs are more likely to collapse than steeply pitched ones. Because wet ash conducts electricity, it can cause short circuits and failure of electronic components, especially high-voltage circuits and transformers. Power outages are common in ashfall areas, making backup power systems important for critical facilities, such as hospitals. Eruption clouds and ash fall commonly interrupt or prevent telephone and radio communications in several ways, including physical damage to equipment, frequent lightning (electrical discharges), and either scattering or absorption of radio signals by the heated and electrically charged ash particles” (USGS 2004).

16.5.4 Environmental Impacts

The environment is vulnerable to the effects of a volcanic eruption, even if the eruption does not directly impact the planning area. This is highly dependent upon the amount of tephra accumulation. Rivers and streams are vulnerable to damage due to ash fall, especially since ash fall can be carried by these water courses. The sulfuric acid contained in volcanic ash could be damaging to area vegetation, waters, wildlife, and air quality.

In areas of the State where proximal volcanic hazard exists, a volcanic eruption could cause dramatic environmental effects. Vegetative communities, wildlife, historic and archeological sites, farms, and parks could be buried, crushed, and burned by a lava flow. Volcanic eruption would affect geology and soils in areas of Idaho near the event. Long-term effects could include forced changes in land-use patterns. Throughout the State, distal volcanic hazards could reduce air quality, damage historic resources (e.g., ashfall on old roofs), clog streams, and have health impacts on fish and wildlife.

16.5.5 Local Hazard Mitigation Plan Impacts

Six of the hazard mitigation plans prepared for Idaho's counties list volcano as a hazard of concern, and none of the counties rank it as a high-impact hazard:

An additional five counties identified volcano as a medium-impact hazard.

Table 16-1 summarizes potential losses to vulnerable structures due to volcano, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 16-1. Volcano Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

Estimated Total Population Exposed	731,654
Estimated Number of Structures at Risk	No structures identified
Estimated Value of Structures at Risk	$27,361,718,882

16.6 VULNERABILITY OF PEOPLE AND ASSETS

16.6.1 Total and Socially Vulnerable Populations

The communities and populations especially vulnerable to volcanic events include low-income communities, migrant populations, populations whose primarily language is not English, indigenous populations, communities of older adults, and those with respiratory and other health concerns. These populations may be more susceptible to transport and communication challenges. They may also be impacted by the effects of toxic volcanic ash and problems of the respiratory system, eyes, and skin due to lack of efficient air filtering systems in residences and shelter facilities.

Toxic gases emitted from a volcano can travel great distances and cause respiratory distress. Sulfur dioxide (SO2) is irritating to the eyes, nose, throat, and respiratory tract. The most vulnerable populations to volcanic gases include children and individuals with pre-existing respiratory conditions such as asthma, emphysema, bronchitis, and chronic lung or heart disease. Vulnerable populations may respond to very low levels of sulfur dioxide in the air without methods for efficient air filtering indoors. Prolonged or repeated exposure to higher levels may increase the danger, especially should there be a disparity in acquiring healthcare.

The acute health threats posed by the gas discharges are largely associated with acid gases, sulfur dioxide being the greatest threat because it is discharged at the highest rates and is also accompanied by sulfuric acid aerosols. The acute threats to human health typically fall off rapidly with distance from the vent. Although epidemiological data demonstrating the adverse impacts of gas exposure have been difficult to develop, anecdotal reports of families and individuals moving out of the exposed communities to avoid the effects of the gases are quite common. Future threats from these gases will also be dependent on the location of future eruptions. As with the acute effects, documentation of the human health impacts of lower-level chronic exposure to the volcanic gases in downwind communities has proven difficult.

Because the volcano hazard is assumed to affect the entire State of Idaho, the vulnerability of individual jurisdictions in the state depends primarily on the total population and socially vulnerable population in the jurisdiction. Table 16-2 summarizes the vulnerable and total population for the entire state and for the top ranked counties. Detailed results for all counties are provided in Table 4-5.

Table 16-2. Total and Socially Vulnerable Populations Statewide and in Highest-Ranked Counties

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	1,754,367	1. Ada (469,473)	2. Canyon (223,890)	3. Kootenai (161,676)
Vulnerable Population in the Hazard Area	384,687	1. Canyon (65,783)	2. Bonneville (31,670)	3. Ada (26,996)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	21.9%	Benewah, Clark, Lincoln, Power (all 100%)		

16.6.2 National Risk Index Ratings

Based on the metrics used to determine the volcanic risk within the National Risk Index, the index's risk rating is not applicable to any of the state's 44 counties.

16.6.3 Vulnerability of Facilities, Infrastructure and Community Lifelines

Impacts on critical infrastructure such as roads could isolate populations and interrupt commodity flows. Should a catastrophic eruption occur at the Yellowstone Caldera, it is assumed that 100 percent of state-owned assets would be exposed to the eruption and its cascading impacts (see Figure 16-2). However, there is no comprehensive mapping that has been conducted to identify individual structures at risk.

16.6.4 Potential Losses Due to a Hazard Event

Volcanic events are not likely to result in any losses associated with damage or impairment to State assets. All losses from this hazard would be associated with impacts on the economy, based on limitations on activities in volcano risk areas.

Loss estimations for the volcano hazards profiled in this assessment are not based on damage functions, because no such damage functions have been generated. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the replacement cost value of all State-owned or -leased facilities (see Table 16-3). This allows the State to select a range of potential economic impacts based on an estimate of the percentage of damage to these assets. Damage in excess of 50 percent is considered substantial by most building codes and typically requires total reconstruction of the structure.

Table 16-3. Loss Potential of State Facilities for Volcano

	Total Replacement Cost Value	Estimated Loss Potential Based on % Damage		
		10% Damage	30% Damage	50% Damage
State-Owned Facilities	$11,382,558,264	$1,138,255,826	$3,414,767,479	$5,691,279,132
State-Leased Facilities	$3,390,608,124	$339,060,812	$1,017,182,437	$1,695,304,062
Total	**$14,773,166,388**	**$1,477,316,639**	**$4,431,949,916**	**$7,386,583,194**

16.7 MITIGATING THE HAZARD

16.7.1 Catalog of Potential Mitigation Alternatives

Table 16-4 summarizes a range of potential alternatives for mitigating the volcano hazard.

Table 16-4. Potential Opportunities to Mitigate the Volcano Hazard

Personal-Scale	Organizational-Scale	Government-Scale
• **Manipulate the hazard:** ❖ None • **Reduce exposure:** ❖ Locate outside of hazard area • **Reduce vulnerability:** ❖ None • **Build local capacity:** ❖ Develop and practice a household evacuation plan.	• **Manipulate the hazard:** ❖ None • **Reduce exposure:** ❖ Locate outside of hazard area • **Reduce vulnerability:** ❖ Protect corporate critical facilities from potential impacts of severe ash fall (air filtration capability). • **Build local capacity:** ❖ Develop and practice a corporate evacuation plan ❖ Inform employees through corporate sponsored outreach ❖ Develop a cooperative.	• **Manipulate the hazard:** ❖ Limited success has been experienced with lava flow diversion structures • **Reduce exposure:** ❖ Locate outside of hazard area • **Reduce vulnerability:** ❖ Protect critical facilities from potential problems associated with ash fall. ❖ Build redundancy for critical facilities and functions. • **Build local capacity:** ❖ Public outreach, awareness. ❖ Tap into state volcano warning system to provide early warning to residents of potential ash fall problems

16.7.2 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the volcanic eruptions hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects
- Action 2023-007: Identify discrepancies that create barriers to implementing programs or projects and provide recommendations to appropriate entities to re-dress issues.

Chapter 17. Wildfire

Wildfire

A wildfire is characterized by a free-burning unplanned vegetative fire, that is either started by natural or human-caused activities and with a management objective of full suppression. Wildfires, particularly large-scale fires, can dramatically alter the terrain and ground conditions. Wildfires can increase the probability of other natural disasters, especially floods, landslides, and mudflows.

CHANGES SINCE 2018

+4

Federal Disasters

+16

Significant Wildfire Events

STATE IMPACT RATING

High (33)

SOCIALLY VULNERABLE POPULATION

15%

Of Total Population

16,697

Persons

CLIMATE PROJECTIONS

Dry vegetation from increased temperatures may intensify wildfire danger

Rainfall Changes

An increase in consecutive dry days and decrease in total rainfall may increase wildfires

CANALS

431

Miles

COMMUNITY LIFELINES

265

Total

625

State Buildings

73

State Bridges

75

State Dams

321

Miles of State Roads

17. WILDFIRE

17.1 HAZARD DESCRIPTION

A wildfire is an unplanned fire caused by lightning or other natural causes, by accidental (or arson-caused) human ignitions, or by an escaped prescribed fire (National Park Service 2022).

The wildfire hazard is significant not only in Idaho but in many areas of the United States. Wildfires, particularly large-scale fires, can dramatically alter the terrain and ground conditions. Wildfires can increase the probability of other natural disasters, specifically floods, landslides, and mudflows. Normally, vegetation absorbs rainfall, reducing runoff. However, wildfires leave the ground charred, barren, and unable to absorb water; thus, creating conditions for flash flooding and mudflows. Flood risk in these impacted areas remain significantly higher until vegetation is restored, which can take up to five years after a wildfire (FEMA 2021).

Wildfires have a rapid forward rate of spread when burning through dense, uninterrupted fuels. They can move as fast as 6.7 miles per hour (mph) in forests and 14 mph in grass and range lands. Wildfires can advance tangential to the main front to form a flanking front or burn in the opposite direction of the main front by *backing*. They may also spread by jumping or spotting, as winds and vertical convection columns carry firebrands (hot wood embers) and other burning materials through the air over roads, rivers, and other barriers that may otherwise act as firebreaks. Torching and fires in tree canopies encourage spotting, and dry ground fuels that surround a wildfire are especially vulnerable to ignition from firebrands. Spotting can create spot fires as hot embers and firebrands ignite fuels downwind from the fire.

Wildfires can consume large areas of Idaho, destroying property and taking lives. When huge fires strike, there is often little that can be done to control them; forcing residents to evacuate. Dense smoke can fill the area for miles around a fire, including areas not directly affected by flames. The smoke poses a direct threat to health impacts, especially for the young and elderly, as well as economic damages due to loss of tourist business. Wildfires also threaten the infrastructure of Idaho, as well as resources such as water, timber, wildlife habitat, and recreation.

17.1.1 Idaho Fire Threats

Idaho fire threats include the following:

- *Ground fires* burn organic matter (topsoil, partially decayed leaves, etc.) in the soil beneath surface litter and are sustained by glowing combustion. This fuel type is especially susceptible to ignition through spotting. Ground fires typically burn by smoldering and can burn slowly for days to months. Ground fires lead to ladder fires which consume the material between low-level vegetation and tree canopies such as small trees, downed logs, and vines. Kudzu, Old World climbing fern, and other invasive plants that scale trees may also encourage ladder fires.

- *Crawling or surface fires* are fueled by low-lying vegetation such as leaf and timber litter, debris, grass, and low-lying shrubbery.
- *Crown, canopy, or aerial fires* burn suspended material at the canopy level, such as tall trees, vines, and mosses. The ignition of a crown fire is dependent on the density of the suspended material, canopy height, canopy continuity, and sufficient surface and ladder fires in order to reach the tree crowns.
- *Underground/subterranean fires* burn combustible materials lying beneath the surface including peat, roots, rotten buried logs, and other woody fuels. Peat fires burning in peatlands tend to produce long-lasting, smoky, underground blazes. They burn a smaller area than fast-moving surface fires but can burn up to 10 times more fuel mass per acre.

17.1.2 Factors Affecting Wildfire Risk

Wildfires occur when all the necessary elements come together in a wooded or grassy area, as described below.

Oxygen

Oxygen is needed to start and sustain combustion and windy conditions can increase air supply. Air supporting a fire must be at least 16-percent oxygen; the air that surrounds humans contains about 21-percent oxygen.

Heat

Heat is needed to raise fuel temperatures to their ignition point and to ignite fuels. Common heat elements can be from both natural and anthropogenic sources. Once fuels are ignited, heat is transferred in three ways:

- *Conduction* transfers heat from a warmer object to a cooler object until both temperatures are the same.
- *Radiation* transfers heat through air by short energy waves (infrared rays), which preheat and dehydrate fuels to their ignition point.
- *Convection* transfers heat through the movement of liquid or gas. Wildfires generate gases that rise in columns, usually accompanied by sparks, embers and burning twigs. These convective columns move downwind, ahead of the fire front, carrying embers that start spot fires (Idaho Firewise 2018).

Fuel

Fuel is needed to sustain and/or carry flames. Fuel is considered any material capable of burning and includes living vegetation, branches, needles, standing dead snags, leaves, etc. Different fuels determine different wildfire behaviors. Large, dense trees burn for hours and generate a lot of heat. Dried grasses, on the other hand, produce a flashy fire that burns quickly and does not generate much heat (Idaho Firewise 2018). Firefighters generally classify wildfire fuels into three types:

- Ground Fuels: This vegetation is close to or lying on the ground. Ground fuels include dead grass and leaves, needles, dead branches, twigs, and logs.
- Surface Fuels: These plants and trees are close to the ground but not actually lying on the ground. They are usually shrubs, grasses, low-hanging branches, and anything not located in the high branches of trees. They are also referred to as “ladder fuels” because a fire can move from ground fuels to surface fuels, then onto crown fuels.
- Crown Fuels: Crown fuels are found only in the crowns of trees. They do not touch the ground and are usually the high branches of trees. When a wildfire burns in the tops of the trees, it is called a crown fire.

Fuels are classified by weight or volume (fuel loading) and by type. Fuel loading, often expressed in tons per acre, can be used to describe the amount of vegetative material available. If fuel loading doubles, the energy released also can be expected to double. Each fuel type is given a burn index, which is an estimate of the amount of potential energy that may be released, the effort required to contain a fire in a given fuel, and the expected flame length. Different fuels have different burn qualities. Some fuels burn more easily or release more energy than others. Grass, for instance, releases relatively little energy, but can sustain very high rates of spread.

Continuity of fuels is an important factor. Continuity is expressed in terms of both horizontal and vertical dimensions. Horizontal continuity is what can be seen from an aerial photograph and represents the distribution of fuels over the landscape. Vertical continuity links fuels at the ground surface with tree crowns via ladder fuels.

Another essential factor is fuel moisture. Like humidity, fuel moisture is expressed as a percentage of total saturation and varies with antecedent weather. Low fuel moisture indicates the probability of severe fires. Given the same weather conditions, moisture in fuels of different diameters changes at different rates. A 1,000-hour fuel, which has a 3-to-8-inch diameter, changes more slowly than a 1- or 10-hour fuel.

Weather

Weather includes wind, temperature, cloudiness, moisture, and air pressure. Warm temperatures and low humidity dry out vegetation, turning it into fuel causing wildfires to burn quickly. Wind not only moves wildfires but also supplies oxygen that causes fires to grow. Wind may also blow fire embers for miles and lead to the ignition of new spot fires. Rain and high humidity can slow down or extinguish fires, while storms can cause fire activity to increase or become unpredictable.

Weather is the most variable out of all the factors influencing wildfire behavior. Extreme weather leads to extreme events, and it is often a moderation of the weather that marks the end of a wildfire’s growth and the beginning of successful containment. High temperatures and low humidity can produce very vigorous fire activity. The cooling and higher humidity brought by sunset can dramatically quiet fire behavior. Fronts and thunderstorms can produce winds that are capable of radical and sudden changes in speed and direction, causing similar changes in fire activity. A fire’s rate of spread varies directly with wind velocity. Winds may play a dominant role in directing the course of a fire. The radical and devastating effect that wind can have on fire behavior is a primary safety concern for firefighters. The most damaging firestorms are usually marked by high winds

Topography

Topography describes the physical features of an area, including slope and aspect (the direction it faces). Wildfires burn more rapidly when moving upslope by preheating unburned fuels and making them more combustible. South and west facing slopes have drier fuels than north and east facing slopes. Topography can have a powerful influence on wildfire behavior.

The movement of air over the terrain tends to direct a fire’s course. Gulches and canyons can funnel air and act as a chimney, intensifying fire behavior and inducing faster rates of spread. Similarly, saddles on ridge tops tend to offer lower resistance to the passage of air and will draw fires. Solar heating of drier, south facing slopes produces upslope thermal winds that can complicate behavior. Slope is an important factor. If the percentage of uphill slope doubles, the rate at which a wildfire spreads will likely double. On steep slopes, fuels on the uphill side of the fire are closer to the source of heat. Radiation preheats and dries the fuel, thus intensifying fire behavior. Terrain can also inhibit wildfires: fire travels down slope much more slowly than it does upslope, and ridge tops often mark the end of a wildfire's rapid spread.

17.2 HAZARD LOCATION

Idaho's climate and ecosystems vary greatly from one area of the state to another but can be divided into two distinct ecosystems affected by fire: forests and rangelands. Additionally, with the significant population growth Idaho has seen since 1970, the wildland-urban interface area is of importance to the wildfire hazard and will only continue to affect the state. Wildfire is both a destructive hazard as well as a cleansing agent for forest health. Figure 17-1 shows relative wildfire risk areas throughout the state.

17.2.1 Forests

A forest is a dynamic system, continually changing in response to disturbances. Some disturbances help maintain native species and historic conditions and others threaten them. In urban forests or in campgrounds, agents of change, like disease, fire, insects and weather damage are often undesirable. They put facilities as well as visitors at some level of risk. However, in wilderness areas these same elements are considered desired components of a functioning ecosystem. It is the use or objective in managing the forest that determines how these agents of change are viewed as either desirable or undesirable (Idaho Forest Products Commission 2023).

Over time, the trees in these forests grow thick and close together, along with other vegetation, both dead and alive. When this happens, the forest needs to be cleaned out to keep trees healthy. Wildfire helps forests to "clean themselves" by burning dead trees and other vegetation, along with the crowded plants and trees. Some wildfires burn all vegetation in a forest, but many of them burn in a "mosaic" pattern, which means that not all trees and vegetation are burnt. After a wildfire, new vegetation has room to grow. Trees can start to rejuvenate, and new trees sprout because they have access to sunlight. Tender grasses begin to grow, which attracts wildlife such as elk, deer, and antelope.

More than 50 percent of Idaho is forested (Idaho Firewise 2018). Idaho has over 21 million acres of forest land, from the Canadian border in the north, to the Great Basin in the south. Elevations range from less than 1,000 feet along the Clearwater River valley to over 11,000 feet in the Sawtooth Range of southern Idaho. The mixed conifer forests in the Panhandle area can be moist forest types that include tree species found on the Pacific Coast such as western hemlock, Pacific yew, and western redcedar. Southern Idaho forests are generally drier, and ponderosa pine and Douglas-fir are most common. Lodgepole pine, Engelmann spruce, whitebark pine and subalpine fir occur at higher elevations or more northerly latitudes throughout the state. Most of the forest land in Idaho is owned by the Federal government (> 16 million acres), and of this, most is administered by the U.S. Forest Service. The State of Idaho owns just under 1.3 million acres, and private landowners own an additional 2.8 million acres. The various owners often have different management objectives (USDA 2021).

Forest Health

Targeted aerial surveys were completed for the 2021 Forest Health Report. The survey covered 18.74 million acres in 2021, compared to 10.24 million acres in 2020 and 27.8 million acres in 2019. For this reason, year to year comparisons of the number of acres affected by a given damage agent are not valid for 2020 and 2021 and are therefore not included in the 2021 report. The following sections summarize some findings of the 2021 Forest Health Highlights report of that aerial detection survey.

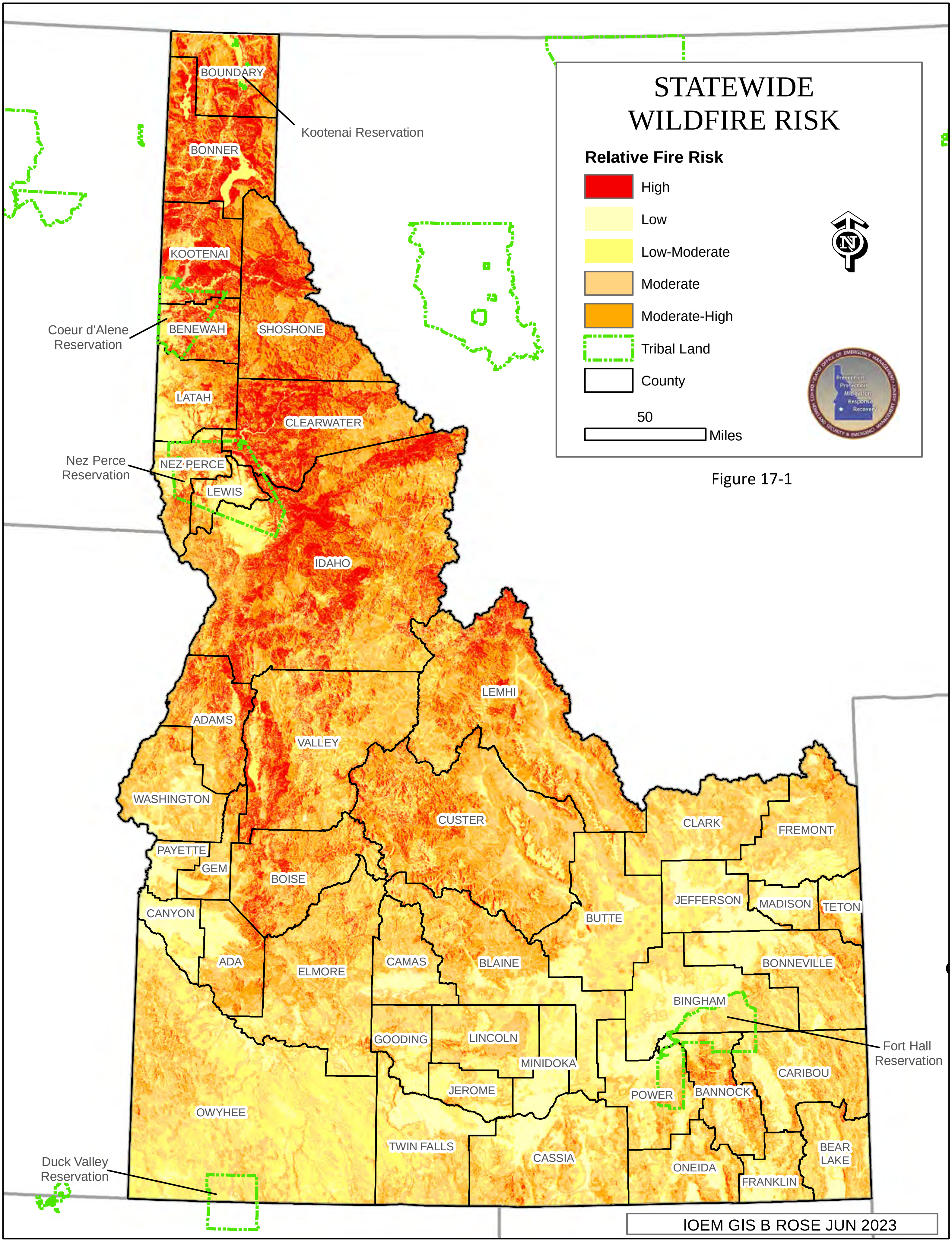

STATEWIDE WILDFIRE RISK
Relative Fire Risk
High
Low
Low-Moderate
Moderate
Moderate-High
Tribal Land
County
50
Miles
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
Fort Hall Reservation
GOODING
LINCOLN
MINIDOKA
JEROME
CARIBOU
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023

Figure 17-1

Bark Beetles

In 2021, Douglas-fir beetle caused mortality on around 10,000 acres. This appears to be an increase compared to typical years, especially in southern Idaho near areas that had been recently defoliated by Douglas-fir tussock moth. Douglas-fir beetle activity may increase in 2022 due to 2021 windstorms that created an excess of blowdown for Douglas-fir beetle to exploit. Fir engraver mortality was observed on over 4,000 acres, which is lower than expected. The decrease in fir engraver activity may be attributed to a cooler and wetter summer in 2020. However, fir engraver activity is expected to rise in 2022 due to extreme heat and drought in summer of 2021. Almost 4,000 acres were impacted by mountain pine beetle in 2021, but most areas were small and only lightly affected. Most of the mountain pine beetle-caused mortality was in lodgepole pine, but there was scattered mortality in other pine species (limber, ponderosa, whitebark, and western white). Western pine beetle-caused mortality occurred on about 1,000 acres, and pine engraver-caused mortality occurred on nearly 800 acres in 2021. Ground surveys in 2021 confirmed that pine engraver beetles were killing mature sized ponderosa pines that normally would have been killed by western pine beetle, likely due to drought conditions. The curtailed 2021 ADS survey may account for many of these acreage declines compared to previous years. It is important to remember that trees attacked by bark beetles do not usually change color until the following year, so mortality observed in 2021 actually represents trees that were attacked in 2020.

Defoliators

Western spruce budworm is a major defoliator of Douglas-fir and true firs in Idaho, especially in the south. Roughly 31,000 defoliated acres were recorded in 2021. The true defoliation extent is likely greater since survey coverage was more limited than usual; however, much less activity was mapped near Salmon, Challis, and Ketchum as compared to 2019. Western spruce budworm outbreaks can be long lasting and negatively impact tree regeneration due to the insect feeding in the cones as well as on the foliage. The Douglas-fir tussock moth outbreak in southern Idaho that caused defoliation on over 212,000 acres at its peak in 2019 has collapsed. There were just a few areas of defoliation west of Cambridge near the Oregon border, and one area of severe defoliation in the Owyhee Mountains. Just over 9,600 acres were damaged by Douglas-fir tussock moth in northern Idaho east of Clarkia and south of Avery. The outbreak in the Silver Valley in 2020 collapsed in 2021. Areas of Douglas-fir tussock moth outbreak were prioritized for ADS flights in 2021, so these recorded acreages likely captured much of the damage from Douglas-fir tussock moth.

Other Agents

Balsam woolly adelgid, an invasive sucking insect, continues to be a major mortality agent of true fir, especially in southern Idaho. ADS surveyors are improving methods for identifying and recording balsam woolly adelgid-caused damage and recorded almost 16,000 acres in 2021. Balsam woolly adelgid may also be a factor in areas recorded as subalpine fir decline, but it is hard to confirm. Approximately 2,300 acres were affected by larch needle cast in 2021. The decrease is attributed to unfavorable conditions for the pathogen in the spring during shoot elongation. Damage due to larch needle cast can appear very dramatic but is rarely a serious concern (USDA 2021)

Disease

Idaho’s forests are also significantly impacted by diseases, but not all diseases are easily detected from the air. With the exception of foliar diseases, most forest diseases are not well represented by aerial detection surveys. Root diseases are very common in northern Idaho, affecting over 8 million acres, with most mortality occurring in Douglas-fir, grand fir, and subalpine fir in northern Idaho. Dwarf mistletoes infect over 2.5 million acres of forest statewide. These parasites are especially damaging to western larch, Douglas fir, lodgepole pine and ponderosa pine. White pine blister rust is widespread throughout the range of western white, whitebark and limber pines, affecting millions of trees, though an acreage estimate would be difficult to determine (USDA 2021).

Forest Economics

Idaho has a very productive forest industry. The data for 2021 has not been updated yet, but in 2020, estimated revenues of wood and paper products totaled $2.4 billion. An estimated 16,158 people were directly employed in the forest products industry and total harvest was estimated at 1.1 billion board feet of timber. An estimated 64 percent of this total came from private lands. State land provided 23 percent and federal lands provided 13 percent of the total. Most of Idaho’s commercial forestland and larger production facilities are located north of the Salmon River. Forest products from Idaho’s forests are sold throughout the world (USDA 2021).

Human Impact on Forest

Another issue is the fire hazard and threat to life and personal property presented by abundant dead or dying trees. While urban areas throughout the Interior West have experienced population booms in the past decade, so have rural areas. Many people continue to seek rural locations with nearby recreational opportunities. While some counties are growing faster than others in Idaho, the state as a whole has been growing at an estimated rate of 18 percent per year since 1990. Much of the development that supports this influx of people is in, or adjacent to, forested lands. While some of that development is taking place near Idaho’s larger population centers, there is also a substantial amount of new dispersed housing in rural counties. Valley County, in the central portion of the state, is a good example of the growth phenomenon. The county is estimated to be expanding at a rate of about 31 percent. Much of the land within the county’s borders is both forested and government owned. About 20 percent of the land base is in private ownership and, therefore, potentially available for residential development. Nearly all of that development is in close proximity to the surrounding forest lands. The problem in terms of fire management is obvious. The probability of human-ignited fire is greater where there are more people, and there is an ever-increasing population in the wildland interface. More fire starts in conjunction with dense forests and hot or windy weather conditions, increases the possibility of fires capable of destroying homes and putting human lives at risk (Idaho Forest Products Commission 2023).

17.2.2 Rangelands

Rangelands form most of the remaining land in the State that is not used for agriculture. Rangelands predominate in the Southwest, Central, and Southeast planning regions of Idaho.

Types of Rangelands in Idaho

Rangelands in Idaho include canyon grasslands, Palouse prairie, sagebrush-steppe, cold desert shrublands, juniper woodlands, aspen savannahs, mountain meadows, and streamside riparian communities. The geographic and climatic regimes of Idaho’s rangelands are very diverse, creating many unique plant communities and habitats that are well adapted to these conditions. Low precipitation in these areas, often less than 10 inches per year, throughout most of Idaho creates plant communities, such as grasslands and shrublands, that can survive hot, dry summers (Idaho Rangeland Resources Commission 2023).

Sagebrush Grasslands

Sagebrush Grasslands is a mix of sagebrush and bunchgrass that dominates about 18.5 million acres in southern Idaho. These rangelands stretch across the plains, plateaus, and valleys south of the Salmon River. Lower elevations support stands of shorter and smaller shrubs compared to taller "savanna-like" stands at higher elevations. Precipitation generally ranges from 10 to 18 inches per year. Big sagebrush is the main type of sagebrush in Idaho. The shrub-grass mix provides good spring and fall grazing for livestock and wildlife. Sage grouse, pronghorn antelope, deer, and black-tailed jackrabbits call sagebrush grasslands home, and rely on this type of ecoregion for survival (Idaho Rangeland Resources Commission 2023).

Juniper Woodlands

Juniper Woodlands is a kind of "pygmy forest" in southern Idaho, with two kinds of small evergreen trees, Western juniper and Utah juniper, covering about 1.6 million acres. Juniper woodlands usually occur on the rougher terrain and can be dense or open depending on soils and topography. These woodlands usually occur in scattered patches rather than solid stands. Annual precipitation in this area ranges from 12 to 30 inches per year. The juniper woodlands are important "watersheds" that yield water for agriculture and other human uses. The woodlands are also important winter range for wildlife, especially deer and songbirds. In addition, the juniper trees are often harvested for fence posts and other wood products. Western and Utah juniper are common types of juniper found on these rangelands (Idaho Rangeland Resources Commission 2023).

Salt-Desert Shrublands

Salt-Desert Shrublands is a dry desert in southern Idaho, created by salty soils and cold temperatures. Shrubs that can live in these salty soils dominate this "cold desert" covering 1.5 million acres. As the name suggests, soil salinity is a characteristic feature of this rangeland area. These shrublands get very little precipitation each year, usually 10 inches or less. Shrubs are generally better suited for these harsh conditions than grasses or forbs because of their deep root systems. Because these shrubs have high nutritive value in winter, salt deserts are excellent winter range for pronghorn antelope and are considered some of the world's best range for winter sheep grazing (Idaho Rangeland Resources Commission 2023).

Pacific Bunchgrass

Pacific Bunchgrass was characterized by settlers who arrived in northern Idaho in the 1880's. They found mostly forest except for a few rolling prairies of bunchgrass that dominated about 1.2 million acres. These exploring farmers found the deep rich soils and moist climate of the Palouse and Camas prairies favorable for growing wheat and other crops. Precipitation in this area ranges from 12-30 inches per year. Today most of the prairies have been converted to farmland, and very little of the native bunchgrass remains. The existing canyon and foothill grasslands continue to provide high quality spring forage for sheep and cattle and good winter habitat for deer and quail. Predominant native grasses in the Pacific Bunchgrass region are bluebunch wheatgrass, Sandberg bluegrass, and Idaho fescue (Idaho Rangeland Resources Commission 2023).

Fire Impact on Rangelands

Fires are a natural disturbance that can have a positive or negative effect in the places where they occur. Fire naturally served a role in maintaining rangeland health, plant composition and diversity in many communities. Plants, animals, and insects in fire-adapted ecosystems have evolved mechanisms to tolerate or even benefit from fire. Adaptations include long lived seeds that are activated by fire, quick germination and regrowth after fire, thick bark resilient to fire, and seed production activated by fire. For example, plants in the *othus* genus (a rangeland shrub) contain a waxy coating on the seed surface that is dependent on heat treatment from fire to break seed dormancy and promote germination. Antelope bitterbrush, rabbitbrush, and several other rangeland shrubs have adapted to sprout quickly after a fire, utilizing the increase of minerals and nutrients that are present in the ash. Grasses often come to dominate shrublands and woodlands after fire because the woody plants are removed and the grasses are better adapted to fire (Idaho Rangeland Resources Commission 2023).

However, if fires are too frequent or intense, plant cover and organic matter at the soil surface can be reduced. Fire almost always results in a loss of nutrients through volatilization, oxidation, ash transport, and erosion. The potential damage to plants and amount of dead plant material that is converted to bio-available nutrients depends on how hot the fire burned. Generally, low intensity burns increase plant productivity, while high intensity burns result in decreased productivity and plant diversity. A change of fire interval (i.e., the time between fires) or improper timing of fire during the season can deplete native plant communities of desirable perennial plants. Over time, repeated burning can result in severe impacts, including loss of perennial plants, an increase in frequency of weedy plants, increased erosion, and a change in nutrient cycling (Idaho Rangeland Resources Commission 2023).

In Idaho and many other western states, land managers are concerned about cheatgrass invasion and its ability to shorten the interval between fire events. When cheatgrass goes dormant it creates a bed of fine fuels that are easily ignited and can burn rapidly and frequently across the landscape. Fine fuel created by cheatgrass recovers and grows when wildfires occur every few years, which can happen on cheatgrass dominated rangelands.

Rangeland Economics

Rangelands also provide important habitat for domestic livestock, including cattle, sheep, goats, and horses. Most of the world's livestock live on rangelands and serve as a highly significant and necessary source of food and livelihood for people all over the globe. Ranching is an important endeavor that uses livestock to convert the nutritious and renewable grasses and other plants on rangelands into food, fiber, and other animal-based products for humans. Livestock production on rangeland is very important to supply meat for American and world populations. Rangelands are the primary source of the meat supply (Idaho Rangeland Resources Commission 2023):

- Livestock grazing occurs on 65 percent of Idaho's total land area and in every county throughout the state.
- Range livestock production is one of Idaho's major agricultural activities in terms of land used and cash receipts.

The University of Idaho College of Natural Resources Policy Analysis Group completed an analysis of the financial performance of Idaho's Endowment Rangelands in December of 2018. This analysis used an input-output model to measure the contributions of Endowment Lands to Idaho's economy. Three sources of economic effects were measured: effects generated by inputs (timber, forage, minerals, etc.) from Endowment Lands to various industries; spending of distributions by beneficiaries; and expenditures by IDL and the Endowment Fund Investment Board for land and financial asset management, respectively. In 2017, Endowment Lands contributed $1.35 billion in output (direct and support effects), 7,641 jobs, and $531.3 million in gross state product, including $315.4 million in wages (University of Idaho 2018). The endowment's rangeland asset consists of over 1.4 million acres of rangeland administered through 1,106 grazing leases and other variety of activities (Commissioners 2021).

17.2.3 Wildland-Urban Interface

The wildland-urban interface (WUI) is the area where structures and other human development meet or intermingle with developed wildland. The character of the WUI ranges from urban areas adjoining wildlands to isolated ranches or cabins. In recent years, the expansion of the WUI has had significant implications for wildfire management and impact. The WUI creates an environment in which fire can move easily between structural and vegetative fuels. According to the 2021 Annual Report by Idaho State Marshal (Department of Insurance), 15 percent of fires investigated in 2021 were in wildland, while 50 percent were located in/near residential structures (Idaho State Fire Marshal 2021). The expansion of the WUI has increased the likelihood that wildfires will threaten structures and people. In Idaho, only 14 percent of the WUI is developed (University of Idaho 2016).

When a fire occurs within the WUI, the job of firefighting becomes more complex. Since 1993, the number of structures in the WUI has nearly doubled. As the number of structures in the WUI continues to increase, concerns over public safety and the protection of improvements increases (Idaho Department of Lands (IDL) 2021). The population increase within the state can also mean that the WUI will continue to grow. According to the headwater's economics report, Idaho had a 135 percent population growth between 1970 and 2016. This greatly affects the WUI and increases the wildfire threat. In 2016, WUI fires were not as damaging as in prior years. Fifty percent of IDL fires started in the WUI, burned 10 percent of the acreage, and accounted for 7 percent of the total cost of suppression. of the WUI fires, 76 percent were human caused. Figure 17-2 depicts the locations of highest vulnerability based on WUI boundaries throughout the State. As seen in the figure, the southwestern portion of the State has the highest risk. This includes Washington, Payette, Gem, Boise, Ada, Elmore, Camas, and Blaine Counties. It is in the WUI that the protection of structures from wildland fires is most challenging and human-caused fire ignitions are most common.

17.3 PREVIOUS HAZARD OCCURRENCES

Wildfires have resulted in significant disasters throughout Idaho's history. The summer fires of 2000 and 2007 were some of the most damaging fires on record in the State. The 1910 fire that struck northern Idaho and western Montana has been characterized as the largest in American history, taking 86 lives and burning three million acres. As the communities of Idaho expand into the wildland urban interface, more and more residents are exposed to wildfire impacts. There is no county in the State of Idaho without a significant wildland fire hazard.

Idaho has experienced several large, long-lasting wildfires in recent years, which burned thousands of acres at a time. These fires are not always considered to be good for the forest, because they burn such a large amount of vegetation all at one time. Wildlife must find new areas to forage for food when thousands of acres have burned all at one time. Many sources provided wildfire information regarding previous occurrences and losses associated throughout the State of Idaho. For the 2023 SHMP, wildfire events that occurred in Idaho between January 1, 2018, and December 31, 2022 are summarized below.

17.3.1 Disaster and Emergency Declarations

Known wildfire events that have impacted the State of Idaho and resulted in 4 federal disaster or emergency declarations between 2018 and 2022 are identified in Table 17-1. Appendix D lists events prior to 2018.

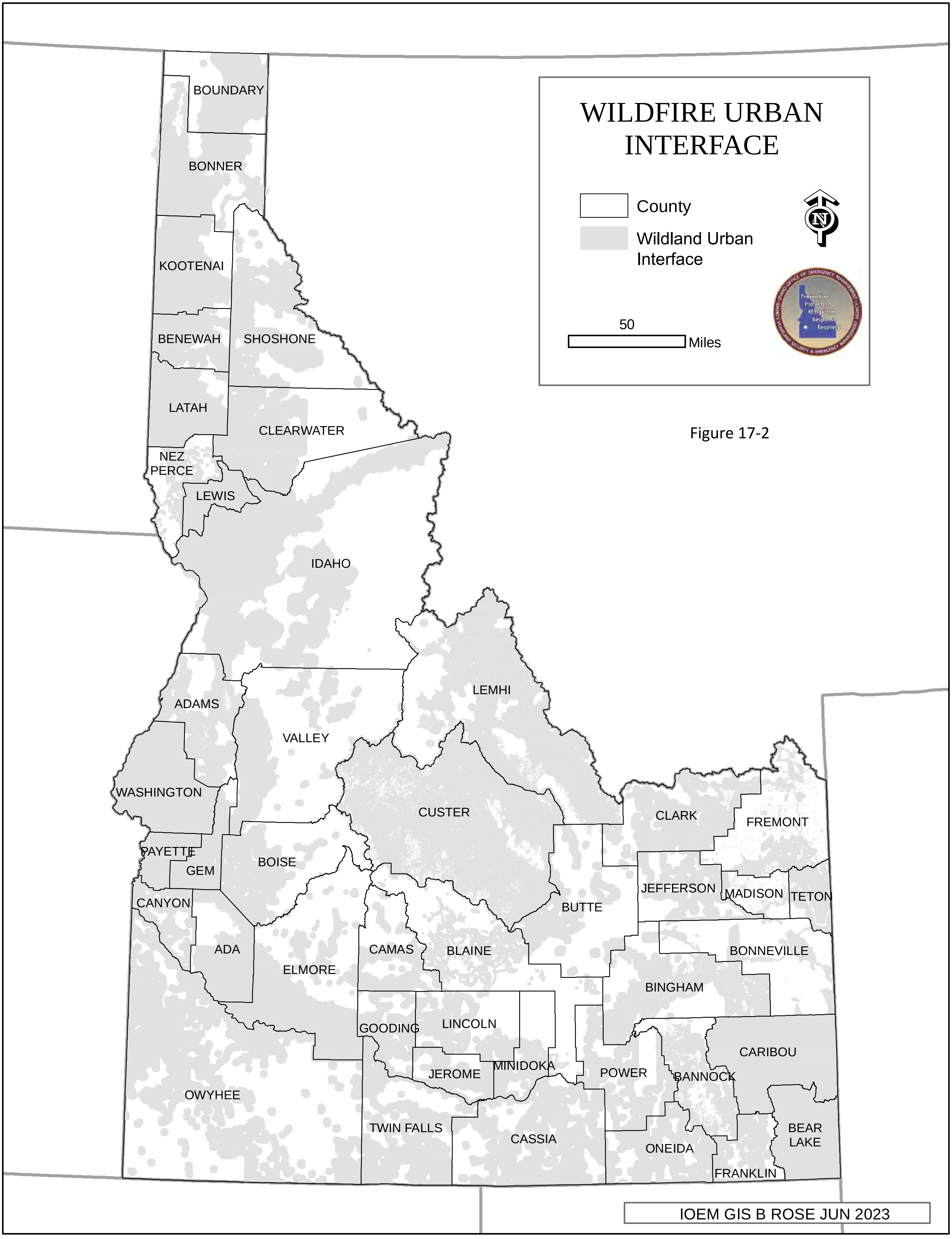

WILDFIRE URBAN INTERFACE
County
Wildland Urban Interface
50
Miles
BOUNDARY
BONNER
KOOTENAI
BENEWAH
SHOSHONE
LATAH
CLEARWATER
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
CAMAS
BLAINE
BONNEVILLE
ELMORE
BINGHAM
GOODING
LINCOLN
CARIBOU
JEROME
MINIDOKA
POWER
BANNOCK
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
IOEM GIS B ROSE JUN 2023

Figure 17-2

Table 17-1. Wildfire Federal and State Declarations (2018 to 2022)

Incident Type	Declaration Title	Date Declared	State or USDA Declaration Number	Federal Declaration Number	Counties Affected
Wildfire	Grassy Ridge Fire	7/29/2018		FM-5263-ID	Clark County
Wildfire	N/A	8/22/2018	S4385		Owyhee County
Wildfire	Summer Wildfires	8/15/2018	ID-03-2018		N/A
Wildfire	Summer Wildfires	9/8/2020	ID-03-2020		N/A
Wildfire	Wildfires	7/9/2021	ID-02-2021		N/A
Wildfire	Bedrock Fire	8/13/2021		FM-5407-ID	Nez Perce County, Nez Perce Tribal Nation Land
Wildfire	Four Corners Fire	8/19/2022	ID-02-2022	FM-5449-ID	Adams County; Gem County; Valley County
Wildfire	Ross Fork Fire	9/5/2022		FM-5452-ID	Blaine County
Wildfire	Ross Fork Fire	9/6/2022	ID-03-2022		N/A
Wildfire	Moose Fire	9/9/2022	ID-04-2022		N/A

Source: (FEMA 2023); (USDA 2023); (IOEM 2023)

The following disaster declarations or emergency proclamations related to wildfire events have been issued for the State of Idaho:

- **Federal disaster (DR) or emergency (EM) declarations, 1956 – 2022**: 22 wildfire events, classified as fire or wildfire.
- **Idaho State Emergency Proclamations, 2018 – 2022**: 6 wildfire events, classified as fire or wildfires.
- **USDA Agricultural Disaster Declarations, 2018 – 2022**: 1 wildfire event.

Figure 17-3 shows counties affected by these declarations.

17.3.2 Event History

All wildfires begin with an ignition source. The 2021 Annual Idaho State Fire Marshal report shows that fires caused accidentally have become the primary fire start cause. Over 5,000 fires were investigated in 2021, 61 percent were caused accidentally, while 20 percent were caused by natural forces. of these 5,000 fires, 1,523 were natural vegetation fires and the remaining 3,603 were human-related categories, 53 being crop fires. A total of over $132 million was recorded in dollar loss (Idaho State Fire Marshal 2021). This is an exponential increase in costs from the 2018 Annual Report, which states the total dollar loss for that year just under $60 million ((Marshal 2018).

Table 17-2 lists significant wildfire events that impacted the State of Idaho between 2018 and 2022. Due to the number of events, the table includes only events that caused at least $75,000 in property/crop damage, or more than one person injured. Appendix D lists events prior to 2018.

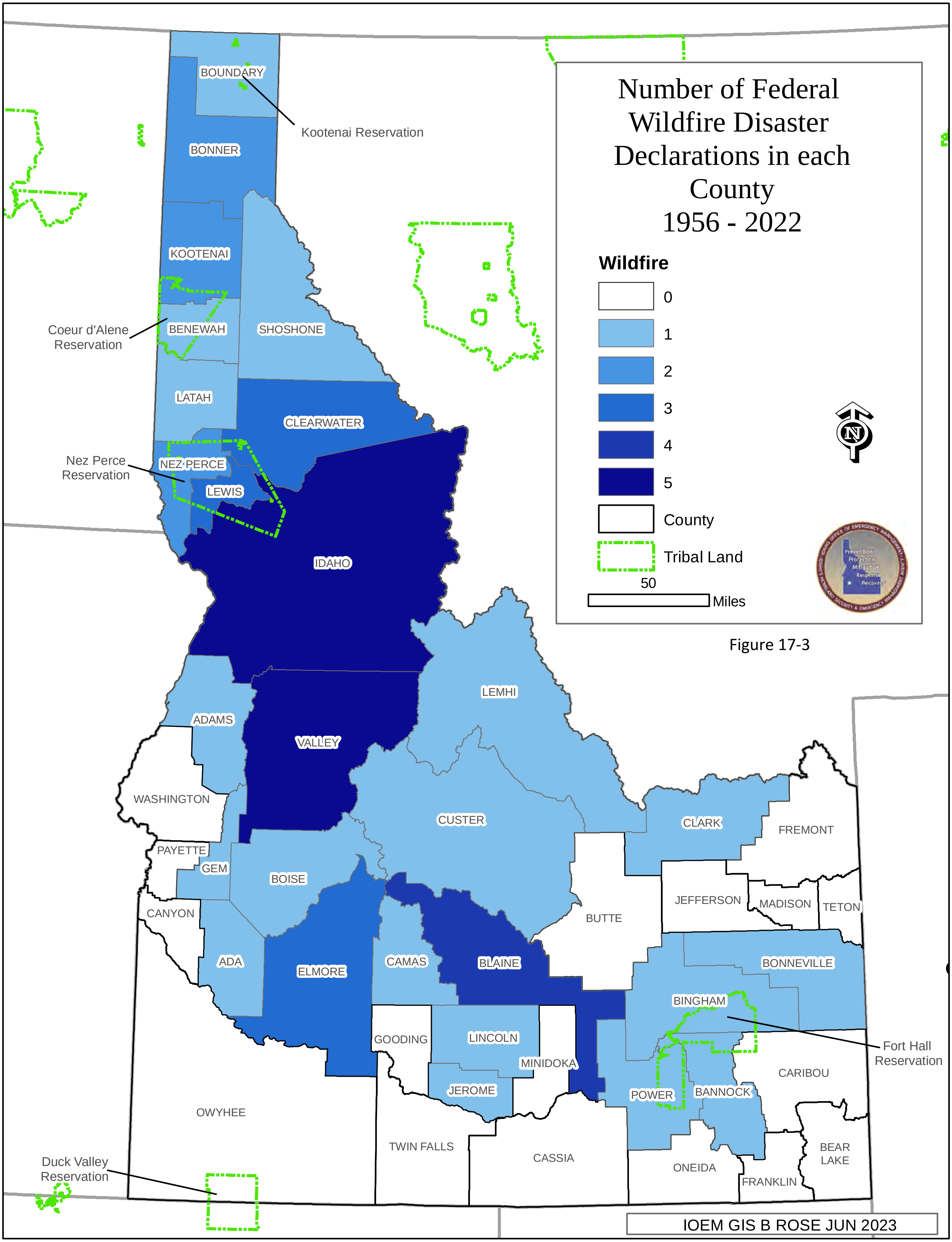

Number of Federal Wildfire Disaster Declarations in each County 1956 - 2022
Wildfire
0
1
2
3
4
5
County
Tribal Land
50
Miles
BOUNDARY
Kootenai Reservation
BONNER
KOOTENAI
Coeur d'Alene Reservation
BENEWAH
SHOSHONE
LATAH
CLEARWATER
Nez Perce Reservation
NEZ PERCE
LEWIS
IDAHO
LEMHI
ADAMS
VALLEY
WASHINGTON
CUSTER
CLARK
FREMONT
PAYETTE
GEM
BOISE
JEFFERSON
MADISON
TETON
CANYON
BUTTE
ADA
ELMORE
CAMAS
BLAINE
BONNEVILLE
BINGHAM
GOODING
LINCOLN
MINIDOKA
Fort Hall Reservation
JEROME
POWER
BANNOCK
CARIBOU
OWYHEE
TWIN FALLS
CASSIA
BEAR LAKE
ONEIDA
FRANKLIN
Duck Valley Reservation
IOEM GIS B ROSE JUN 2023

Figure 17-3

Table 17-2. Significant Wildfires in Idaho (2018 to 2022)

Start Date	Event Type	Counties or Region Affected	Description
10/1/2022	Wildfire	Boundary County; Bonner County; Benewah County; Clearwater County; Kootenai County; Idaho County; Lewis County; Latah County; Shoshone County; Nez Perce	The Kootenai River Complex consisted of the Eneas Peak, Katka, Russel Mountain, Scotch Creek, and Trout fires. Combined the fires burned a total of 25,401 acres. The cost of resources to contain the fire totaled $15 million.
9/3/2022	Wildfire	Central Panhandle Mountains	The Prospect fire was started from lightning and burned a total of 291 acres of timber. The cost of resources to contain the fire totaled over $2 million.
9/1/2022	Wildfire	Central Panhandle Mountains	The Caledonia fire was started from lightning and burned a total of 1,535 acres. The cost of resources to contain the fire totaled $75,000.
9/1/2022	Wildfire	Camas County; Blain County; Custer County	The Ross Fork wildfire began on August 14th in Camas County and spread to Blaine and Custer Counties in late August to early September. The fire was fueled by timber litter and short grass totaling 35 thousand burned acres. Mandatory evacuations were issued on September 4th and several highway systems were shut down and resorts were closed. FEMA (FM-5452) authorized federal funds of nearly $6 million to assist with firefighting costs.
8/21/2022	Wildfire	Central Panhandle Mountains	The Columbus fire was suspected to be caused by lighting and detected on August 22nd. The fire was located within a mile of the Idaho/Montana state line and burned a total of 2,298 acres. The cost of resources to contain the fire totaled $2.5 million.
8/16/22	Wildfire	Adams County, Gem County, Valley County	The Four Corners Fire burned about 14,000 acres of grass and timber resulting in a federal declaration (FM-5449). More than 300 personnel were assigned to fire-fighting efforts.
8/18/2022	Wildfire	Central Panhandle Mountains	The Bear Gulch fire was caused by lightning and detected on August 18th. It was located within a mile of the Idaho/Montana state line and burned 100 acres of timber and brush. Cost of resources to contain the fire totaled $300,000.
8/14/2022	Wildfire	Central Panhandle Mountains	The Blackburn fire was started from a lightning strike days before. Several other fires were reported in the area. The fire burned a total of 360 acres of timber and the cost of resources to contain the fire totaled $400,000.
9/1/2021	Wildfire	Nez Perce	The Bedrock fire burned more than 11,000 acres. FEMA (FM-5407) authorized nearly $108,000 in Public Assistance and HMGP funding.
9/1/2021	Wildfire	Central Panhandle Mountains	Trestle Creek Complex, Character Complex, and Larkins Complex wildfires were all started by lightning from passing thunderstorms in the Idaho panhandle. The fire burned a total of 12,367 acres and resulted in the loss of 3 structures and 14 firefighter injuries.
6/14/2021	Wildfire	Lower Snake River Plain	A human caused wildfire and burned 3,843 acres resulting in several evacuations and downed power lines. The wildfire was classified as a grass, brush, and juniper fire. Cost of resources to contain the fire totaled $310,000.
4/21/2021	Wildfire	Lower Snake River Plain	A wildfire began on April 21st and grew to 1,200 acres on April 22nd due to shifting winds. The fire resulted in evacuations and one destroyed home. The cost of resources to contain the fire totaled $200,000.
9/7/2020	Wildfire	Boundary County; Bonner County; Benewah County; Clearwater County; Kootenai County; Idaho County; Lewis County; Latah County; Shoshone County; Nez Perce	Hunter fire began on August 7th due to an unknown cause. The fire burned 684 acres due to high winds and resulted in several road closures, evacuations, and destroyed 4 homes. Costs of resources to contain the fire totaled $600,000.

Start Date	Event Type	Counties or Region Affected	Description
9/7/2020	Wildfire	Orofino/Grangeville Region	Heavy wind gusts at 45 mph caused trees to fall on power lines, sparking and starting several wildfires. Due to low humidity and high winds the wildfires spread rapidly damaging 13 homes, 31 outbuildings, and 27 vehicles. U.S. Hwy 12 was closed due to the wildfire. The cost of resources to contain the fire totaled $2.5 million.
9/22/2018	Wildfire	Blackfoot Mountains	A fire started by sparks from a welder in southeast Soda Springs and burned a total of 1,066 acres destroying 2 homes and 2 trailers. The fire began on September 22nd and was contained on September 25th. The cost of resources to contain the fire totaled $100,000.
8/1/2018	Wildfire	Central Panhandle Mountains	The Surprise Creek wildfire is believed to have been caused by lightning on July 27th due to dry conditions over north Idaho during July and August. Dry fuel conditions were seen across the region. The fire burned 3,300 acres of timber in wilderness area. The cost of resources to contain the fire totaled $1.3 million.
8/1/2018	Wildfire	Central Panhandle Mountains	The Rampike wildfire is believed to have been caused by lightning on July 31st due to dry conditions over north Idaho during July and August. Dry fuel conditions were seen across the region. The fire burned 3,100 acres in a remote wilderness area. The cost of resources to contain the fire totaled $1 million.
8/1/2018	Wildfire	Boundary County; Bonner County; Benewah County; Clearwater County; Kootenai County; Idaho County; Lewis County; Latah County; Shoshone County; Nez Perce	The Smith Creek wildfire is believed to have been caused by lightning on July 27th due to dry conditions over north Idaho during July and August. Dry fuel conditions were seen across the region. The fire burned 1,113 acres of timber in the mountains. Cost for resources to contain the fire totaled $299,000.
8/1/2018	Wildfire	Boundary County; Bonner County; Benewah County; Clearwater County; Kootenai County; Idaho County; Lewis County; Latah County; Shoshone County; Nez Perce	The Cougar wildfire is believed to have started from lightning on July 28th due to dry conditions over north Idaho during July and August. Dry fuel conditions were seen across the region. The fire burned 7,866 acres of timber. Cost for resources to contain the fire totaled $5.1 million.
8/28/2018	Wildfire	Clark County	The Grassy Ridge Fire burned more than 100,000 acres. FEMA (FM-5263) authorized nearly $106,000 in Public Assistance and HMGP funding.

Source: (NOAA NCEI 2023)

17.4 PROBABILITY OF FUTURE HAZARD EVENTS

17.4.1 Overall Probability

According to FEMA and NOAA Idaho has experienced over 406 designated wildfire events between 1956 and 2022, as summarized in Table 17-3. Based on historical records, the State of Idaho has experienced 22 FEMA declarations associated with wildfires since 1956. The state can experience a major event that leads to a FEMA declaration once every 3 years. Looking at all wildfire events recorded by NOAA, there have been 384 events between 1956 and 2022. Based on this data, the State of Idaho may experience between an estimated 7 wildfire events each year (NOAA 2023). Overall, the State can expect to at least experience similar average frequency of these events in the future, with the possibility of an increase in frequency due to the impacts from climate change.

Table 17-3. Probability of Future Wildfire Events in Idaho

Hazard Type	Events Between 1956 and 2022	Average Frequency
Wildfire	384	7 events per year

Source(s): (NOAA 2023)

17.4.2 Climate Change Impacts

The climate of Idaho is changing as records show that the State has seen an increase in temperature of one to two degrees (°F) over the past 100 years. In the coming years, it is predicted that streams will be warmer, wildfires will become more common, deserts may expand, and water may be less available for irrigation (Environmental Protection Agency 2016).

Fire is determined by climate variability, local topography, and human intervention. Hot, dry spells create the highest fire risk. Increased temperatures may intensify wildfire danger by warming and drying out vegetation. When climate alters fuel loads and fuel moisture, this changes the ecosystem susceptibility to wildfires. Climate changes also may increase winds that spread fires. Faster fires are harder to contain, and thus are more likely to expand into residential neighborhoods.

Increasing Temperatures

In the past 40 years, rising spring and summer temperatures have increased the risk of wildfires in most parts of the West. Studies show that continued climate change is going to make wildfires much more common in the coming decades. Rising spring and summer temperatures across the West appear to be correlated to the increasing size and numbers of wildfires. The Climate Central analysis of historical climate data and climate projections examined how wildfire risk could change in the coming decades. The findings in Idaho revealed the conditions suitable for summer wildfires are projected to increase substantially in the relatively short period between now and 2050. The analysis relies on the Keetch-Byram Drought Index (KBDI), which is a measure of the dryness of the top 8 inches of the forest floor (the duff layer). The KBDI serves as a proxy for the dryness of forest fuels. It is one of several indicators of wildfire potential and the U.S. Forest Service uses this tool along with others, to predict fire danger. The scale runs from 0 to 800, where low numbers indicate that the fuel moisture is high (less likely to burn) and high numbers represent more severe drought leading to a higher likelihood of wildfires.

The analysis found that the number of days with KBDI above 600 (level of high potential for wildfire) would increase significantly between now and 2050 in 10 of the western states if greenhouse gas emissions continue unabated (according to the high emission scenario RCP 8.5). The KBDI projections are calculated from an ensemble of 29 climate models, downscaled across the U.S. (Climate Central 2016).

Earlier Spring and Longer Summers

Rising temperatures have secondary and tertiary effects on conditions which set the stage for increased wildfires. The frost-free season, defined as the stretch between the last 32°F reading in the spring and the first 32°F reading in the fall, has increased in length over the past 30 years; with both an earlier last frost in the spring and a later first frost in the fall. The average duration of the frost-free season is about 15 days longer across the U.S. than it was in the early 20th century. Climate change is contributing to an overall increase in the number of days without frost. The West has seen the most dramatic increases in the length of the frost-free season, with Boise adding about a month more to the frost-free season since 1970. The longer the time without frost, the longer the growing season. While this may seem good — it could have detrimental effects on the crops grown in the State. Warmer weather helps pests survive longer which can wreak havoc on many crops (Climate Central 2016).

This affects fuels in Idaho's forests with pests that can cause disease also living longer. In the spring and summer, hotter temperatures lead to drying of fire fuels – the duff and downed wood on the forest floor, and the standing trees. Drier fuels are more likely to ignite from lightning strikes and human activity. In Idaho's rangelands, where the climate is hotter and drier, those fires that do start are more likely to find ideal fire conditions over larger areas, leading to more area burning.

Reduced Snowpack

According to Climate Central's Meltdown analysis, an increasing percentage of winter precipitation is falling as rain rather than snow across much of the West. As a result, less water is stored in the West's mountain snowpack, leading to less water availability to keep fuels moist during hotter and drier parts of fire season. In Idaho, 78 percent of weather stations at higher elevations (5,000 to 8,000 feet) reported a decreasing trend of snowfall (Climate Central 2016).

Earlier and warmer spring temperatures lead to earlier melting of the snowpack, causing a similar loss of water available during the hotter and drier times of the year. Earlier melting compounds the problem of less precipitation falling as snow. Research has found that years with higher wildfire frequency, especially in the Northern Rockies, were also years with low snowpack (Climate Central 2016).

Increase in Wildfire Burn Season and Burn Acreage

On average, wildfires burn twice as much land area each year as they did 40 years ago. In the past decade, the average annual burn area on Forest Service land in the West has exceeded 2 million acres. Over the past 45 years, Idaho has seen a larger increase in the number of large fires and the area burned by them than any other western state. According to an analysis of large wildfires (>1,000 acres) on U.S. Forest Service land in Idaho conducted by Climate Central in 2016:

- Over the last five years, Idaho has seen an average of 21 more large fires each year than it did in the 1970s. The largest increase among the western states, which is a 10-fold increase in the annual number of large wildfires.
- Idaho also ranks first in the increase of area burned by large wildfires. Approximately 305,000 more acres were burned in an average year to date, than did in the 1970s.

The burn season is recorded as being two and a half months longer than 40 years ago. Across the West, the first wildfires of the year are starting earlier, and the last fires of the year are starting later; making typical fire years 75 days longer than 40 years ago. The number of days with high wildfire potential in Idaho is projected to quadruple between now and 2050, the third largest percentage increase among the western states (Climate Central 2016).

These climatological changes seem to also be pointing towards increased wildfire activity in the coming years. Idaho may see an increase in wildfire activity due to several factors: minimal snowpack, higher temperatures, and lower than average rainfall amounts. The low average of rainfall across Idaho has contributed to drought conditions which will do little to reduce the threat for wildfires across the State.

Fire Weather Index Value Changes

Fire Weather Index values signal different levels of relative fire danger across a region. Values above 25 typically represent a high level of fire danger in northern regions such as Idaho. Fire Weather Index values incorporate factors that contribute to greater wildfire risk, but do not account for fuel types or the results of fire behavior models. Climate models using the RCP8.5 scenario show a slight increase in Fire Weather Index values by mid-century, especially in the southern part of the state (Figure 17-4). The RCP8.5 scenario represents a continuous rise of greenhouse gas emissions throughout the 21st century.

Source: (Climate Risk and Resilience Portal 2023)

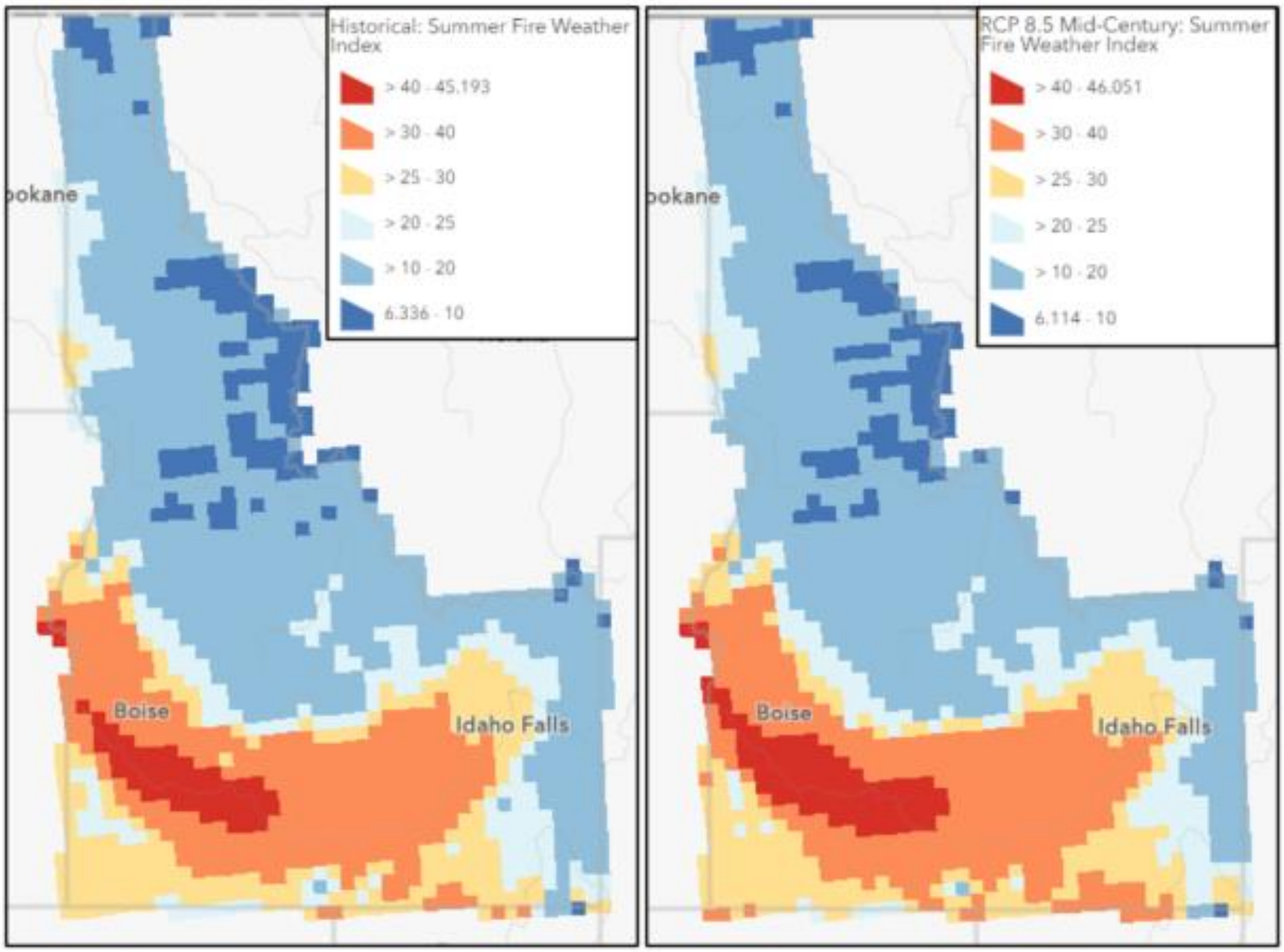


Figure 17-4. Historical Fire Weather Index Values (left), RCP8.5 Mid-Century Projection of Fire Weather Index Values (right)

17.4.3 Future Changes that May Impact State Vulnerability

An understanding of population and development trends can assist in planning for future development and ensuring that appropriate mitigation, planning, and preparedness measures are in place. The State considered the following factors to examine previous and potential conditions that may affect hazard vulnerability:

- Potential or projected development

- Projected changes in population
- Other identified conditions as relevant and appropriate

The U.S. EPA’s Integrated Climate and Land-Use Scenarios (ICLUS) project generated projected population and land use projections for the United States through 2100. The project examined multiple scenarios taking into account various population growth and economic development parameters that have been used as the baseline for the Intergovernmental Panel on Climate Change’s (IPCC) Special Report on Emissions Scenarios (SRES). Population change took into account assumptions regarding fertility, mortality, and immigration, which was then used to drive the land use projections. This SHMP used the ICLUS modeling (Scenario SSP2 + RCP4.5) to prepare statewide and county-specific estimates for Idaho land use in 2020 and 2030.

Appendix E lists the estimated land-use area (square miles) located in the identified wildfire hazard area for 2020 and projected area for 2030 by jurisdiction. Figure 3-7 displays the projected population growth by 2026. With this update the Idaho Department of Labor produced population projection data for each region in the state through 2029. Wildfires can occur statewide, so population growth statewide will expose additional people to a wildfire event.

Statewide there is a projected increase of 4,480 square miles of buildable lands within the wildfire hazard area by 2030. This increase is the greatest in Latah County, where an increase of 1,217 square miles of buildable land is projected; this coincides with the increase in higher housing densities, which will place a greater number of people in the hazard area.

Numerous studies have been conducted with differing results in terms of number of buildings in the WUI. In addition, there are differing spatial definitions of the “WUI zone.” All studies agree that the WUI is extensive and is rapidly expanding. For example, the 2023 Wildfire Hazard Risk Report by CoreLogic indicates that the State of Idaho’s risk has increased from 41,230 residential properties potentially at risk in an “extreme risk” zone in 2016 to 100,233 residential properties potentially at risk in 2023. The CoreLogic 2016 report estimated $9.9 billion in replacement cost value, which now in 2023 is an estimated $33.1 billion in replacement cost value.

As populations increase and developments expand into WUI zones, one could expect to continue to see this trend. According to a 2013 study by Headwater Economics, based on the large number of undeveloped private land in the WUI, future development trends will result in increased wildfire risk, especially to homes and personal property. The study estimates only 12.6 percent of available private land in the WUI is developed in Idaho, leaving a huge potential for growth in the remaining 87.4 percent of the acreage. This ranks Idaho as the State with the 5th most undeveloped land in the WUI.

Northern Idaho has an exceptionally high potential risk. The current risk of wildfire (number of square miles of WUI with existing homes) and the potential risk (number of square miles of WUI that remains undeveloped) are both highest in the northern parts of the State. Both Kootenai and Bonner counties have more than 100,000 square miles of buildable land in the WUI.

A recent study from the University of Oregon’s Institute for a Sustainable Environment conducted analysis of the economic impacts of large wildland fires in the western U.S. This study found that economies increase 0.9 to 1.5 percent in a community directly after a wildfire, but that these gains are short-lived and decreases are seen one to two years following the event. This is the inverse of those patterns seen for most other hazards, where communities generally experience a decrease in economy during a disaster event with economic growth seen during subsequent recovery.

17.5 IMPACT ANALYSIS

17.5.1 Severity

Potential losses from wildfire includes human life, property, infrastructure, and natural resources; they can have considerable social and economic costs. These costs have risen substantially in recent years and can be particularly high in the WUI, where considerable resources are spent on the protection of homes and other structures. Suppression costs are the most publicized costs associated with wildfires. Both federal and state expenditures related to wildfire have increased, and include protection, prevention, and suppression. In addition to suppression costs, there are other equally important costs associated with wildfires: costs of restoring burned areas, lost tax and business revenues, property damage and/or devaluation, and costs to human health and lives.

Smoke and air pollution from wildfires can be a health hazard, especially for vulnerable populations including children, the elderly, and those with respiratory and cardiovascular diseases. Wildfires may also threaten the health and safety of those fighting the fires. First responders are exposed to the dangers from the initial incident to the after-effects such as smoke inhalation and heat stroke. In addition, wildfire can lead to ancillary impacts such as landslides in steep ravine areas and flooding caused by the impacts of silt in local watersheds.

Within the WUI, risks are associated with the probability that an area will burn, its severity, and the likely behavior of fire in the area. It is assumed that burn probability and fire behavior contribute equally to the risks of communities. Agriculture areas, rock, urban areas, and water are not assigned a burn probability or relative fire behavior. Communities with these cover classes are assumed to not be at risk from wildfire.

Fire severity provides a description of how fire intensity affects ecosystems, particularly for wildfires where information on the fire intensity was absent and effects were variable between different ecosystems. It refers to the loss or decomposition of organic matter above- and belowground. Burn severity refers to the loss of organic matter in or on the soil surface. The following classifications can be used to estimate soil heating by vegetative and physical conditions. They also assist with determining the burn intensity of a wildfire, which is useful in preparing rehabilitation plans and planning other post-fire activities. The indicators shown in Table 17-4 assist with determining the intensity of a wildfire.

17.5.2 Warning Time

Wildfires are often caused by humans, intentionally or accidentally and there is no way to predict when one might occur. However, there are tools used to identify the possibility and susceptibility of fire weather in an area. Fire weather watches and red flag warnings are used to convey the possibility of severe fire weather to wildland fire agencies.

The National Weather Service (NWS) issues Fire Weather Watches and Red Flag Warnings to alert fire departments and residents of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity. The watches, warnings, and evacuation notices are science-based predictions that are intended to provide adequate time for evacuation.

Table 17-4. Wildfire Burn Severity Classification

General Statements	Indicators	Interpretations
Low Fire Severity (Type III)		
• primarily occur on rangeland • no sediment delivery • natural recovery likely	• duff and debris are partly burned • soil is a normal color • hydrophobicity is low to absent • standing trees may have some brown needles	• root crowns and surface roots will resprout quickly • infiltration and erosion potential are not significantly • changed
Medium Fire Severity (Type II)		
• primarily occur on steep, lightly timbered slopes • with grass • some sediment delivery	• duff is consumed • burned needles are still evident • ash is generally dark colored • hydrophobicity is low to medium on surface soil up to 1 inch deep • soil is brown to reddish-brown and up to 2 inches of soil is darkened from burning (below ash) • roots are alive below 1 inch • shrub stumps and small fuels are charred but present • standing trees are blackened but not charcoal	• root crowns will usually resprout • roots and rhizomes below 1 inch will resprout • most perennial grasses will resprout • vegetative recovery (non-tree), depending on • conditions, could be one to five years • soil erosion potential will increase due to the lack of ground cover and moderate hydrophobicity
High Fire Severity (Type I)		
• primarily occurs in unprotected drainages on steep, timbered, north or east slopes with dense forest canopy • sediment delivery likely • natural recovery limited	• duff consumed • uniformly gray or white ash (in severe cases ash is thin and white or light) • no shrub stumps or small fuels remain • hydrophobicity medium to high – up to 2 inches deep • 2 to 4 inches of soil is darkened (soil color often reddish orange) • roots burned 2 to 4 inches • soil physically affected (crusting, crystallization, agglomeration) • standing trees charcoal up to 1 inch deep	• soil productivity is significantly reduced • some roots and rhizomes will resprout but only those deep in soil • vegetative recovery (non-tree), depending on conditions, could be five to 10 years • soil erosion potential can be significantly increased

Source: University of Wyoming 2018

A fire weather watch is issued by the NWS when the potential of severe fire weather exists for the near future. A watch is used when there is a relatively low probability of occurrence and less chance of verifying. The fire danger rating is usually in the high to extreme category. It is normally issued 12 to 24 hours in advance of the expected onset of severe fire weather conditions and typically in conjunction with the routine narrative forecasts. The area affected, onset time, and a statement describing the conditions are included in the forecast. A Red Flag Warning is issued by the NWS to indicate the imminent danger of severe fire weather or the relatively high probability of one occurring (NPS 2018).

17.5.3 Cascading Impacts

Flooding after a wildfire is often severe, as debris and ash from the fire form mudflows. During and after a rain event, as water moves across charred and denuded ground, soil and sediment is picked up and carried in a stream of floodwater. These mudflows have the potential to cause significant damage to impacted areas. Areas directly affected by fires and those located below or downstream of burn areas are most at risk for flooding (FEMA 2021).

Large wildfires may affect air currents in their immediate vicinities by the stack effect: air rises as it is heated, and large wildfires create powerful updrafts that will draw in new, cooler air from surrounding areas in thermal columns. Great vertical differences in temperature and humidity encourage pyrocumulus clouds, strong winds, and fire whirls with the force of tornadoes at speeds of more than 80 kilometers per hour (50 mph). Rapid rates of spread, prolific crowning or spotting, the presence of fire whirls, and strong convection columns signify extreme conditions.

Wildfires can also impact human health miles from the actual burn site. The National Climate Assessment describes these human health impacts from wildfires by pointing out that exposure to smoke can lead to a wide range of respiratory and cardiovascular issues resulting in increased hospitalizations, ER visits, and even fatalities. A Climate Central analysis found that in several western U.S. cities, the worst air quality days of the year were usually days when wildfires were burning in the region.

Additionally, wildfires may lead to long term power outages. Transmission lines that pass-through areas prone to wildfires are at a higher risk of outages. Dense smoke from wildfires can “trip” a transmission line circuit, causing it to go out of service. Outages can also result from emergency line de-rating or shutdowns during a nearby fire to prevent thermal damage to the lines. Wooden utility poles have a high potential to burn, downing power lines and leading to outages as well.

Wildfires may damage energy transmissions and communication infrastructure. This could result in energy shortages or cyber disruptions in a community. As wildfires can produce extremely large and impactful events, a worst-case event could be a driving cause for civil disturbances. Facilities that store radiological materials may also be susceptible should they be located in an area affected by wildfire.

17.5.4 Environmental Impacts

Wildfire is a part of an ecosystem’s natural cycle. It plays a key role in shaping ecosystems by serving as an agent of renewal and change. However, uncontrolled fire can be deadly as it may destroy homes, wildlife habitat and timber, and polluting the air with emissions harmful to human health. Fire also releases carbon dioxide—a key greenhouse gas—into the atmosphere. Thus, large fire events have an effect on the landscape that may prove to be long lasting. Often these effects are influenced by forest conditions before the fire and management action taken or not taken after the fire. Fire can shape ecosystem composition, structure, and functions in multiple ways:

- By selecting fire adapted species and removing other, susceptible species
- By releasing nutrients from the biomass and improving nutrient cycling
- By affecting soil properties through changing soil microbial activities and water relations
- By creating heterogeneous mosaics, which in turn, can further influence fire behavior and ecological processes
- By damaging watersheds that serve as water supplies for urban areas
- By eliminating natural grazing areas.

Fire as a destructive force can rapidly consume large amounts of biomass and cause negative impacts such as post-fire soil erosion, water runoff, and air pollution. However, as a constructive force, fire is also responsible for maintaining the health and perpetuity of fire dependent ecosystems. Considering the unique ecological roles of fire in mediating and regulating ecosystems, it should be incorporated as an integral component of ecosystem and management and conservation.

Wildfire can also bring opportunities for noxious weeds to grow on Idaho's rangelands. Nonnative species, including their seeds, eggs, spores, larvae, or other biological material capable of propagation, that cause economic or environmental harm and are capable of spreading are collectively known as invasive species. In Idaho, an invasive species is defined as a species that is (1) non-native to the state and (2) whose introduction causes or is likely to cause, economic or environmental harm. Invasive species can be plants, animals, and other organisms. Human actions are the primary pathway (opposed to natural shifts in the distribution of species). Nationally, the current environmental, economic, and health costs of invasive species were estimated as exceeding the costs of all other natural disasters combined.

Invasive species introduced into Idaho are affecting plant and animal communities on farms, ranches, parks, waters, forests, natural areas and in backyards. Human activity such as trade, travel and tourism have all increased substantially, escalating the speed and volume of species movement to unprecedented levels. Invasive species are often unintended hitchhikers on conveyances such as animals and people. Still more non-native species are deliberately introduced as pets, ornamental plants, crops, biofuels, food, for recreation, or other purposes. Many non-native species brought into Idaho, including most sources of food and fiber, are not harmful; many are highly beneficial. Although invasive species, in most cases, primarily cause environmental damage and degradation, there are situations in which serious threats to public health, safety, and well-being can occur. For example, a widespread insect infestation, such as that of the Emerald Ash Borer, can create a serious public safety threat (especially in densely populated urban areas such as the Treasure Valley). The infestation could cause the trees to decay and die resulting in increased flammability (dry, brittle nature), or to partial/total collapse of the trees due to high winds or ice/snow accumulation. The falling trees or limbs can also cause property damage, block roads, bring down power lines, cause damage to public and private structures, and cause injuries or even death. Emerald Ash Borer has caused extensive damage to trees in other states at considerable expense.

Cheatgrass is one invasive weed that is widely distributed throughout the western U.S. Because cheatgrass can grow in Idaho's climate and soils, it has spread rapidly throughout Idaho's rangelands. After fires burn on Idaho's rangelands, cheatgrass begins to grow before Idaho's native plants due to it sprouting in late fall. When cheatgrass grows first, Idaho's native plants do not have soil and water to grow. Cheatgrass is also highly flammable and grows in a continuous bed of grass, whereas Idaho's native grasses grow in clumps with separation between them. Because cheatgrass covers large areas, wildfire burns rapidly through it, creating larger, faster moving wildfires that are difficult to control.

Beneficial fires occur when a fire ignites and burns slowly, burning mostly ground vegetation and a few trees. These fires help Idaho's ecosystems by cleaning out dead and/or crowded vegetation but leaving the majority of large trees alive and able to repopulate the forest. Some trees rely on wildfire to repopulate the forest. Many of these trees drop "serotinous cones" from their branches. The seeds, sealed in the cone by resin, are stored for many years until they are exposed to intense heat that melts the resin covering the cone and allows the cone to open. The seeds are then able to germinate when conditions are optimum, in the ashes immediately after a forest fire. For example, the Lodgepole Pine trees in many of Idaho's forests drop serotinous cones on the forest floor. These trees are considered "fire dependent," because they need fire in order to spread their seeds (Idaho Rangeland Resources Commission 2023).

Wildfire plays an important role in the health of Idaho's rangelands, just as it does in Idaho's forests. Juniper trees grow on Idaho's rangelands and are also fire dependent. Without regular wildfires, juniper trees begin to grow in areas where sagebrush and grasses grow naturally. The juniper trees crowd out the sagebrush and grasses, causing habitat loss for sagebrush-dependent birds such as the sage grouse.

17.5.5 Local Hazard Mitigation Plan Impacts

Forty-three of the hazard mitigation plans prepared for Idaho's counties list wildfire as a hazard of concern, and 30 counties rank it as a high-impact hazard:

- Adams
- Bannock
- Benewah
- Bingham
- Blaine
- Bonner
- Bonneville
- Boundary
- Camas
- Cassia
- Clark
- Clearwater
- Custer
- Elmore
- Fremont
- Gem
- Gooding
- Idaho
- Jerome
- Kootenai
- Latah
- Lemhi
- Nez Perce
- Oneida
- Owyhee
- Payette
- Power
- Twin Falls
- Valley
- Washington

An additional nine counties identified wildfire as a medium-impact hazard.

Table 17-5 summarizes potential losses to vulnerable structures due to wildfire, based on estimates from the local risk assessments. Due to variances in approaches to assessing risk at the local level as well as the hazards assessed and the age of each assessment reviewed, this data is considered approximate.

Table 17-5. Wildfire Risk Exposure Analysis for Local Hazard Mitigation Plan Reviews

Estimated Total Population Exposed	1,798,333
Estimated Number of Structures at Risk	131,136; 428 miles of roadway; 28,097 parcels
Estimated Value of Structures at Risk	$54,138,661,303

17.6 VULNERABILITY OF PEOPLE AND ASSETS

A GIS analysis was performed to evaluate the number of people and assets within the defined hazard area for wildfire. The wildfire hazard area was identified as the areas of moderate-high and high risk as determined by the Idaho Bureau of Land using the wildland urban interface, relative wildland fire risk, and relative wildland fire hazard. Results are summarized below.

17.6.1 Total and Socially Vulnerable Populations

Low-income communities, migrant populations, populations whose primary language is not English, indigenous populations, communities of older adults, and those with respiratory and other health concerns are all especially vulnerable to wildfires. Members of immigrant communities may be concerned about impacts to their immigration status and do not seek help. When a wildfire impacts an area with high rents where multiple families live in one structure, it may be difficult for those not listed on the lease to prove that they were affected by the fire; this could result in a lack of access to services. Additionally, fires quickly increase housing prices and rent prices, further displacing people already affected by the fire. Homelessness can increase.

Wildfires can also pose significant threats to the health and safety of those fighting the fires. First responders are exposed to the dangers from the initial incident and after-effects from smoke inhalation and heat stroke.

The population living along the WUI may only have one ingress/egress to their communities, making them highly vulnerable in the event of an evacuation. Additional vulnerabilities include communicating risks about the hazard.

It can take days to translate information into languages other than English, hindering communication about evacuations and health and safety alerts. Indigenous populations may lose sacred sites; fisheries and hunting and gathering grounds may be degraded. Older adults do not have the mobility many others have, which can slow or prevent evacuation. Health problems related to wildfire smoke exposure can be as mild as eye and respiratory tract irritation and as serious as worsening of heart and lung disease, including asthma, and even premature death.

Table 17-6 summarizes the vulnerable and total population within the defined hazard area. Detailed results for all counties are provided in Appendix E.

Table 17-6. Population Within the Wildfire Hazard Area

	Statewide Total	Highest-Ranked Counties		
Total Population in the Hazard Area	113,990	1. Kootenai (39,670)	2. Bonner (20,249)	3. Valley (5,033)
Vulnerable Population in the Hazard Area	16,697	1. Benewah (3,487)	2. Kootenai (2,919)	3. Shoshone (2,294)
Vulnerable Hazard Area Population as % of Total County or State Hazard Area Population	14.6%	1. Benewah, Clark, Lincoln, & Power (100% each)		

17.6.2 National Risk Index Ratings

According to the National Risk Index, 23 of the state's 44 counties have NRI identified wildfire risk rated from relatively high to relatively moderate. The risk rankings for the highest ranked counties are shown in Table 17-7.

Table 17-7. NRI Ratings for Wildfire in Highest-Ranked Idaho Counties Wildfire

County	Expected Annual Loss	Social Vulnerability	Community Resilience	Community Risk Factor	Risk Value	Score
Ada County	$24,589,329	Very Low	Very High	0.845696585	$19,238,525	99.10
Idaho County	$14,870,890	Relatively Moderate	Very Low	1.249837477	$18,506,830	98.95
Elmore County	$11,452,891	Relatively High	Relatively Low	1.314922279	$14,536,291	98.50
Boise County	$8,623,714	Very Low	Very Low	0.931196412	$8,026,999	97.29
Valley County	$8,055,924	Very Low	Relatively High	0.920478818	$7,390,553	97.00

17.6.3 State-Owned or -Leased Facilities

Table 17-8 summarizes the number and estimated replacement cost value of all State-owned or -leased facilities in the defined hazard area. Table 17-9 shows the number of State agencies and counties that have State-owned or -leased facilities in the hazard area. Table 17-10 lists the top three state agencies and counties with State-owned or -leased facilities in the hazard area, by number of facilities and by total estimated replacement cost value. Detailed results for all counties and state agencies are provided in Appendix E.

Table 17-8. Total State Facilities Within the Wildfire Hazard Area

	Facilities in the Hazard Area		
	State-Owned	State-Leased	Total
Number of Facilities in the Hazard Area	573	52	**625**
Total Estimated Replacement Cost Value	$1,097,459,699	$108,322,452	**$1,205,782,151**

Table 17-9. State Facilities Within the Wildfire Hazard Area by State Agency and County

	Total Number of State Agencies with Facilities in the Hazard Area	Total Number of Counties with Facilities in the Hazard Area
State-Owned	16	28
State-Leased	15	19
Total[a]	**25**	**32**

a. Total number of agencies or counties with vulnerable facilities may not be equal to the sum of those with state-owned facilities and those with state-lease facilities, as some agencies and counties have both state-owned facilities and state-leased facilities.

Table 17-10. Top Three State Agencies and Counties with State Facilities Within the Wildfire Hazard Area

	Greatest Number of Facilities in Hazard Area				Greatest Replacement Cost Value in Hazard Area			
	State Agencies		Counties		State Agencies		Counties	
	Name	Facilities	Name	Facilities	Name	Value	Name	Value
1.	Dept. of Parks & Recreation	272	Bonner	109	Dept. of Parks & Recreation	$737.2 million	Clearwater	$202.9 million
2.	Dept. of Fish & Game	136	Valley	81	Division of Military	$126.3 million	Bonner	$180.5 million
3.	Division of Military	58	Clearwater	76	Dept. of Fish & Game	$76.9 million	Valley	$155.2 million

17.6.4 Highways, Bridges, Dams, and Canals

Table 17-11 summarizes the miles of highway and number of bridges and dams within the defined hazard area statewide, as well as the counties with the greatest number of each. Detailed results for all counties are provided in Appendix E.

Table 17-11. State Highways, Bridges, and Dams Within the Wildfire Hazard Area

	Statewide Total	Highest-Ranked Counties		
Miles of Highway	321	1. Idaho (54.5)	2. Kootenai (49.6)	3. Bonner (36.0)
Number of Bridges	73	1. Kootenai (15)	2. Idaho & Lewis (8 each)	
Number of State-Regulated Dams	75	1. Valley (18)	2. Owyhee (7)	3. Kootenai (6)
Miles of Canals	431	1. Lincoln (40)	2. Elmore (36)	3. Lemhi (27)

17.6.5 Buildable Lands

Table 17-12 summarizes the amount of buildable land within the defined hazard area for 2020. Appendix E provides details on buildable land and ICLUS land use in the hazard area for all counties for 2020 and 2030.

Table 17-12. Buildable Lands Within the Wildfire Hazard Area. 2020

	Statewide Total	Highest-Ranked Counties		
Buildable Land in the Hazard Area (acres)	261,440	1. Kootenai (87,363)	2. Bonner (74,229)	3. Boundary (18,437)
Hazard Area Buildable Land as % of Total County or State Buildable Land	41.1%	1. Clearwater (77.2%)	2. Benewah (75.7%)	3. Bonner (72.6%)

17.6.6 Community Lifelines

Table 17-13 summarizes the number of community lifelines by type within the defined hazard area. Detailed results for all counties are provided in Appendix E.

Table 17-13. Community Lifelines Within the Wildfire Hazard Area

	Number of Lifelines Within the Hazard Area			
	Statewide Total	Highest-Ranked Counties		
Energy	115	1. Elmore & Gooding (11 each)		3. Jerome (10)
Food, Water, Shelter	2	1. Gooding & Blaine (1 each)		n/a
Health & Medical	3	1. Clearwater (2)	2. Bonner (1)	n/a
Safety & Security	58	1. Kootenai (21)	2. Bonner (13)	3. Boise (5)
Transportation	87	1. Adams (14)	2. Bonner & Nez Perce (9 each)	
Total	**265**	**1. Kootenai (32)**	**2. Bonner (26)**	**3. Adams & Boundary (17 each)**

Idaho Power developed a mitigation plan for wildfire hazards with a multi-faceted strategy to reduce risk in Idaho and Oregon coverage areas. The plan includes assessments, risk analysis, history of wildfire, and public input and outreach, and is found online at 2023 Wildfire Mitigation Plan.

Mitigation activities include broad categories of system hardening, feeder segmentation, fire mesh installation, asset inspections, vegetation management, and meteorology. System hardening includes undergrounding power lines. In 2022, 1.85 miles of line was buried. Segmentation isolates circuits with reclosing devices in high risk zones to improve power reliability. Fire mesh is wrapped around poles in high-risk areas. Patrols identify areas for pruning and hazard tree removal. Five weather stations were installed in 2022 to monitor live fuel moisture and forecasting weather events.

Public safety power shutoff (PSPS) is a program to communicate with public safety partners, critical facilities, and customers of imminent shutoffs due to high winds and high wildfire potential. Idaho Power conducts exercises to test PSPS.

Idaho Power leans forward with new technology such as satellite imagery for vegetation management, fire detection cameras, and LiDAR for pole distribution and capacity. The mitigation plan will be reviewed annually and updated prior to wildfire season as needed.

17.6.7 Potential Losses Due to a Hazard Event

Although wildfire can cause significant damage to State assets, there are no standard generic formulas for estimating associated losses. Instead, loss estimates were developed representing 10 percent, 30 percent, and 50 percent of the replacement cost value of all State-owned or -leased facilities exposed to the landslide hazard (see Table 17-14). This allows the State to select a range of potential economic impacts based on an estimate of the percentage of damage to these assets. Damage in excess of 50 percent is considered substantial by most building codes and typically requires total reconstruction of the structure.

Table 17-14. Loss Potential of State Facilities for Wildfire

	Total Replacement Cost Value of Exposed Facilities	Estimated Loss Potential Based on % Damage		
		10% Damage	30% Damage	50% Damage
State-Owned Facilities	$1,097,459,699	$109,745,970	$329,237,910	$548,729,850
State-Leased Facilities	$108,322,452	$10,832,245	$32,496,736	$54,161,226
Total	**$1,205,782,151**	**$120,578,215**	**$361,734,645**	**$602,891,076**

17.7 MITIGATING THE HAZARD

17.7.1 Catalog of Potential Mitigation Alternatives

Table 17-15 summarizes a range of potential alternatives for mitigating the wildfire hazard.

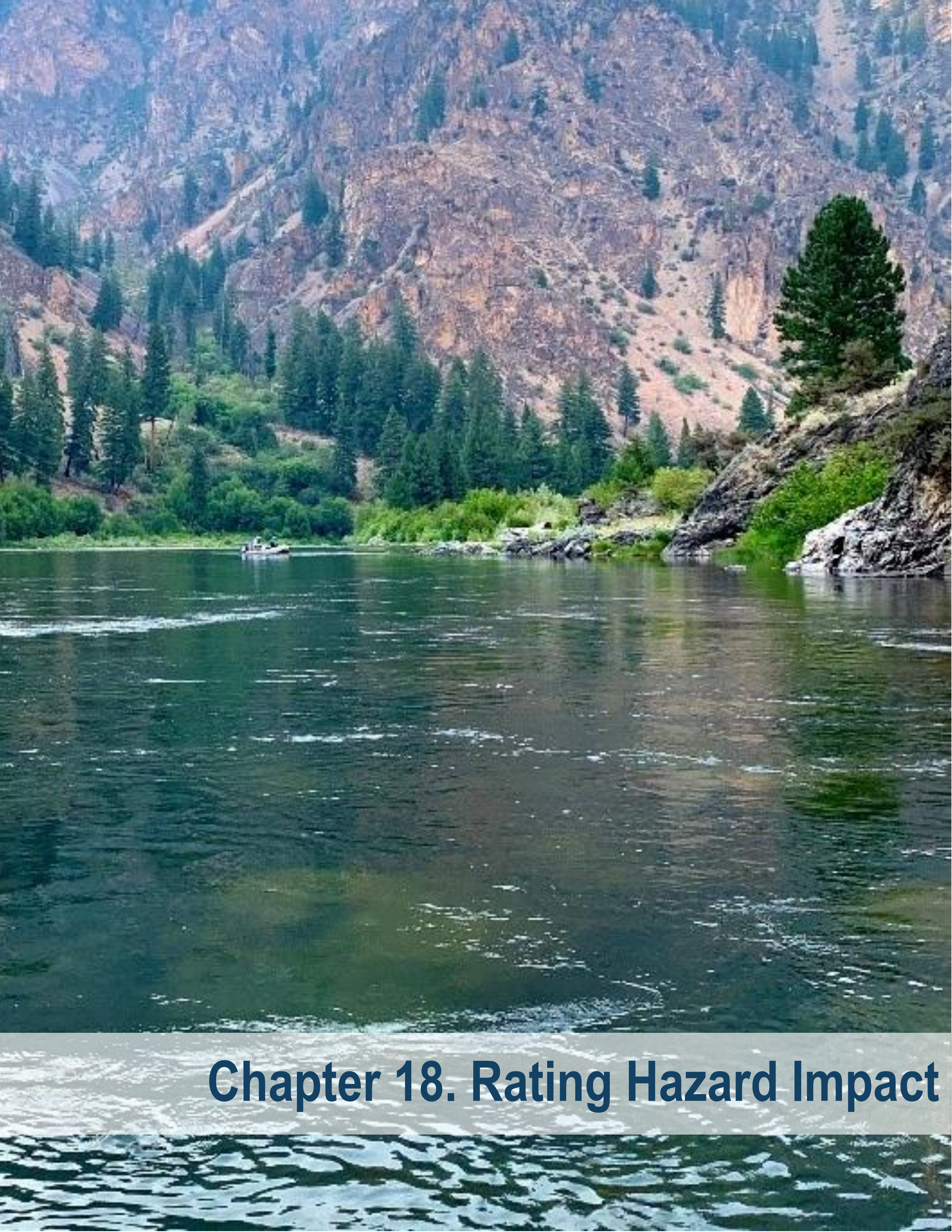
17.7.2 Relevant Mitigation Actions in This SHMP

The mitigation strategy developed for this SHMP includes the following actions that address the wildfire hazard:

- Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process
- Action 2023-002: Develop a statewide approach to modeling and mapping projected future conditions
- Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps
- Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects

Table 17-15. Potential Opportunities to Mitigate the Wildfire Hazard

Personal-Scale	Organizational-Scale	Government-Scale
• **Manipulate the hazard:** ❖ Clear potential fuels on property such as dry overgrown underbrush and diseased trees • **Reduce exposure:** ❖ Create and maintain defensible space around structures ❖ Locate outside of hazard area ❖ Mow regularly • **Reduce vulnerability:** ❖ Create and maintain defensible space around structures and provide water on site ❖ Use fire-resistant building materials ❖ Create defensible spaces around home • **Build local capacity:** ❖ Employ techniques from the National Fire Protection Association's Firewise USA program to safeguard home ❖ Identify alternative water supplies for fire fighting ❖ Install/replace roofing material with non-combustible roofing materials and implement other strategies to harden homes from embers and flame impingement	• **Manipulate the hazard:** ❖ Clear potential fuels on property such as dry underbrush and diseased trees • **Reduce exposure:** ❖ Create and maintain defensible space around structures and infrastructure ❖ Locate outside of hazard area • **Reduce vulnerability:** ❖ Create and maintain defensible space around structures and infrastructure and provide water on site ❖ Use fire-resistant building materials ❖ Use fire-resistant plantings in buffer areas of high wildfire threat. • **Build local capacity:** ❖ Support Firewise USA community initiatives. ❖ Create /establish stored water supplies to be utilized for firefighting.	• **Manipulate the hazard:** ❖ Clear potential fuels on property such as dry underbrush and diseased trees ❖ Implement best management practices on public lands • **Reduce exposure:** ❖ Create and maintain defensible space around structures and infrastructure ❖ Locate outside of hazard area ❖ Enhance building code to include use of fire-resistant materials in high hazard areas. • **Reduce vulnerability:** ❖ Create and maintain defensible space around structures and infrastructure ❖ Use fire-resistant building materials ❖ Use fire-resistant plantings in buffer areas of high wildfire threat. ❖ Consider higher regulatory standards (such as Class A roofing) ❖ Establish biomass reclamation initiatives ❖ Reintroduce fire (controlled or prescribed burns) to fire-prone ecosystems ❖ Manage fuel load through thinning and brush removal ❖ Establish integrated performance standards for new development to harden homes. • **Build local capacity:** ❖ More public outreach and education efforts, including an active Firewise USA program ❖ Possible weapons of mass destruction funds available to enhance fire capability in high-risk areas ❖ Identify fire response and alternative evacuation routes and establish where needed ❖ Seek alternative water supplies ❖ Become a Firewise USA community ❖ Use academia to study impacts/solutions to wildfire risk ❖ Establish/maintain mutual aid agreements between fire service agencies ❖ Develop, adopt, and implement integrated plans for mitigating wildfire impacts in wildland areas bordering on development ❖ Consider the probable impacts of future climate conditions on the risk associated with the wildfire hazard in future land use decisions ❖ Establish a management program to track forest and rangeland health ❖ Provide incentives to for existing structures to be hardened against wildfire.



Chapter 18. Rating Hazard Impact

18. RATING HAZARD IMPACT

The 2023 SHMP assessed eight natural hazards of interest, which are the hazards that are typically assessed in local hazard mitigation planning efforts in Idaho and that are eligible for mitigation grant funding under FEMA's Hazard Mitigation Assistance programs. Those natural hazards are a baseline for local risk assessments and planning efforts. Local jurisdictions should determine the hazards of concern to be addressed for their plans through a planning process. The role of the SHMP is to provide guidance and alternatives to support these planning processes.

Of the eight natural hazards assessed in this SHMP, four were identified as high-impact hazards, three were identified as medium-impact, and one was considered low-impact as shown in Figure 18-1. The parameters of these ratings are discussed in detail in Appendix F.

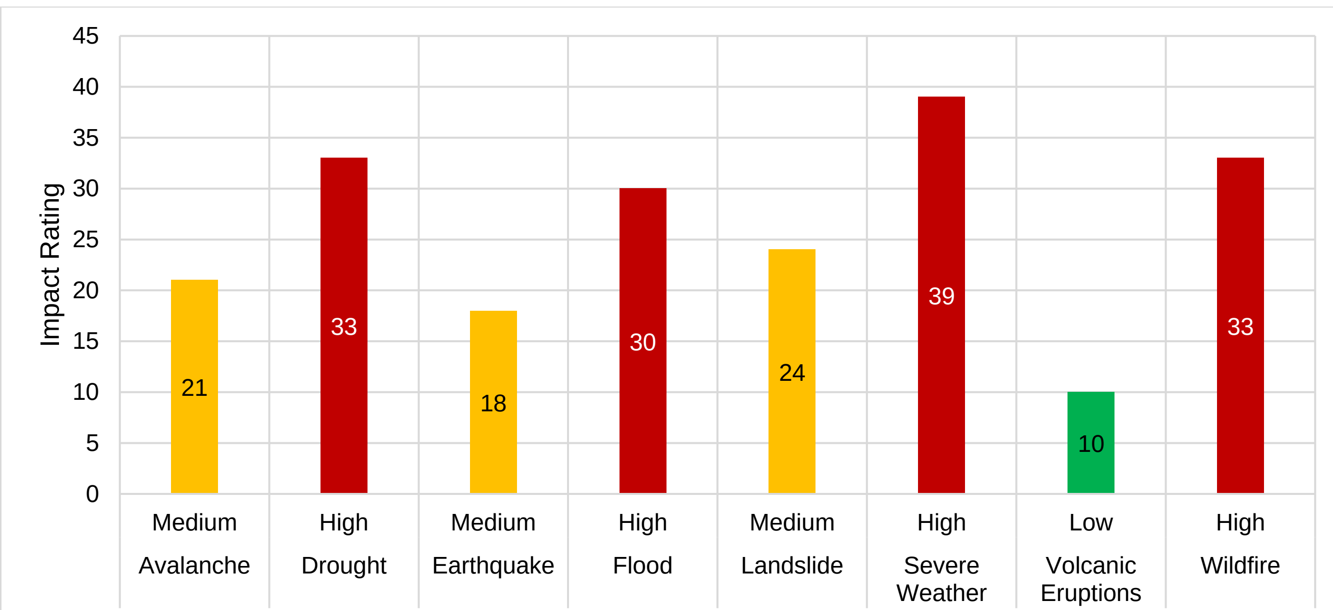


Figure 18-1. Natural Hazards Hazard Impact Rating

The 2023 SHMP assessed five "other hazards on interest," which are hazards that are considered to be ineligible hazards under FEMA Hazard Mitigation Assistance (HMA) programs, including human-caused hazards or natural hazards for which mitigation actions are limited to preparedness or response activities. These hazards may be eligible for grant funding streams other than HMA programs. These hazards do not need be considered baseline hazards for local planning efforts. However, local communities should determine the hazards of concern to be addressed for their plans through a planning process. The role of the SHMP is to provide guidance and alternatives to support these planning processes.

Of the five other hazards of interest assessed in this SHMP, none were identified as high-impact hazards, two were identified as medium-impact, and three were identified as low-impact as shown in Figure 18-2. The parameters of these ratings are discussed in detail in Appendix F.

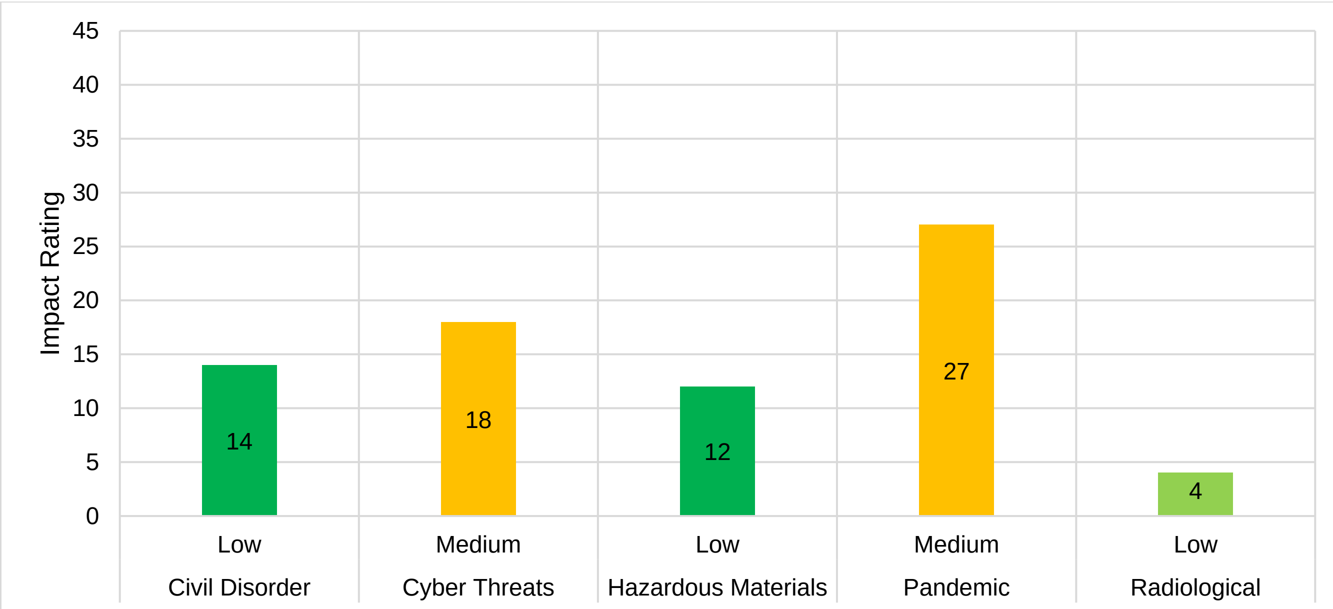


Figure 18-2. Other Hazards of Interest Hazard Impact Rating

Part 3. Hazard Mitigation for Local Jurisdictions

Chapter 19. Local Capability Assessment

19. LOCAL CAPABILITY ASSESSMENT

The State is responsible for supporting local governments with mitigation planning through training, technical assistance, and, when available, funding. This ensures that communities are aware of hazard data, planning resources, and state priorities for mitigation. Likewise, considering local mitigation strategies and capabilities increases the state partners' awareness of local priorities and data. This informs and influences the State's risk assessment and mitigation priorities. This mutual understanding between states and local governments allows for a streamlined review and approval process, better aligns mitigation strategies, and plans, and directs available resources toward effective mitigation planning.

This chapter is not intended to include every capability discussed in local HMPs or every capability that may be used to support hazard mitigation at the county level, rather it provides an overview of state-mandated and locally adopted capabilities that can provide a basis for implementing hazard mitigation actions.

19.1 LOCAL CAPABILITY SUMMARY

Table 19-1 discusses existing local policies and how they accomplish hazard mitigation.

Table 19-1. Existing Local Capability Summary

Capability	Description	Applicability
Building Codes	The 2021 Idaho State Legislature adopted the 2018 International Building Code as part of 39-41 Idaho Code, Idaho Building Code Act. Idaho's building code largely reflects the international codes, with provisions for wind, seismic, and snow loading hazards.	Building codes are important in hazard- prone areas, because they ensure that new construction and improved existing construction are more resilient to local hazards and/or improve life safety functions.
Subdivision Regulations	Subdivision regulations form part of the process utilized by local governments to carry out the requirements of their comprehensive plans and zoning ordinances.	Subdivision regulations are important in hazard- prone areas, since they can specify requirements for the layout and location of infrastructure, lots, and other facilities as land is developed.
Comprehensive Plans and Zoning	Title 67, Chapter 65, which is Idaho's local land use enabling authority, includes a stated, specific purpose of local land use regulation: "to protect life and property in areas subject to natural hazards and disasters."	Comprehensive planning and zoning are very important in hazard-prone areas, as they are tools that can establish suitable land uses, especially for hazards with a geographic extent (i.e., floodplains).
Floodplain Zoning	The ordinance explains requirements for floodplain development permits, construction standards, and other pertinent information for floodplain management.	Floodplain Ordinances are important in Special Flood Hazard Areas, not only to provide appropriate development standards but to enable communities to participate in the NFIP and therefore be eligible for flood insurance and flood mitigation programs.

Capability	Description	Applicability
NFIP and CRS Participation	The National Flood Insurance Program (NFIP) provides flood insurance to property owners, renters and businesses. The NFIP works with communities required to adopt and enforce floodplain management regulations that help mitigate flooding effects. The Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management practices that exceed the minimum requirements of the NFIP.	Each county is responsible to conduct floodplain management within their jurisdiction to mitigate flood risk.
High Hazard Potential Dam Program	FEMA's Rehabilitation of High Hazard Potential Dams (HHPD) grant program provides technical, planning, design, and construction assistance for rehabilitation activities that reduce dam risk and increase community preparedness.	Implementation of the HHPD program can significantly reduce the risk to downstream communities.

19.2 LOCAL CAPABILITY EFFECTIVENESS

Table 19-2 lists the effectiveness of local government mitigation capabilities, the challenges to implementing them and opportunities for increasing each capability. The effectiveness of local government mitigation capabilities specifically related to high-hazard-potential dams is described in Table 19-3

19.2.1 Assessment of Existing Capabilities

Table 19-2. Existing Local Capability Effectiveness

Capability	Effectiveness	Challenges	Opportunities
Building Codes	Communities are not required to adopt the building code. The only structures required to be reviewed under the building code are modular buildings, schools, and state buildings. Also, one- and two-family dwellings are exempted from installing mandatory fire sprinkler systems	Jurisdictions that choose not to adopt building codes run the risk of having structures less resilient to hazards, including those amplified by the effects of climate change. They also will not be eligible to some federal funds that have it as a requirement.	Continued education and encouragement to help jurisdictions understand that by building to higher standard they become more resilient communities.
Subdivision Regulations	Subdivision enabling authority in Idaho is deferential to local governments to the point that local governments have the authority to define the term subdivision as they would like to. State enabling authority does not contain standards or requirements that would be considered to exceed those commonly found elsewhere, nor are subdivision regulations mandated.	Since subdivision regulations are not mandated many have been constructed in areas that are hazard prone leading to high cost in damages when an event occurs. Hazard-prone subdivisions often house socially vulnerable populations.	Continue to educate jurisdictions on how these standards will reduce vulnerability to the whole community and create more resilient communities.
Comprehensive Plans and Zoning	According to 67§65 Idaho Code, Local Land Use Planning Act, every city and county is to implement, review, and update a comprehensive plan, as well as a zoning ordinance.	There are local politics that often affect these zoning and ordinances thus often they are not as effective as they can and should be.	Encourage jurisdictions to incorporate Mitigation planning into Comprehensive plans so they are looking at the hazards and future conditions as they develop these plans and zoning.

Capability	Effectiveness	Challenges	Opportunities
Floodplain Zoning	Idaho communities are authorized to adopt a Flood Damage Prevention Ordinance to regulate mapped Special Flood Hazard Areas. Additionally, enabling authority allows Idaho communities to adopt standards that exceed the minimum standards of the National Flood Insurance Program.	Jurisdictions that choose not to adopt flood plain zoning run the risk of having structures less resilient to floods. They also will not be eligible to some federal funds that have it as a requirement.	Continued education and encouragement for local jurisdiction to become NFIP compliant and how this is a requirement for FMA grant funds.
NFIP and CRS Participation	Jurisdictions are not required to participate in the NFIP and CRS programs.	Residents in jurisdictions that choose not to participate in the NFIP must seek private flood insurance that is not backed by the federal government. Jurisdictions that do not participate in the CRS program are excluded from incentives.	Idaho County is the only county not currently participating in the NFIP. Only about one-quarter of Idaho's counties currently participate in the CRS program.
High Hazard Potential Dam Program	HMPs can be approved without meeting HHPD requirements.	The program is new, and enhancements will need to be made to HMPs to meet the HHPD requirements, especially the goal setting and action plan requirements. Risk communication and awareness is also a challenge.	No local HMPs have requested review for HHPD requirements. Local jurisdictions can be informed of the benefits of including this capability in their plans.

Table 19-3. Existing Local HHPD Capability Effectiveness

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Winchester Dam Lewis County	Lewis County Emergency Operations & Response Plan (2009), City of Craigmont Capital Improvement Plan FY-17 through FY-21 (2016), City of Kamiah PWS: #ID231003 Source Water Protection Plan (2016), Drinking Water Protection Plan, City of Craigmont (2006), Teasdale, G.N. (2015). Reconnaissance Hydrologic Analysis of the Big Canyon Watershed and the Fisher Fire Burn Area in Nez Perce County, Lewis County, and the Nez Perce Reservation, Idaho, Ida-Lew Economic Development Council Strategic Plan (2017), Wildland Fire & Flood Risk Assessment – Final Report, Lewis County, Idaho (2010), Bureau of Engineering, State of Idaho Department of Fish & Game (2017). Operation Plan – Winchester Reservoir, State of Idaho Building Code (2016) IBC Building Code (2004); Zoning (1997 w/amend. in 2002 Subdivision (1991 w/ amend. in 2002) Lewis County, Flood Damage Prevention Ordinance- 1995—Building and construction standards for the flood prone areas in all unincorporated areas of Lewis County, Idaho. Winchester Reservoir Operation Plan11 – This document describes the dam, its uses, as well as normal and emergency operating procedures. (11 Bureau of Engineering, State of Idaho Department of Fish & Game (2017). Operation Plan – Winchester Reservoir.) The City of Winchester has a stormwater drainage plan from 2005 and a Transportation plan from 2011. The City of Nezperce adopted a transportation plan in 2017, which helped to strengthen their capabilities. Nez Perce is also planning to update its floodplain ordinance.	Lewis, Nez Perce, Nez Perce Tribal Nation: Lack of resources small towns must allocate and prioritize and the need for doing the best with what is available. Lack of funding for projects is always a challenge. Challenges in maintaining parity with technology; and political challenges as well. Spring and summer bring an influx of population increases due to recreation and fishing. The IDWR classifies potential losses and damage anticipated to downstream areas during a dam failure. Dworshak Dam, Soldiers Meadow Dam, and Winchester Dam are all classified as high risk. There are three major dams located in the vicinity of the Nez Perce Reservation: Dworshak Dam, Winchester Dam, and Soldiers Meadow Dam. None of these structures have failed or been subject to significant damage. However, a threat of potential dam failure occurred for Winchester Dam following a severe flood/winter storm event in February 1996.	No actions specific to Winchester Dam. Related Lewis County actions: 3. Develop improved hazard warning systems. 5. Develop a mass casualty annex and evacuation plan annex as part of the Lewis County Emergency Operations and Response Plan. 7. Continue to improve and update the County GIS system including development of E911 capability. 16. Encourage participation in the National Flood Insurance Program and continue to work with IDWR on an update floodplain ordinance. City of Kamiah 8. Implement land use and development policy to reduce exposure to hazards. 12. Educate the public on mass casualty and emergency evacuation protocols. 17. Repair and/or relocate the city's alert siren in order to alert populations in the city and surrounding areas with limited cellular service of large- scale emergencies City of Winchester: 2. Work with local partners to improve sheltering capacity during emergency evacuation events.

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Winchester Dam Nez Perce County	Nez Perce County—Comprehensive/Master Plan, Capital Improvements Plan, Economic Development Plan, Emergency Operations Plan, Transportation Plan, City of Lewiston Wastewater and Stormwater Plans, zoning ordinances, subdivision ordinances, City of Lewiston Acquisition Policy, public works maintenance programs.		Nez Perce County related actions: NPC needs to be re-mapped with current lidar elevation data and current stream flow data, including a detailed flood study in areas of significant population density such as incorporated cities and unincorporated communities. Potlatch River Corridor Floodplain Analysis, Phased project—I hydrology analysis, establish flood zones, identify flood depths, quantify flow volumes; II—Identify protection measures; III – Install protection measures. Emergency Communications Center, build a robust, hardened communications capable of housing and providing Emergency Communications infrastructure for the County of Nez Perce, the City of Lewiston and other stakeholders. The current facility is in the area of impact from the largest hazmat threat, as well as in the inundation zone for two major dams.
Winchester Dam Nez Perce Tribe	Nez Perce Tribe- Legal and Regulatory Resources Available Hazard Mitigation Administration Plan, Geographic Response Plan—Engages the region's partnerships and regulatory agencies of the Clearwater, Snake River, and Columbia River Basin Corridors to collaborate on emergency responses to toxic releases into the waterways, FOG—Field Operations Guide for frequencies to first responders, Forest Protection Fire Ordinance, Water and Waste Management Ordinance-Brownfields assessment and underground storage tanks are identified and tracked throughout the Tribe's Environmental Protection Agency compliance of identifying and potential removal of toxic releases. Forest Department Fuel Management Program, Student Conservation Association Program- Student Conservation Association conducts wildland urban-interface outreach and fuel management programs. Nez Perce Tribal Commercial Building Code—Enforces the Uniform Building Code for commercial buildings only, Mutual Aid Agreements—Lapwai Fire Department. Mutual Aid for firefighting includes fire responders and their equipment.		Nez Perce Tribe related actions: 1.C Explore the need for hazard zoning and high-risk hazard land use ordinances. 1.D Incorporate hazard prone areas into land use planning. 2.D Develop emergency evacuation programs for neighborhoods in hazard prone areas. 3.A Join the National Flood Insurance Program. 3.B Implement best management practices for floodplain areas. Provide community flood preparedness drills. Incorporate flood levels for community notifications.

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Crowther and Deep Creek Dams Oneida County	Oneida County Comprehensive Plan, Oneida County Land Use Ordinances, Oneida County EOP, Oneida County Multi-Jurisdiction All Hazard Plan, NFIP- Oneida County and the City of Malad	Deep Creek – Considered a high-hazard Da. HAZUS estimates that about 51 buildings will be at least moderately damaged with 2 destroyed. Possible economic loss due to Dam failure is 13.73 million. Crowther is considered a high-risk dam, but nothing is really addressed in the current plan, so the vulnerabilities will need to be addressed in the next update. Right now, it does not show as high-risk. There have been no significant, recorded dam failure events in Oneida County Spring and Summer population increases due to recreation and fishing	No mitigation actions are specific to dams. Related actions: Request FIRM Maps Develop a listing of roads, bridges, cattle guards, culverts, and other limiting conditions and incorporate improvements into the County Transportation Plan Comprehensive Mass Shelter and Care Plan for the Entire County Enforce Building Codes Map Floodplain and Flood Prone Areas in the City of Malad
Fish Creek Dam Ada County	Ada County and cities have existing programs: Ada County Comprehensive Plan (2007), The comprehensive plans for each of the incorporated city planning partners, Ada County and the cities of Boise, Eagle, Garden City and Meridian all participate in the NFIP. The Ada County Hazard Inventory and Vulnerability Analysis (2010), Ada County Threat/Hazard Identification and Risk Assessment (2015), The Ada County Emergency Operations Plan (2014), Ada County Flood Response Plan (April 2014), Ada County Wildfire Response Plan (May 2014), Ada County Dam Response Plan (April 2007) and the Boise River Enhancement Plan. Cities floodplain or watershed plans.	Six percent of dam failures are due to miscellaneous causes. Many are secondary results of other disasters, such as earthquakes, landslides, storms, snowmelt, equipment malfunction, structural damage, and sabotage. The most likely disaster-related causes of dam failure in Ada County are earthquakes, excessive rainfall and landslides. Poor construction, lack of maintenance and repair, and deficient operational procedures are preventable or correctable through regular inspections. Terrorism and vandalism are concerns that all operators of public facilities plan for; these threats are under continuous review by public safety agencies. All statutory sized dams must be inspected by IDWR no less than every five years. The frequency between individual dam inspections depends on such items as the project's physical condition, method of construction, maintenance record, age, hazard rating, and size and storage capacity. Inspection reports prepared by the IDWR for non- federal dams are available through the state office in Boise (Idaho Dam Safety Web Site, 2011). Blacks Creek is rated high for downstream hazard potential. The Boise and Snake River meander through the counties. These rivers, their impoundments, and their tributaries provide boating, fishing, bird watching and other water recreation activities that attract tourism to the most populated area in the state.	There are no reported mitigation action opportunities for Black Creeks Dam. Related mitigation actions: CW-1 Sponsor and maintain a natural-hazard informational website including hazard-specific information such as warning, private property mitigation alternatives, important facts on risk and vulnerability AC004- Keep first responder facilities out of flood areas where possible. AC005- Examine and determine the most cost-effective method to harden irrigation canals (i.e., tiling) in areas of high urban interface to prevent the flooding of residences and businesses. AC022- Where appropriate, support retrofitting, purchase, or relocation of structures located in hazard-prone areas to protect structures from future damage, with properties with exposure to repetitive losses as a priority. K3- Open space preservation in identified high risk hazard area. M-4 – Meridian: Apply for CRS and maintain standing M-10—Perform an assessment to determine housing areas that would benefit from foundation elevation projects. M-12—Consider appropriate higher regulatory standards that prevent or reduce risk to the built environment from the known hazards of concern. KFD10- Evacuation routes, map and mark evacuation options from southern portion of District. Provide public education in regard to evacuations. Identify Ustick, Homedale, Notus, and Allendale Roads as critical evacuation routes

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Blacks Creek Dam Canyon County	Canyon County and cities have existing programs: The Canyon County 2020 Comprehensive Plan, Canyon County and the cities of Caldwell, Middleton, Nampa, Notus and Parma all participate in the NFIP. Community Planning—U.S. Forest Service, Forest Stewardship Program – U.S. Forest Service, Rural Fire Assistance – BLM, State Fire Assistance – U.S. Forest Service, State Fire Assistance Hazard Mitigation Program – National Fire Plan, Idaho Forestry Assistance Program – IDL, HMGP and FMA – FEMA		8.3.e “Emergency Evacuation Route” signs along the identified primary, secondary and escape access routes in the County Change the policy to give local officials the authority to open irrigation canal head gates during flood events City of Caldwell: Construct diversion gates to direct floodwaters from the Boise River to the Dixie Slough Place Engineered dikes along the river channel through Caldwell Raise the banks on the larger canals that run through Caldwell Develop Policies that all local irrigation districts to open headgates or irrigation canals and ditches to divert floodwaters on to fields. Protect the Wastewater System Clarifier #2 from Flooding City of Notus: Protect the Sewer System Treatment Ponds located in the Floodplain
Mackay Dam Butte and Custer County	Butte County Comprehensive Plan, County Land Use Ordinance 7-31-06, City of Arco Comprehensive Plan and Codified Land Use Ordinances, Butte County and the City of Arco participate in the NFIP Custer County Comprehensive Plan, City of Stanley Comprehensive Plan, City of Challis Comprehensive Plan, Custer County Emergency Operations Plan, Custer Road and Bridge Department Transportation Plan, City of Mackay Emergency Operations Plan (2019), 2016 Custer County Community Wildfire Protection Plan Custer County, as well as the cities of Challis and Mackay, participate in the NFIP. Custer County has two communities within the 100-year flood plain hazard areas that are not participating in the NFIP, including Clayton and Stanley.	Dam Failure causes— Overtopping caused by floods that exceed the capacity of the dam Deliberate acts of sabotage Structural failure of materials used in the dam construction Poor design and/or construction methods. Movement and/or failure of the foundation supporting the dam. Settlement of concrete or embankment dams Piping and internal erosion of soil in the embankment, and/or Inadequate maintenance and upkeep. The Mackay Dam, which is 67 feet high and has a storage capacity of 45,000 acre-feet of water, is located in the southeastern portion of the county. The purpose of the dam is to control flooding and provide irrigation water. The Mackay Dam is classified as a high risk because of potential flooding to residential and agriculture development downstream. If the dam failed catastrophically, flood waters would reach Mackay in 6 minutes. Because the dam is not manned 24 hours a day, it is anticipated that there would be no time to evacuate the town of Mackay should a breach occur. The inundation area would experience impacts greater than a normal flood event	Mackay Dam Report (2017), The Idaho Department of Water Resources Inspection Report of the Mackay Dam was used to assess the condition of the dam following the heavy flooding in 2017. The IDWR Dam Safety Program oversees the regulation and safety of dams and reservoirs throughout Idaho in order to protect the health, safety, and welfare of citizens and their property. Program personnel regularly inspect existing projects according to the potential consequences that the dam’s failure would present to downstream life and property. The frequency of individual dam inspections depends on the project’s physical condition, method of construction, maintenance record, age, hazard rating, and size and storage capacity. All statutory-sized dams must be inspected by IDWR at least once every 5 years Install a warning system on the Mackay Dam. Project deferred to Custer County. Butte County will assist Custer County upon request. City of Arco – Develop an Evacuation Plan and Notification System for a Mackay Dam Failure

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Mountain Home Dam Elmore County	2014 Elmore County Comprehensive Growth and Development Plan, Elmore County Zoning and Development Ordinance (2018), Mountain Home Flood Hazard Protection and Floodplain Ordinances, February 2019. "Amended Zoning and Development Ordinance." Elmore County, Mountain Home, and Glenn's Ferry all participate in NFIP.	Elmore county has stated that an additional Dam Failure annex would be created if funding was approved to allow them to expand their plan beyond what is currently FEMA funded. They have guidelines from USGS about the location of expanding buildings to prevent potential water pollution. This puts more people downstream and in danger of flooding. Mt Home Dam has overflowed in the past due to an upstream dam failure. This caused $2.7 million in damage in Mountain Home. The Snake River provides over half of the water for irrigation in the county and is a source of power generated at Bliss Dam and C.J. Strike Dam. It provides boating, fishing, and hunting as well as being a scenic attraction. middle portion of the Snake River is a working river, and it is the prime source of water for irrigated agriculture in the county. The county has a few hot water artesian wells and springs. Several geothermal wells are being used for irrigation in the Snake River Plains area. Hot water springs can be found along the Front Range and on the Boise River.	There are no reported mitigation action opportunities as it relates specifically to Mt. Home Dam, however there are mitigation actions in place that will be helpful in the event of dam failure. Update Flood insurance Rate Maps. Evaluate culverts, roads and access points identified in floodplains. Add to the stormwater/ overflow collection systems in Mountain Home.

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Mountain Home Dam Owyhee County	Owyhee County Comprehensive Plan-2012, Owyhee County Wildland-Urban Interface Wildfire Mitigation Plan-2004, Owyhee County Energy Plan-2007, Owyhee County Groundwater Quality Improvement & Drinking Water Source Protection Plan-2009, 2010, Owyhee County Natural Resources Plan-2009, Owyhee County Sage-Grouse Management Plan-2000, 2004, 2013. The City of Homedale does participate in NFIP. The City of Grandview, which could be affected by Mountain Home dam but does not participate in NFIP. They do have an ordinance that regulates construction in the 100-year flood zone within Grandview.	A challenge to mitigation actions is that because there haven't been any dam failures in Owyhee County to date there are increases in development and land use in potentially hazard prone areas—AHMP 5.18 The county has mapped a majority of its waterways however they do not have Digital Flood Insurance Rate Maps. Non-regulatory depth grids that were provided by FEMA were used to map the extent and magnitude of flood risk. These maps are also technically incomplete as they do not cover all possible waterways. Limited funds keep the county from updating their Flood Insurance Rate maps. The federally and state managed lands within the county allow for a wide variety of recreational activities ranging from jet boating to remote area camping to off-highway vehicle activities. Hunting and fishing are also popular on the lands and waters of the county. whitewater water sports are popular for tourists, but no numerical data is provided. Rafting and kayaking are popular activities on the Bruneau River and Owyhee River drainages. Jet boating is also enjoyed, particularly on the Snake River. There are several boat ramps or put-in areas along both waterways; however, some of these sites present difficult or hazardous conditions.	Identifying locations for needed retention ponds. Check and maintain or improve roads and waterways near and around Bruneau to mitigate flash flood problems.

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Strongarm #1 Franklin County	Franklin County and its incorporated communities employ other measures that regulate development and certain activities in hazardous areas. These include, but are not limited to, comprehensive plans, overlay districts, subdivision ordinances, building codes, and fireworks ordinances. Unincorporated Franklin County and the cities of Preston and Weston participate in the NFIP.	Strongarm Number One Dam, also known as Treasureton Reservoir, is a private earthen dam completed in 1887. It is 480 feet in length and 39 feet in height, with a hydraulic height of 36 feet. The impoundment covers a surface area of 131 acres and a drainage area of 4,456 square miles, with a 1,713 acre- feet storage capacity. The spillway is capable of 360 cfs and its potential hazard for downstream areas as a result from failure or mis-operation of the dam or facilities is recognized as high. An emergency action plan is in place for this dam. The dam has a controlled spillway type, with 20 feet of spillway available for discharge when the reservoir is at its maximum designed water surface elevation. The dam is inspected every two years and is state regulated by the Idaho Department of Water Resources. The most recent condition assessment rated Strongarm Number One Dam as satisfactory. Besides providing recreational opportunities and watershed provisions, Strongarm #1 reservoir can provide a water source for fire engines and helicopters during wildfire suppression Operations.	Related actions: 2, 39. Seek CRS Status for the County and City of Preston 3, 41. Request Updates of the FIRM Maps 45. Use the Risk Assessment in this hazard mitigation plan to develop land use policies 56. Maintain cooperation and communication with IDWR on monitoring and inspecting dams 66. Continue participation in the NFIP Program through the enforcement of Floodplain ordinances and building codes
Oakley Dam Cassia County	Community capabilities include comprehensive plans, overlay districts, subdivision and zoning ordinances, building codes, and fireworks ordinances. The City of Burley has a Master Water Plan and Municipal Airport Site Selection Study. Cassia County established an Outdoor Recreation Land Use Zone. The County and Cities participate in NFIP. Evacuation plan for Oakley Reservoir from Oakley to Snake River.	The most recent condition assessment rated Oakley Dam as unsatisfactory. Given changes in climate conditions and development, the planning team and local officials are concerned with sheet flooding, localized flooding, and impoundment structure failure. Dispatch is in the flood zone. Skiing and fishing draw tourists to the area.	Mitigation Actions 59. Update dam operations plan for Oakley Dam 60. Install gate on the spillway to control flows on Oakley Dam and complete other engineering recommendations for Oakley Dam study 61. Improve West Canal capacity for Oakley Dam 62. Watershed Model/SNOTEL Data needed specifically for the Oakley Reservoir Drainage 64. Install injection sites for Oakley Dam

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Oakley Dam Gooding County	Gooding County Community Wildfire Protection Plan, Floodplain Management, Stream Channel Protection Program, Emergency Operations Plan, Cities Ordinances and State Codes, Site Master Plans (wastewater treatment, landfill, airport, business incubators, etc.), Personnel Training Programs, NFIP, and Storm Drain Management.	Mountainous areas are especially susceptible to the damaging effects of flash floods, as steep topography may stall thunderstorms in a limited area and may also funnel runoff into narrow canyons, intensifying flow. Winter weather, Ice jams or debris contribute to flooding hazards. Recreational properties exist along the Snake River Canyon. Hagerman experiences a large seasonal population.	No actions are specific to Oakley Dam. Mitigation action 6.1.b. Develop county and city policies to restrict development in flood zone to help prevent losses. 6.1.p. Evaluate the structures located in the flood zone to determine measures needed to protect the structure from flood waters (elevation of structure, barrier, wet protection, etc.). Multiple jurisdictions: County and cities' continued participation in National Flood Insurance Program. Develop county and city policies to restrict development in flood zone to help prevent losses. Mitigate flooding in flood prone roads throughout County. Request FEMA update of Flood Insurance Rate maps. Placement of information and warning signs in open spaces.
Oakley Dam Jerome County	Emergency Operations Plan, Jerome County and cities' Comprehensive Plans, Fire Fighting, Emergency Medical Services, Transportation Planning, Public Utilities, Road and Bridge Maintenance, Law Enforcement, County and City of Jerome's participation in NFIP.	There is no indication that any part of Jerome County is at risk of inundation from a catastrophic dam failure event, except residents and structures residing in the Snake River Canyon. There are 387 parcels that lie in the Snake River Canyon that may be affected by a failure of any of the upstream dams. The total value of structures in the canyon is $59,083,383 and the total property value is $92,739,521. Jerome County offers many recreational opportunities including hunting, fishing, water and winter sports, hiking, camping, sightseeing, and wildlife and nature photography. The Snake River, Wilson Lake Reservoir, BLM Snake River Rim Special Recreation Management Area, and Scott's access south of Jerome offer many recreational access sites for tourists.	No specific actions for Oakley Dam. Related actions: Request Updates of FIRM Maps to include Canal System Drainage.
Oakley Dam Minidoka County	Comprehensive Plans, subdivisions and Planned Unit Developments ordinances, building codes, city and county ordinances, zoning and land use ordinances, building codes, floodplain ordinances, NFIP, County Wildfire Protection Plan, and Local Emergency Planning Committee.	There are no impoundment failures currently to date in Minidoka County. Future land use and more intensive land use may increase the possibility of structural damage and loss of life and property. The County and cities ranked tourism low < 5% to medium low 6-10%. However, Craters of the Moon, the Snake River, Minidoka National Wildlife Refuge, Lake Walcott, Milner Reservoir, and small streams and springs provide many recreational opportunities.	No specific actions for Oakley Dam. Related actions: 9. Request Updates of FIRM Maps to include Canal System Drainage 39. Adopt the NFIP Program – City of Paul 46. Assess feasibility of Reopening injection wells near Camp Hawley

Dam and County/Tribal Nation	Policies, Programs & Capabilities	Challenges	Opportunities
Oakley Dam Twin Falls County	Comprehensive Plan, local capital improvement plans which include infrastructure projects such as stormwater systems, water supplies, warning sirens, and communications equipment. Regulations, agreements, and related procedures and existing emergency operating or response plans and land use ordinances. NFIP Continuity Strategy	There is no history of damage from Oakley Dam. Twin Falls County is the most populous county in central Idaho. It is home to the College of Southern Idaho and the famous Shoshone Falls, sometimes called the Niagara of the West, with an impressive 212-foot drop. The county is not only a retail hub for most of central Idaho but is also a recreational hot spot for travelers.	No specific actions for Oakley Dam, but Twin Falls County will continue to participate in the NFIP and develop actions that will reduce possible damage to county infrastructure due to flash and stream flooding.

Chapter 20. Local Government Planning Coordination

20. LOCAL GOVERNMENT PLANNING COORDINATION

20.1 SUPPORT FOR LOCAL HAZARD MITIGATION PLANNING

IOEM considers supporting local hazard mitigation programs a top priority. While staff work directly in the Mitigation Section, IOEM employs six area field officers with whom the Mitigation Section coordinates closely. The concept of the field coordinator support is to have a state staff resource who works closely with local emergency managers and other officials on an array of emergency management issues. Area field officers can act as an extension of the Mitigation Section, especially in times of high staff resource demand.

IOEM has been successful in encouraging compliance with FEMA's requirements for local jurisdictions to develop hazard mitigation plans. All 44 counties and four Tribal Nations have developed and adopted local hazard mitigation plans. As mitigation plans expire, the Mitigation Section supports local jurisdictions in updating their plans. Specifically, the Mitigation Section provides the following mitigation planning technical assistance and training as listed in Table 20-1.

Local mitigation plans are required to be reviewed by the IOEM Mitigation Section before they are forwarded to FEMA. These plans must be accompanied by a completed mitigation plan review tool. Plans should be reviewed within 10 business days after draft plans are submitted to the IOEM Mitigation Planner, and comments or needed revisions are provided back to the local jurisdiction. After revisions are made, the plan is resubmitted to IOEM, and after its review and approval, IOEM forwards the plan to FEMA Region X with review comments and recommendations. Tribal Nation plans are also reviewed upon request. FEMA then has 45 days to complete their review, and if revisions are required it will be returned to the State Mitigation Planner for review and if needed it will be returned to the jurisdiction for revisions. It is then forwarded back to IOEM for a final review and then submitted back to FEMA for another review that can take an additional 45 days to approve. This back and forth will continue until all requirements are met.

As examples of the mitigation planning and project support that has been provided, from 2013 to 2018, the State has done the following:

- Conducted briefings for the annual Unified HMA grant programs. Regional applicant briefings were held to provide additional information and tips for developing mitigation applications.
- Utilized a HMA project "tip sheet" to assist communities in developing competitive and eligible HMA project applications.
- Assisted applicants and gave briefings on the HMGP after federally declared disasters. Provided application assistance to counties in Idaho which included assistance on project applications ranging from plan updates, stormwater drainage issues, seismic retrofits, stream restorations and armoring, aquifer recharge to dam restoration.

Table 20-1. Mitigation Planning Assistance Provided by IOEM

Type of Mitigation Planning Assistance	Occurrence During 2018 SHMP Performance Period	Participants
Review local plans and provides comments to the community before forwarding them to FEMA Region 10 for review	As needed	N/A
Facilitate ATC 20 and FEMA 154 Damage assessment trainings (data can be useful for planning and mitigation project development).	June 12-13, 2018, in Fort Hall	N/A
FEMA P-154 / ATC-20 ROVER	May 29-30, 2019	Attendees included numerous state and local agencies focusing on building safety, structural engineering, land use and development, and emergency management.
L-276 Benefit Cost Analysis Fundamentals	December 5, 2019	Participants included Gem County, City of Jerome, Pocatello Public Works, Kootenai County, Meridian City Public Works, FEMA
L-213 Provided technical assistance and guidance during local mitigation planning meetings	January 8, 2020	Ada County, Bannock County, Bear Lake County, Benewah County, Bingham County, Blaine County, Boise County, Bonner County, Bonneville County, Boundary County, Butte County, Camas County, Canyon County, Caribou County, Cassia County, Coeur d'Alene Tribal Nation, Clearwater County, Franklin County, Fremont County, Gem County, Gooding County, Idaho County, Jefferson County, Jerome County, Kootenai County, Latah County, Lewis County, Lincoln County, Minidoka County, Nez Perce County, Nez Perce Tribal Nation, Owyhee County, Payette County, Shoshone County, Teton County, Twin Falls County and Valley County.
G-318 Local Mitigation Planning Virtual Workshop	November 9-10, 2020 May 2-3, 2023	FEMA, North Central District Health, Bannock County, Nez Perce Tribe, Adams County
Hazard Mitigation Grant Program 101—This webinar provides a general overview of the program, including specifics about completing eligible applications; finding useful resources; and implementing a successful HMGP project.	November 4, 2022	N/A
Land Use Planning Training	April 15, 2021	City of Boise, Private Land Use Planning and Urban Planning Companies, COMPASS, Treasure Valley Community College, FEMA, Idaho VOAD (Voluntary Organization Active in Disaster)
BCA assistance as requested by local jurisdictions	May 25, 2021	State Agencies, City of Boise, Bonner County, Public Utilities Commission, IOEM, Kootenai County, City of Hayden Public Health and Health Care, City of Coeur d'Alene, Benewah County, North Kootenai Water District, Lewis County
Provided technical assistance and guidance during local mitigation planning meetings.	Annually or as needed	N/A
Encourages Hazus use and training.	Annually or as needed	N/A
Participates in and facilitates technical working groups.	Annually or as needed	N/A

- Made presentations on local mitigation issues at the council, commissioner, and other public meetings, as needed or at the request of communities interested in mitigation planning or projects.
- Maximized available funding from HMA grants for Technical Assistance site visits to monitor mitigation projects.
- Participated in local mitigation planning workshops.

20.2 GRANT COORDINATION

The IOEM Mitigation Section provides the following project development assistance:

- Conducts briefings for all Unified HMA programs (including HMGP).
- Reviews and/or conducts benefit-cost analyses for local mitigation project applications.
- Provides BCA assistance as requested by local jurisdictions.
- Will perform onsite inspections and non-engineering consultations for project development.

As required by 44 CFR § 206.435, IOEM reviews all applications submitted by eligible jurisdictions for completeness and to ensure they meet state and federal eligibility criteria. Additionally, IOEM staff review the benefit-cost analysis submitted with the application or conduct their own based upon information provided by the sub-applicant for the project. While not a scored element of the State’s process, the benefit-cost analysis ensures that only cost-effective projects are reviewed and submitted to FEMA for funding.

IOEM may convene a Mitigation Grant Review Committee when the number of applications exceeds the funding amount available. Currently, this applies to communities and local jurisdictions that receive planning and project grants under available mitigation funding programs and for non-planning grants. The Mitigation Grant Review Committee normally consists of at least five members; this includes, at a minimum, the following:

- Two individuals from the IOEM, normally the State Hazard Mitigation Officer and the Senior Mitigation Planner.
- Two designees from a state agency that deals with issues related to the particular type or nature of the disaster (example: a Department of Water Resources representative for floods, a Department of Lands representative for wildfire, a Geologic Survey representative for geologic hazards, or a Division of Occupational and Professional Licenses (DOPL) representative for structural mitigation).
- One individual representing local government as nominated by the Idaho Emergency Managers Association.

IOEM seeks local committee members that have experience in public works, engineering, land-use planning, disaster grant administration, or other related experience. The committee also consults experts from State, local, and Federal agencies. IOEM may ask the Idaho Association of Counties or the Association of Idaho Cities to provide names of potential local committee members.

Committee members serve without compensation but will be reimbursed for authorized expenses incurred in the performance of their duties, in accordance with Idaho State Travel Regulations, as existing or hereafter amended.

20.2.1 Eligibility Screening

The committee reviews and prioritizes the grant applications that pass the initial eligibility screening. The initial eligibility screening is based on both FEMA and State criteria.

Federal criteria for eligibility are as follows:

- Solve the problem it is intended to address
- Be located in a community participating in good standing in the National Flood Insurance Program
- Meet all applicable Federal, State, and local permit requirements, and not contribute to or encourage development in the floodplain, wetlands, or other hazardous areas, and support environmental justice (Federal Executive Orders 11988, 11990 and 12898); and
- Be cost effective in that it:
  - Addresses a problem that has been repetitive or that poses a significant risk if left unsolved.
  - Will not cost more than the anticipated value of the reduction in both damages and subsequent negative impacts to the area, if future disasters occur (demonstrate a benefit-to-cost ratio of 1:1 or greater).
  - Has been determined to be the most practical, effective, and environmentally sound alternative after consideration of a range of options.
  - Contributes, to the extent practicable, to a permanent or long-term solution to the problem it is intended to address.
  - Considers long-term changes to the areas and entities it protects and has manageable future maintenance and modification requirements.

State criteria for eligibility are as follows:

- Support the goals and objectives of the community's adopted/approved local hazard mitigation plan
  - Protect lives and reduce public risk
  - Reduce the level of disaster vulnerability in existing structures
  - Reduce the number of vulnerable structures and repetitive loss and severe repetitive loss properties, through acquisition, relocation, flood proofing, or seismic retrofitting
  - Avoid inappropriate future development in areas known to be vulnerable to future disasters
  - Solve a problem independently, or function as a beneficial part of an overall solution with assurance that the whole project will be completed
  - Provide a cooperative, inter-jurisdictional solution to reduce future disaster damage.
  - Provide a long-term mitigation solution
  - Address emerging hazard damage issues (urban stormwater, trees in power rights-of-way, new earthquake faults, etc.)
  - Restore or protect natural resources, recreation, open spaces, and other environmental values
  - Develop and implement comprehensive programs, standards, and regulations that reduce disaster damage
  - Increase public awareness of natural hazards, preventive measures, and emergency responses to disasters
  - Upon completion, have affordable operation and maintenance costs.

20.2.2 Ranking and Prioritization of Eligible Projects

After eligibility screening, projects are ranked and a recommendation for funding is developed, based on the following criteria:

- Combined ordinal application score determined by the Mitigation Grant Review Committee using the evaluation system mentioned above
- Available funding
- Goals and objectives in the State of Idaho Hazard Mitigation Plan
- Geographical mix
- Socially vulnerable population impacted
- Climate change and future conditions
- Previous mitigation program participation and results
- Current mitigation program participation. At its discretion, IOEM may limit sub-applicants to three active projects at any one time, depending upon the demonstrated capability of the sub-applicant to administer previous and existing projects
- Projects that reduce or eliminate repetitive and severe repetitive loss are given a high priority for funding.

The review committee develops and provides to the Director for the IOEM a prioritized list of projects to recommend to FEMA for approval and funding. IOEM then formally notifies sub-applicants of the results of the committee ranking and review process and of their recommended or non-recommended status. Sub-applicants not recommended for funding may appeal this decision under specific criteria. Currently, there is no preference for planning projects over “bricks and mortar” projects, and funding for HHPD projects follows the same ranking and prioritization criteria as all other mitigation actions.

20.3 LINKING STATE AND LOCAL MITIGATION PLANS

A local hazard mitigation plan is required to describe the planning process, the assessment of hazards and risk, the involvement of participating entities, action items, and a maintenance strategy. Local jurisdictions must use FEMA’s Plan Review Tool to navigate the required components for submitting their local HMPs. FEMA and the state review the plans in accordance with the required elements and provide necessary technical assistance that will lead to an approved plan. For a local plan to receive approval by the state, it needs to be consistent with the state’s mitigation priorities and efforts.

The required local hazard mitigation plan elements related to hazard identification and vulnerability offer an opportunity for integration of state and local planning. The SHMP provides information on natural hazards and other hazards of interest that are known to exist within the state, and the general location and vulnerability aspects of each hazard.

20.3.1 Integrating Local Risk Assessments

The state has incorporated local risk assessment data into this plan through a comprehensive look at how each county ranked local risk associated with hazards of concern based on the net impact of each hazard on each county. This process identified hazards that had high impacts in each county, ultimately informing the identification of actions at the local level. These impacts by county are summarized in each hazard profiled in the SHMP. These hazard impact evaluations will be monitored annually by IOEM over the performance period of the SHMP through the plan review and technical assistance programs. This information will then be used to inform future SHMP updates and updates to the guide for local hazard mitigation planning.

20.3.2 Integrating Goals and Capability Assessments

Using a consistent set of goals and objectives reinforces the plan integration process. The 2023 SHMP contains a set of goals, objectives, and actions that can easily be adopted or adapted by local jurisdictions to guide their development of local HMPs. In its future reviews of local plans, IOEM will continue to check for consistency between the goals of the local plans and those in the SHMP. These reviews also will confirm that each local plan has clearly identified actions for each hazard assessed that has been identified as having high impact on the defined planning area. In turn, when reviewing and evaluating local HMPs, state reviewers can ensure that local concerns are reflected in overall state goals, objectives, and mitigation strategies.

The State of Idaho has a broad array of hazard mitigation legislation, plans and programs that require, encourage, and support mitigation capabilities at the local level. These resource capabilities—including statewide codes and general plan requirements—can be integrated into the capabilities section of local HMPs.

20.4 CHALLENGES AND OPPORTUNITIES TO EFFECTIVE STATE AND LOCAL HAZARD MITIGATION

20.4.1 Challenges and Barriers

The following challenges and barriers to implementing effective state and local mitigation actions were identified during the update process for the 2023 SHMP:

- **Sources of Funding Impact Implementation**—Activities and actions that required outside sources of funding for implementation were less likely to be implemented over the performance period of plans, due to economic fluctuations and budget delays.
- **Coordination and Collaboration Are Needed**—Additional coordination and collaboration among state and local governments and non-government agencies is needed to successfully implement many mitigation activities.
- **Data Sharing and Information Management Could Be Improved**—Data sharing and information management for hazard mitigation have been a challenge and are a priority concern. A sustained effort to gather historical damage data, such as high-water marks on structures and damage reports, would be useful in measuring the cost-effectiveness of future mitigation projects.
- **Public Awareness of Risk Could Be Improved**—Increased awareness and better understanding of risks and impacts is needed across stakeholder groups, including the general public and decision makers. Isolated population centers especially need information on sheltering in place and instructions on developing a personal emergency plan.
- **Capabilities Could Be Enhanced/Updated**—Some county and state plans, such as community plans and drainage plans, have not been updated regularly. Development codes could be improved to better account for hazard risk, such as requiring defensible space in new subdivisions and increasing the design capacity of stormwater systems.

- **Conditions Are Changing**—Guidance is needed on effective approaches and time horizons for planning for climate change.
- **Structures Are Vulnerable**—Many structures across the state were constructed before modern building codes were widely adopted and enforced. Mechanisms for bringing these structures into compliance are limited and may be cost prohibitive to owners.
- **Development Pressures Can Increase Risk**—There is continued pressure to convert floodplain compatible uses, such as agricultural lands, to more intensive uses during periods of growth.

20.4.2 Opportunities to Address and Leverage Capabilities

The following are some of the opportunities identified during the update process for the 2023 SHMP and documented in local hazard mitigation plans to address challenges and leverage capabilities:

- **Building Code Effectiveness**—Coordination between the state and counties to adopt building codes within similar timeframes will allow grant applications to become more competitive.
- **Opportunities for Partnerships**—Forming partnerships with community and non-profit organizations can maximize limited financial resources when developing data sources needed for planning efforts.
- **Harnessing Natural Resources for Mitigation Goals**—Maintenance, restoration, and management programs can be developed for natural mitigation features, such as forests, wetlands, and riparian areas.
- **State Resources and Assistance to Support County Efforts**—The state provides technical resources and programs that support the counties in their hazard mitigation activities, including assistance in applying for grant funding opportunities.

Part 4. Mitigation Strategy

Chapter 21. Goals for Hazard Mitigation

21. GOALS FOR HAZARD MITIGATION

Mitigation goals and objectives are set at the State level to ensure the following:

- A mitigation vision is set for Idaho.
- Local mitigation objectives and actions that have been developed are consistent with the State's overall vision.
- Specific actions, appropriate at the State level, are established to facilitate greater hazard mitigation activity and enhance community resilience.

Using a consistent set of goals and objectives reinforces the plan integration process. The goals and updated objectives can be incorporated into local hazard mitigation planning. When reviewing and evaluating local HMPs, state reviewers can ensure that local goals, objectives, and mitigation strategies are consistent with those of the state, and that local concerns are reflected in the overall state goals, objectives, and strategies. Consistent goals and objectives can lead to consistent mitigation strategies at both the state and local level.

As shown in Figure 21-1, a linear strategy for goals and objectives allows multiple objectives to apply under multiple goals. This approach allows the state to establish priorities for mitigation actions identified in the plan.

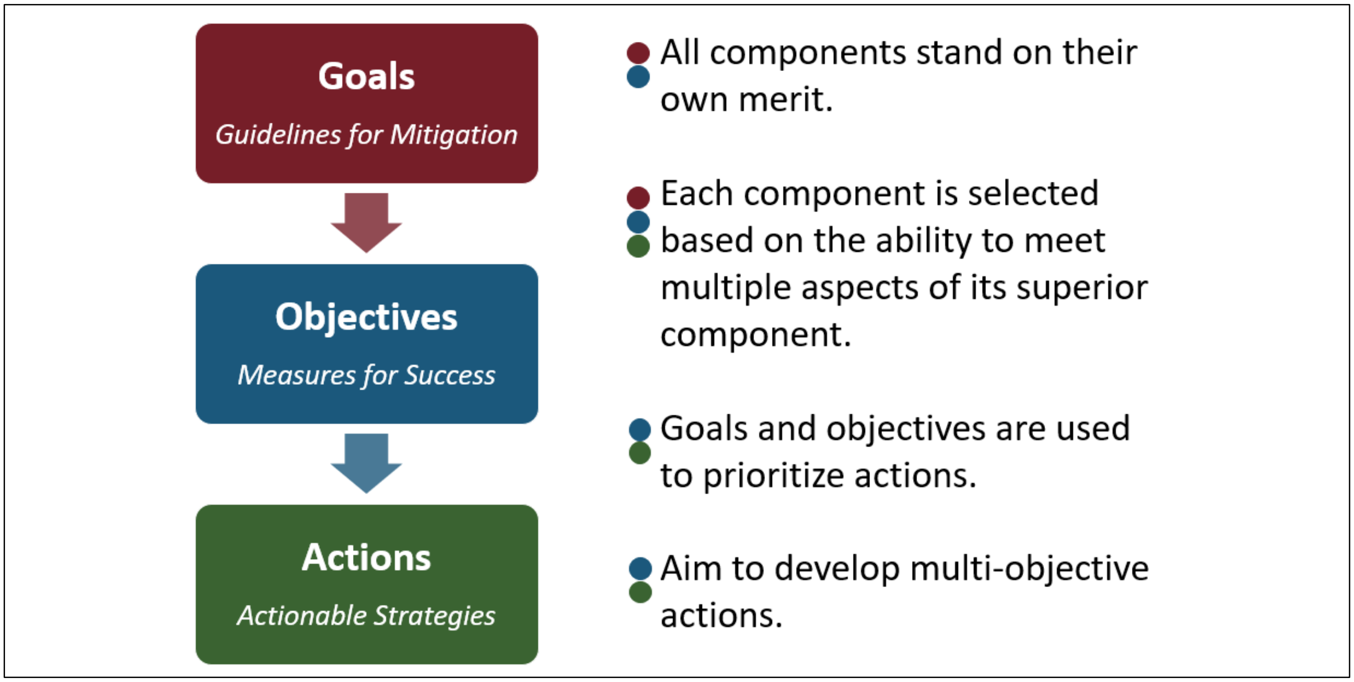


Figure 21-1. Linear Goal-Setting Approach

21.1 MITIGATION GOALS

Goals are broad, long-term policy and vision statements that explain what will be achieved by implementing the mitigation strategy. The mitigation strategy includes goals for reducing long-term vulnerabilities from the identified hazards. These goals represent what the State seeks to accomplish through mitigation plan implementation using a wide range of funding. They were developed to be consistent with the hazards and vulnerabilities identified in the risk assessment.

Mitigation goals are the overarching targets stated in the Plan that define the State’s hazard mitigation strategy. Since the 2010 update, there have been no additions or major changes to these goals by the executive committee or any of the technical advisory groups. The only change is that some were reworded to also include technological and human-caused events, in addition to natural hazards, or to identify impacts on infrastructure. The State of Idaho’s hazard mitigation goals are as follows:

1. Save lives and reduce public exposure to risk from natural, technological, and human-caused hazard events.
2. Reduce or prevent damage to public and private property and infrastructure from natural, technological, and human-caused hazard events, including failure of high hazard potential dams.
3. Enhance coordination between federal, state, tribal, regional, local, and non-governmental agencies and organizations and consistency of hazard impact reduction policy.
4. Reduce the adverse economic and environmental impacts of natural, technological, and human-caused hazard events.
5. Enhance vulnerability and risk assessments through the development and collection and analysis of data.

21.2 MITIGATION OBJECTIVES

Mitigation objectives are the fundamental strategies prescribed by the Plan to achieve the mitigation goals. They specifically state how the goals will be achieved through action at state and other levels. Objectives1, 2 and 5 were enhanced for the 2023 update with clarifying language. Updates are shown below in *italicized* text. The State of Idaho’s hazard mitigation objectives are as follows:

1. Improve State agency administrative and legislative coordination, cooperation, and capacity to identify and implement effective hazard mitigation strategies *based on current and future conditions.*
2. Increase awareness of hazards and their impacts *on life, infrastructure, community lifelines, property, and the environment.*
3. Increase knowledge of hazard mitigation options.
4. Improve statewide understanding of risk and vulnerability.
5. Motivate communities and citizens, *including socially vulnerable populations*, to take preparedness and mitigation actions.
6. Identify, analyze, and integrate existing data.
7. Develop common statewide datasets to enhance vulnerability, risk assessments, and impact.
8. Develop cost-effective and feasible mitigation grant projects.
9. Influence policy based on risk assessment and historical events.

Chapter 22. Progress on Previous Plan

22. PROGRESS ON PREVIOUS PLAN

22.1 STATUS OF ACTIONS FROM PREVIOUS STATE PLAN

The 2018 SHMP update identified 67 mitigation actions for implementation. These actions were reviewed for the current update, and for each action it was determined whether the action had been completed, was in progress, or had not been started. Incomplete actions were reviewed to determine if they should be carried over to the 2023 SHMP update or removed due to changes in priorities, capabilities, or feasibility. Of the 67 actions from the 2018 SHMP, 38 indicated work is conducted as an ongoing capability, 6 reported no progress, 17 were completed, and 6 have been removed. See Appendix G for a complete reconciliation of the 2018 action plan.

22.2 UPDATED PRIORITY OF ACTIONS FROM PREVIOUS STATE PLAN

The 2018 SHMP prioritized actions through a weighted Social, Technical, Administrative, Political, Legal, Economic, and Environmental process. The 2023 SHMP uses an expanded approach to prioritize actions while taking into account the benefits of each project versus the cost. Actions that were carried over to the 2023 SHMP were evaluated for being “SMART”—Specific, Measurable, Attainable, Realistic, and Timely.

The following questions represent the prioritization scheme for action implementation. The answers to the questions are weighted and scored. Then, based on the scoring of each action, they are categorized as high, medium, or low priorities.

- Will the action result in life safety?
- Will the action result in property protection?
- Will the action be cost-effective? (future benefits exceed cost)
- Is the action technically feasible?
- Will the action mitigate impacts from climate change?
- Does the State have the legal authority to implement it?
- Is funding available for the action?
- Will the action have a positive impact on the natural environment?
- Does the action benefit socially vulnerable communities?
- Does the State have the administrative capability to execute the action?
- Will the action reduce risk to more than one hazard?
- Can the action be completed in less than 5 years?

- Is there an agency/department champion for the action?
- Will the action support other objectives (such as capital improvements, economic development, environmental quality, or open space preservation?) or policies of other plans and programs?

The answers to each of these questions are weighted as follows:

- Yes = 3 points
- Not sure, could be either yes or no, or question is difficult to quantify = 1 point
- No = 0 points

The combined score will indicate the priority:

- High = 31 or more
- Medium = 15 to 30
- Low = 0 to 14

The Executive Committee met in May 2023 and applied the updated prioritization process to a revised action plan that focuses on high and medium hazards identified by the risk assessment conducted for the 2023 SHMP update. It was also applied based on updates to the capabilities assessed in Chapter 23, as shown in the prioritization questions above. Chapter 24 indicates the implementation priority for each action in this SHMP. See the detailed table in Appendix G for the scoring assigned to each action.

Chapter 23. Assessment of State Capabilities to Mitigation Risk

23. ASSESSMENT OF STATE CAPABILITIES TO MITIGATE RISK

Idaho's capabilities as a state are the means it has at its disposal to accomplish desired outcomes such as hazard mitigation. A capability assessment identifies the State's capabilities to reduce risk and increase resilience. The assessment demonstrates the State's commitment to mitigation, identifies a range of resources to implement mitigation activities, and reveals areas to target improvements. Without this evaluation of the State's capabilities, the plan's implementation could stall from inadequate resources.

23.1 POLICIES RELATED TO DEVELOPMENT

Overall, Idaho's policies related to development in hazard-prone areas is best characterized as a patchwork quilt with a heavy emphasis on personal responsibility and an acknowledgement of the home rule authority of Idaho communities.

23.1.1 State and Local Building Codes

The 2021 Idaho State Legislature adopted the 2018 International Building Code as part of 39-41 Idaho Code, Idaho Building Code Act. Idaho's building code largely reflects the international codes, with provisions for wind, seismic, and snow loading hazards. However, communities are not required to adopt the building code. The only structures required to be reviewed under the building code are modular buildings, schools, and State buildings. Also, one- and two-family dwellings are exempted from installing mandatory fire sprinkler systems, which could be argued makes those structures less resilient to the hazard of wildfire. Building codes are important in hazard-prone areas, because they ensure that new construction and improved existing construction are more resilient to local hazards and/or improve life safety functions.

23.1.2 Subdivision Regulations

Subdivision regulations form part of the process utilized by local governments to carry out the requirements of their comprehensive plans and zoning ordinances. Subdivision enabling authority in Idaho is deferential to local governments to the point that local governments have the authority to define the term subdivision as they would like to. State enabling authority does not contain standards or requirements that would be considered to exceed those commonly found elsewhere, nor are subdivision regulations mandated. Subdivision regulations are important in hazard-prone areas, since they can specify requirements for the layout and location of infrastructure, lots, and other facilities as land is developed.

23.1.3 Comprehensive Plans and Zoning

Title 67, Chapter 65, which is Idaho's local land use enabling authority, includes a stated, specific purpose of local land use regulation: "to protect life and property in areas subject to natural hazards and disasters." Tools to do this include *comprehensive planning* and *zoning*.

Consistent with Idaho law, a comprehensive plan provides the policy basis for a community's zoning ordinance, which contains the specific standards and requirements and processes for making land use and development decisions. In Idaho, a comprehensive plan is required to include a section on hazards (67-6508(g)):

- The plan with maps, charts, and reports shall be based on the following components as they may apply to land use regulations and actions unless the plan specifies reasons why a particular component is unneeded.
- Hazardous Areas—An analysis of known hazards as may result from susceptibility to surface ruptures from faulting, ground shaking, ground failure, landslides or mudslides; avalanche hazards resulting from development in the known or probable path of snow slides and avalanches, and floodplain hazards.

As part of comprehensive planning, a future land use map is prepared to indicate suitable projected land uses for the jurisdiction. The implementation tool to realize the vision of the comprehensive plan is the zoning ordinance. Zoning protects the rights of property owners while promoting the general welfare of the community. By dividing land into categories according to use, and setting regulations for these categories, a zoning ordinance can govern private land use and segregate incompatible uses. The purpose of zoning is to locate particular land uses where they are most appropriate, considering public utilities, road access, and the established development pattern.

According to 67§65 Idaho Code, Local Land Use Planning Act, every city and county is to implement, review, and update a comprehensive plan, as well as a zoning ordinance. Comprehensive planning and zoning are very important in hazard-prone areas, as they are tools that can establish suitable land uses, especially for hazards with a geographic extent (i.e., floodplains).

23.1.4 Floodplain Zoning

Idaho communities are authorized to adopt a Flood Damage Prevention Ordinance to regulate mapped Special Flood Hazard Areas. Additionally, enabling authority allows Idaho communities to adopt standards that exceed the minimum standards of the National Flood Insurance Program. Floodplain Ordinances are important in Special Flood Hazard Areas, not only to provide appropriate development standards but to enable communities to participate in the NFIP and therefore be eligible for flood insurance and flood mitigation programs.

23.2 CAPABILITIES FOR IMPLEMENTING HAZARD MITIGATION

The Idaho Office of Emergency Management is a Division of the Idaho Military Division. The services provided by IOEM facilitate emergency management in Idaho and assist neighboring States. More importantly, IOEM is the central point of coordination within the State for all hazard preparedness, response, recovery, and mitigation. IOEM coordinates all situation and damage assessment operations in a disaster area. The agency routinely cooperates with Federal, State, and local governments to maintain and develop disaster preparedness, response, recovery, and mitigation plans. IOEM establishes and maintains a State Emergency Operations Center (EOC) to provide coordination and public information during emergencies and disasters. It is the State coordinating agency responsible for the administration of Federal disaster assistance programs under the Robert T. Stafford Act, Public

Law 93-288, which requires mitigation recommendations and implementation as a condition of Federal financial assistance.

The IOEM Mitigation Program has the following responsibilities:

- Risk and vulnerability analysis
- Mitigation planning
- Administration of FEMA's mitigation grant programs
- Coordination of natural hazards risk reduction projects

Its current staffing level is two full-time employees (FTEs), a temporary planner, and administrative support, which includes:

- State Hazard Mitigation Officer (SHMO)
- State Hazard Mitigation Planner
- Temp State Hazard Mitigation Planner
- State Hazard Mitigation Admin Support (2)

Overall, the hazard mitigation management capabilities of the State have improved since the last plan was approved. The staff resources have increased from three personnel to an additional two totaling five staff. Additionally, the program staff is more experienced. Communities seem to better accept hazard mitigation concepts and the technical assistance offered by Mitigation Planners, and this is evidenced by the growing numbers of mitigation grant applications. There are challenges with the current funding environment at both the State and local level. Unforeseen challenges also come from the federal program side. Application systems often require workarounds, deployment to disasters and staff changes may delay processing and awarding of applications. Environmental historical preservation reviews need coordination across federal agencies to alleviate duplication and postponing projects.

23.2.1 Program Management Capability (S and E)

Since hazard mitigation is a Federal-State-local partnership, States have a responsibility for maintaining their competency in managing and implementing a robust State hazard mitigation program to effectively administer FEMA mitigation programs and also assist in the administration or promotion of mitigation programs that are offered by different entities. For example, many local mitigation plans identify structural flood control as a possible mitigation measure. A competent State mitigation program not only would be aware of possible USACE programs that could be utilized but also could facilitate getting the project underway.

The State Hazard Mitigation Officer is responsible for administering these programs. In administering the mitigation grant programs, IOEM staff does the following:

- Develops/distributes grant guidance, funding criteria, and application forms.
  - ➢ IOEM may limit eligibility for sub-applicants.
  - ➢ For the Hazard Mitigation Grant Program (HMGP), IOEM may limit the number of applications allowed per eligible sub-applicant and the maximum project budget/grant award based on the projected funding available for the disaster. IOEM will also establish criteria for ranking and prioritizing HMGP applications.

  - For other mitigation programs, FEMA will publish the number of applications and maximum Federal grant award in annual program guidance.

- Makes recommendations to IOEM Director on the scope of the HMGP program for the Governor's request for Federal assistance—Presidential disaster declaration. This may include:
  - Statewide or county-specific application of the HMGP.
  - A list of communities, jurisdictions, and agencies with an approved local hazard mitigation plan.
  - A list of communities, jurisdictions, and agencies with a local hazard mitigation plan under development, under review, or pending approval.
  - A review of the entities in the disaster-impacted areas that have approved plans and those without approved plans at the time of the event.
  - Solicit qualified mitigation planning or project proposals from eligible sub-applicants.
  - Provide technical assistance to eligible sub-applicants as resources permit. This may include sub-applicant briefings on program-specific issues, application development and/or benefit-cost training and technical support, site visits to validate potential mitigation measures, and review of draft applications prior to the formal submittal of program applications.
  - Prioritize projects for funding: convene, as needed, the Mitigation Grant Review Committee to review, evaluate, prioritize and recommend projects for funding.
- Forward funding recommendations to FEMA for final approval.
- Withdraw projects from consideration, if necessary.
- Develop grant agreements, formally notify successful grant/sub-grant applicants and administer distribution of funds to sub-applicants.
- Submit quarterly and final reports to FEMA.
- Monitor sub-grantee performance.
- Conduct final project inspection and arrange for a final engineering inspection, as necessary.

The Governor's Authorized Representative (GAR) oversees mitigation program expenditures. The State Hazard Mitigation Program Manager / State Hazard Mitigation Officer is responsible for the daily operations and technical aspects of the program, hazard mitigation planning, and administering the hazard mitigation grant programs noted in this document and the State of Idaho All-Hazard Mitigation Plan.

The GAR will designate the State Hazard Mitigation Officer to:

- Coordinate activities of the State Hazard Mitigation Team.
- Incorporate the findings and recommendations required by Section 322 into a Hazard Mitigation Plan Annex.
- Coordinate with State, local, and Federal agencies.
- Provide technical assistance to grant sub-applicants.
- Manage the HMGP (including selecting projects, administering funds, and final closing of projects).
- Maintain State HMGP Project and Disaster Files.

The organizational structure for HMGP administration will be flexible and capable of expansion and contraction as the need dictates. Program management may require the following positions, reporting to the State Hazard Mitigation Officer:

- HMGP Administrators
- Appropriate staff to assist the State Hazard Mitigation Officer in periodic tasks requiring special kinds of expertise to accomplish Sections 404 and other State needs in hazard mitigation. This includes access to professional engineering staff to complete project inspections
- Administrative support not available from State agencies will be hired on a contract or as temporary hires

In post-disaster situations where expertise is required beyond that available within the State Hazard Mitigation Team, the State Hazard Mitigation Officer identifies those needs and requests the needed staff through the GAR, specifying the kind of staff, the kind of tasks, the likely source of the needed expertise, and the time commitment. The GAR then contacts and asks the recommended agencies for such assistance.

23.2.2 Monitoring Progress of Mitigation Activities

A key capability in managing mitigation programs is to monitor the progress of mitigation activities occurring in the State. The following paragraphs describe these project monitoring activities.

Ongoing Hazard Mitigation Assistance (HMA) project monitoring

The IOEM Mitigation Section and Grants Management Office is required to monitor HMA-funded projects on a quarterly basis – both financially and programmatically. Agencies (State, local, and Tribal) that have received HMA funds are required to make quarterly reports of progress. This frequency of monitoring allows IOEM to ensure that projects are within the approved scopes of work and on budget. Mitigation Section staff perform field monitoring in accordance with the appropriate administrative plan.

HMA project closeouts

Agencies (State, local, and Tribal) are required to submit a closeout report at the conclusion of any grant-funded project. At that time, the Mitigation Section and Grants Management Office staff schedule a closeout meeting/inspection and review all documentation to ensure that the project is appropriately completed. Detailed closeout procedures are identified in the appropriate Administrative Plan for the mitigation grant program.

Monitoring of Fire Plan mitigation activities

As indicated elsewhere in this Plan, the Idaho Department of Lands (IDL) is charged with assisting counties with their Wildfire Protection Plans and associated countywide working groups in order to facilitate implementation of the National Fire Plan. In doing this, the IDL develops an annual report on the progress in meeting fire plan goals. Mitigation success stories are shared in presentations at regional emergency management workshops.

23.3 OVERALL EVALUATION OF POLICIES AND PROGRAMS

IOEM, in coordination with the TWGs and stakeholders, conducted a thorough review of laws, regulations, policies, and programs to identify and evaluate their hazard mitigation-related capabilities, including those related to development in hazard-prone areas. Each identified capability was described, significant changes that occurred during the performance period of the 2018 SHMP were noted, and opportunities or challenges in enhancing capability effectiveness or minimizing conflicts with mitigation goals were discussed. In addition, the hazards of concern that the capability helps to mitigate, the type of hazard management capability (pre- and/or post-disaster), and the effect on loss reduction were identified. While some funding capabilities were identified in this discussion, funding is discussed in more detail in Section 23.4. Table 23-1 summarizes the full range of identified capabilities and the hazards which they mitigate. The detailed information evaluating the mitigation capabilities of state laws, regulations, policies, and programs upon which this summary table is based is in Appendix H. Detailed information in the appendix also includes the areas of strength or deficiency of the capabilities for impacting resilience to climate change and supporting vulnerable populations.

Table 23-1. Summary of the State of Idaho's Hazard Mitigation Capabilities by Hazard of Concern

Capability	Hazards of Concern												
	Avalanche	Civil Disorder	Cyber Threats	Drought	Earthquake	Flood	Hazardous Materials Release	Landslide	Pandemic	Radiological Accidents	Severe Weather	Volcanic Eruptions	Wildfire
29 CFR § 1910.210							◆			◆			
40 CFR § 261.33							◆			◆			
40 CFR § 302, Table 302.4							◆			◆			
40 CFR § 355		◆					◆			◆			
44 CFR § 60.3						◆					◆		
49 CFR § 171- 177							◆			◆			
Bonneville Power Administration (BPA): Integrated Fish and Wildlife Program						◆							
Community Development Block Grant (CDBG) Program	◆				◆	◆		◆			◆	◆	◆
Division of Occupational & Professional Licenses	◆				◆	◆		◆			◆		
EPA's Smart Growth Implementation Assistance Program						◆					◆		
IDAPA 02.04.03, Section 175									◆				
IDAPA 16.02.10									◆				
IDAPA 16.02.11									◆				
IDAPA 16.02.15									◆				
Idaho Bureau of Land Management (BLM) – Communities at Risk and Partnership funds													◆
Idaho Code Title 28 Chapter 51 Section 105			◆										
Idaho Code Title 31, Chapter 48, Sections 1 & 16	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Idaho Code Title 42 Chapter 31						◆							
Idaho Code Title 46, Chapter 10, Section 6	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Idaho Code Title 46, Chapter 10, Section 8	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Idaho Code Title 46, Chapter 10, Section 22						◆							
Idaho Code Title 67 Chapter 52	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Idaho Department of Environmental Quality (DEQ)						◆	◆						
IDL Community Forestry Program	◆			◆		◆		◆			◆		◆
Idaho Department of Lands (IDL) – Fire Management Program													◆
Idaho Department of Water Resources (IDWR)–Dam Safety Program						◆							
Idaho Department of Water Resources (IDWR)–HHPD Program						◆							
Idaho Department of Water Resources – Floodplain Management Program						◆							

Capability	Hazards of Concern												
	Avalanche	Civil Disorder	Cyber Threats	Drought	Earthquake	Flood	Hazardous Materials Release	Landslide	Pandemic	Radiological Accidents	Severe Weather	Volcanic Eruptions	Wildfire
Idaho Disaster Preparedness Act of 1975	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Idaho Fish and Wildlife Foundation Funding Program	◆			◆		◆	◆				◆		◆
Idaho Office of Emergency Management (IOEM) – Mitigation Section	◆			◆	◆	◆		◆			◆	◆	◆
Idaho Silver Jackets						◆							
Idaho State Legislature – Local Highway Assistance Council – Leading Idaho Local Bridge Program					◆	◆					◆		
Idaho State Legislature – Idaho Water Resource Board – Aging Infrastructure Grant				◆	◆	◆							
Idaho Statue Title 18 Chapter 64 Section 01		◆											
Idaho Statute Title 18 Chapter 64 Section 04		◆											
Idaho Statue Title 18 Chapter 81 Section 02		◆											
Idaho Statue Title 18 Chapter 81 Section 03		◆	◆										
Idaho Statue Title 22, Chapter 27, Section 18	◆			◆	◆	◆		◆			◆	◆	◆
Idaho Statue Title 33 Chapter 55	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Idaho Statue Title 39 Chapter 28	◆			◆	◆	◆		◆				◆	◆
Idaho Statue Title 39, Chapter 41	◆				◆	◆		◆			◆		◆
Idaho Statute Title 46 Section 1012	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
Idaho Statue Title 47, Chapter 17						◆	◆	◆					
Idaho Statue Title 67, Chapter 65, Section 8	◆			◆	◆	◆	◆	◆			◆	◆	◆
Idaho Statue Title 70						◆							
International Business Code (IBC 2015)	◆	◆	◆		◆	◆		◆			◆		◆
International Energy Conservation Code (2018)											◆		
International Existing Building Code (IEBC 2015)	◆				◆	◆		◆			◆	◆	◆
International Fire Code (2021)							◆						◆
International Fuel and Gas Code (2018)							◆			◆			◆
International Green Construction Code (2018)				◆			◆				◆		
International Mechanical Code (IMC 2018)			◆								◆	◆	◆
International Residential Code 2018 (IRC 2018)	◆			◆	◆			◆			◆	◆	◆
International Wildlife –Urban Interface Code (2021)													◆
LiDAR						◆		◆					◆
Local Option Swine Facilities Act							◆		◆				
National Green Building Standard (ICC 700) 2020				◆			◆				◆		
National Poultry Improvement Plan							◆		◆				
NFPA-780 Standard for the Installation of Lightning Protection Systems											◆		◆
Pacific Northwest Regional Water Quality Program						◆	◆				◆		
Reclamation Act of 1902				◆		◆							
Resource, Conservation and Recovery Act							◆			◆			
State Drought Plan				◆									

Capability	Hazards of Concern												
	Avalanche	Civil Disorder	Cyber Threats	Drought	Earthquake	Flood	Hazardous Materials Release	Landslide	Pandemic	Radiological Accidents	Severe Weather	Volcanic Eruptions	Wildfire
State Executive Order	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆	◆
State Fire Assistance Program													◆
State Water Plan				◆		◆							
The Steele-Reese Foundation Grant Program				◆		◆		◆	◆		◆		◆
Superfund Amendments and Reauthorization Act (SARA) Title III							◆			◆			
The Wilburforce Foundation Grant Program				◆		◆					◆		◆

23.4 FUNDING

23.4.1 Federal Funding for Mitigation Activities

FEMA's hazard mitigation assistance provides funding for eligible mitigation measures that reduce disaster losses. Table 23-2 summarizes these FEMA grant funding programs, their purpose, and applicability of pre- or post-disaster requirements. Appendix I provides additional detail of these FEMA programs and lists a large suite of additional potential federal and state funding and opportunities that may be leveraged for mitigation activities.

Table 23-2. Summary of FEMA Mitigation Funding

Hazard Mitigation Grant Program (HMGP)
Purpose: To provide funds to states, territories, Indian tribal governments, and local communities to significantly reduce or permanently eliminate future risk to lives and property from natural hazards. HMGP funds projects in accordance with priorities identified in state or local hazard mitigation plans and enables mitigation measures to be implemented during the recovery from a disaster. Availability: Post-Disaster. When authorized under a Presidential major disaster declaration in areas of the state requested by the Governor.
Building Resilient Infrastructure and Communities (BRIC)
Purpose: To provide funds to states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. Availability: Pre-Disaster
Pre-Disaster Mitigation (PDM)
Purpose: Makes federal funds available to state, local, tribal, and territorial governments to plan for and implement sustainable cost-effective measures. These mitigation efforts are designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters. This funding is offered in addition to funds provided through other FEMA grant programs for projects that will support growing mitigation needs nationwide. Availability: Pre-Disaster
Flood Mitigation Assistance (FMA)
Purpose: To implement cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes and other structures insured under the National Flood Insurance Program (NFIP). As noted, the FMA combines the previous Repetitive Flood Claims and Severe Repetitive Loss grants into one grant program. Availability: Pre-Disaster

HMGP Post-Disaster Fire Assistance
Purpose: Provides assistance to help communities implement hazard mitigation measures after wildfire disasters. Availability: Post-Disaster
Rehabilitation of High Hazard Potential Dams (HHPD)
Purpose: Provides technical, planning, design and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. Availability: Pre- and Post-Disaster
Public Assistance
Purpose: Provides federal assistance to government organizations and certain private non-profit organizations following a Presidential Disaster Declaration so that communities can quickly respond to and recover from major disasters or emergencies. Provides assistance to supplement federal disaster grants for debris removal, life-saving emergency protective measures, and the repair, replacement, or restoration of disaster-damaged publicly owned facilities and the facilities of certain private non-profit organizations. Supports local communities with opportunities to strengthen infrastructure that has been proven to fail under disaster conditions. Availability: Post-Disaster

23.4.2 State Funding Capability

The State uses its own funding for mitigation activities. This use of funds includes earmarking resources for mitigation projects, providing grant funds to the counties and non-governmental organizations, supporting ongoing programs that further mitigation goals, and using state funds or in-kind contributions as matching funds for federal grants. The programmatic and regulatory programs summarized earlier in this chapter are supported, at least in part, by state general funds and the operating budgets of the various state departments and agencies. The detailed state capabilities listed in Appendix H include a column that indicates if the agency provides funding for mitigation. The following lists the state funding sources as specified by each contributing agency or department:

- Idaho Code Title 28 Chapter 51 Section 105- Commercial Transactions Code
- Idaho Code Title 42 Chapter 31
- Idaho Statue Title 67, Chapter 65, Section 8 – Planning Duties
- IDL Community Forestry Program
- Idaho Department of Lands (IDL) – Fire Management Program
- Idaho Office of Emergency Management (IOEM) – Mitigation Section
- Idaho State Water Plan
- Idaho State Legislature
    - Local Highway Assistance Council – Leading Idaho Local Bridge Program
    - Idaho Water Resource Board – Aging Infrastructure Grant

23.5 OBSTACLES, CHALLENGES AND PROPOSED SOLUTIONS

During the SHMP update process, stakeholders noted the following gaps and challenges to existing State capabilities to implement hazard mitigation actions and build resilience:

- Building codes vary among local jurisdictions, resulting in inconsistent building standards with different levels of protection. Additional coordination is needed between state and local agencies and adoption and enforcement of statewide building codes can be improved (Action 2010-013).

- During the performance period of the 2018 SHMP, the state's NFIP Coordinator position was vacated, but a replacement has not yet been secured to provide support for the FMA program. The state is actively seeking to fill this position.
- Identifying statewide recommended modeling and mapping of projected future conditions (i.e., climate change) will ensure consistency across planning efforts and initiatives. It will also ensure that data stays up-to-date and readily available to state agencies and local jurisdictions. Coordination between the State Hazard Data Group and the academia sector is needed to develop these models and maps (Action 2023-002.
- Defining the statewide avalanche risk is dynamic and time-consuming due to the complexity of the terrain and climate of the area. Various slope scale avalanche models to anticipate risk are improving every year, but additional expertise is still required to accurately input local weather and climate parameters, in addition to extensive avalanche experience to precisely define where an avalanche would release. Research is also being conducted to improve upon the ability to identify exposed assets and their vulnerability in terms of "people-hours" inside threatened structures and people-hours in threatened recreational areas, but none has been published to date.

Chapter 24. Mitigation Actions

24. MITIGATION ACTIONS

24.1 TYPES OF HAZARD MITIGATION ACTIONS

Hazard mitigation strategies to reduce specific risks comprise one or more hazard mitigation actions and can vary from very simple to complex. They are often classified into six categories as described in the sections below. Hazard mitigation is done on multiple levels and is intended to be both unilateral and overlapped. On an individual level, for example, a home or business owner can purchase flood or earthquake insurance. On a community level, mitigation actions can be any of those discussed below. At the state or Tribal Nation level, mitigation actions tend to focus on ensuring that programs are made available, protecting government facilities from hazards, and encouraging mitigation through programs, policies, and laws. It is important that state, Tribal, and federal agencies work cooperatively to reduce risk.

24.1.1 Prevention

Prevention actions are intended to keep a hazard risk problem from getting worse. They ensure that future development does not increase hazard losses. Communities can achieve significant progress toward hazard resistance through prevention actions. This is particularly true in areas that have not been developed. Types (and examples) of prevention actions are:

- Planning and zoning (floodplain regulations)
- Open space preservation (parks and recreation areas)
- Land development regulations (large lot sizes)
- Stormwater management (clear ditches/larger retention basins)
- Capital improvement planning (no infrastructure extended into hazard areas)
- Building codes

24.1.2 Property Protection

Property Protection actions are used to modify buildings subject to hazard risk, or their surroundings, rather than to prevent the hazard from occurring. A community may find these to be inexpensive actions because often they are implemented or cost-shared with property owners. These actions directly protect people and property at risk. Protecting a building does not have to affect the building's appearance and is therefore a popular action for historic and cultural sites. Some examples of property protection actions are:

- Acquisition (the public procurement and management of lands that are vulnerable to damage from hazards)
- Relocation (involves permanent evacuation of hazard-prone areas through movement of existing hazard-prone development and population to safer areas)

- Elevation of structures above the base flood elevation
- Rebuilding (modifying structures to reduce damage by future hazard events)
- Floodproofing and localized flood control (protecting a flood prone building using one or more of several different methods)
- Creating defensible spaces around structures in and around the wildfire-urban interface
- Nonstructural seismic retrofits (includes strapping water heaters to walls, reinforcing connections for suspended ceilings, bookcases, and electronics mounted on walls, etc.)

24.1.3 Public Education and Awareness

Public Education and Awareness activities inform and remind people about hazardous areas and the actions necessary to avoid potential damage and injury. The public can be informed about hazard mitigation through several avenues. Some examples include:

- Providing hazard maps and other hazard information
- Social Media
- Website
- Outreach programs that provide hazard and mitigation information
- Asking business owners to provide hazard mitigation information to employees
- Mass mailings
- Notices to residents and property owners in a specific hazard-prone area
- Displays in widely used facilities, such as public buildings and malls
- Print media, radio/TV spots, and interviews
- Public access TV channel announcements
- Property owner handbook
- Presentations at meetings of neighborhood groups
- Tab in phone book
- Real estate disclosure
- Hazard mitigation information in a library
- Available technical assistance
- School-age and adult education

24.1.4 Natural Resource Protection

Natural Resource Protection actions are intended to reduce the intensity of hazard effects, as well as to improve the quality of the environment and wildlife habitats. Park, recreation, or conservation agencies or organizations usually implement these activities. Examples of natural resource protection include:

- Erosion and sediment control
- Wetlands protection

- Dune restoration
- Reforestation
- Terracing

24.1.5 Community Lifeline Protection

Community lifeline protection is essential because community lifelines can have a huge effect on the scope of the damage as well as the ability of the community to respond and recover from a hazard event. Community lifelines include:

- Essential facilities, such as police stations, fire stations, and hospitals
- Facilities that house populations requiring special consideration, such as nursing homes, prisons, schools, and secondary education facilities
- Facilities that can create secondary hazards, such as nuclear power plants and hazardous materials production or storage facilities

24.1.6 Structural Projects

Structural Projects directly protect people and property at risk. They are called "structural" because they involve the construction of structures to control hazards. Some examples of structural projects are:

- Dams, reservoirs, dikes, levees
- Revetments
- High-flow diversions
- Debris basins
- Channel modifications
- Storm sewers
- Elevated roadways

24.2 IDENTIFIED ACTIONS

Mitigation actions for inclusion in the 2023 SHMP were identified through four primary sources:

- **2018 SHMP Mitigation Strategy**—Actions that were not completed during the 2018 SHMP were reviewed, revised, and included as described in Section 22.1.
- **Risk Assessment**—The results of the updated risk assessment were reviewed with the TWGs and stakeholders, and problem statements were developed. Mitigation actions were added after comparing the updated risk analysis with a focus on actions that would address high and medium ranked hazards and reduce the vulnerability of state assets.
- **Capability Assessment**—Challenges and opportunities identified during the capability assessment were reviewed with the TWGs and stakeholders. Mitigation actions were added to address challenges, capture opportunities, and enhance ongoing progress in capability development.
- **Local Jurisdiction Actions**—Local HMPs were reviewed to understand community vulnerabilities and priorities and to identify opportunities for the state to develop actions to support its local jurisdictions in their mitigation efforts.

Throughout the planning process, IOEM did email and in-person outreach to the TWGs and stakeholders to encourage new mitigation action development. During the May 15, 2023, workshop, the same groups were encouraged to identify and discuss new mitigation actions. The actions that were selected are described in the action plan.

Table 24-1 presents the SHMP Hazard Mitigation Action Plan. The following are descriptions of attributes included in the action plan:

- **Action Numbering**—A numeric identifier assigned to each action for tracking and progress reporting. Actions with a “2023” prefix are new actions identified for this SHMP update. Actions with a “2018, 2013, or 2010” prefix are actions carried over from previous SHMPs
- **Responsible Agencies**—The lead and any support agencies responsible for implementation
- **Reporting Committee**—The reporting committee or TWG for each action
- **Hazards Mitigated**—The hazards of concern that each action will mitigate
- **Location**—The location where the mitigation action will be implemented
- **New or Existing Assets**—Whether the action will reduce risk to new assets as they are built, existing assets (i.e., retrofits), or both
- **Community Lifelines Addressed**—Which of the seven FEMA categories for lifelines each action will protect
- **Estimated Costs**—General cost information as follows:
    - **High**—>$100,000
    - **Medium**—$10,000 to $100,000
    - **Low**—<$10,000
- **Potential Funding Sources**—Potential options for funding the action
- **Timeline**—General project implementation timing as follows:
    - **Short-Term**—The action can be completed within the five-year performance period for the SHMP.
    - **Long-Term**—The action is likely to take longer than five years to complete.
    - **Ongoing**—The action is already funded and being implemented by the State.

Table 24-1. SHMP Hazard Mitigation Action Plan

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2023-001: Promote statewide consistency for local plans in the hazard mitigation planning process					
Responsible Agencies: Lead: IOEM Support: BSU					
Reporting Committee: Executive Committee					
Hazards Mitigated: Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Medium: $10,000 to $100,000	County funds; HMA (HMGP, FMA, BRIC, PDM); HHPD	Ongoing
Action 2023-002: Develop a statewide approach to modeling and mapping projected future conditions					
Responsible Agencies: Lead: State Hazard Data Group, ITS Support: State Hazard Data Group, IOEM, U of I, ISU, BSU					
Reporting Committee: Executive Committee					
Hazards Mitigated: Drought, Earthquake, Flood, Landslide, Severe Weather, Avalanche, Wildfire					
Statewide	Future	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Medium: $10,000 to $100,000	FMA (HMGP, BRIC, PDM); State funds	Ongoing
Action 2023-003: Coordinate with federal and state agencies to identify gaps to better integrate climate change impacts into flood risk management					
Responsible Agencies: Lead: IOEM Support: Hazard Data TWG					
Reporting Committee: Dam/Levee/Canal TWG, Executive Committee, Flood TWG					
Hazards Mitigated: Flood, Landslide, Severe Weather					
Statewide	Future	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	Medium: $10,000 to $100,000	HMA (HMGP, FMA, BRIC, PDM); State funds	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2023-004: Display the approved SHMP and mitigation success stories on ArcGIS StoryMaps					
Responsible Agencies: Lead: IOEM Support: **RiskMAP**					
Reporting Committee: Executive Committee					
Hazards Mitigated: Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Low: <$10,000	EMPG; HMA (HMGP, FMA BRIC, PDM)	Ongoing
Action 2023-005: Precipitation and flood modeling and outreach: • Model future precipitation patterns and projected future flood conditions (worst-case scenarios) as a result of climate change • Create a user-friendly dashboard (GIS-based) that displays FEMA flood maps and climate change-related flood conditions with suggestions for risk reduction actions and decision making • Overlay social vulnerability and expected population growth to assess risk to vulnerable populations and projected new development					
Responsible Agencies: Lead: BSU Support: IOEM					
Reporting Committee: Dam/Levee/Canal TWG, Executive Committee, Flood TWG					
Hazards Mitigated: Flood, Severe Weather					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Medium: $10,000 to $100,000	NST; HMA (HMGP, FMA, BRIC, PDM); CTP	Ongoing
Action 2023-006: Provide community resilience action planning assistance that promotes cooperation, collaboration, informed and integrated planning, and equitable decision-making for interdisciplinary, solutions-oriented projects					
Responsible Agencies: Lead: BSU Support: IOEM					
Reporting Committee: Executive Committee					
Hazards Mitigated: Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Medium: $10,000 to $100,000	EMPG; CTP; HMA (HMGP, HMGP-PFA, FMA, BRIC, PDM)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2023-007: Identify discrepancies that create barriers to implementing programs or projects and provide recommendations to appropriate entities to re-dress issues.					
Responsible Agencies: Lead: IDL Support: IOEM, BSU					
Reporting Committee: Executive Committee, Fire TWG					
Hazards Mitigated: Drought, Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Low: <$10,000	Staff Time	Ongoing
Action 2023-008: Increase design and modeling capabilities to improve climate change resilience for state highways: • Hydraulic Design & Hydrology—Prepare climate change guidance into a subsection of the Roadway Design Manual 600 section and Bridge Hydraulics Manual, or a memo in the interim. This subsection will layout a brief breakdown of the non-stationary climate theory and its impacts on highway analyses. It will then set the limits for when projects will need to account for these impacts. Last it will give recommended processes for including the impacts in hydrologic predictions. • Pavement Design—Update AASHTOWare Pavement ME Design Implementation Roadmap. Review the climatic data sets used to develop the state-specific calibration parameters a decade earlier and compare against the current state of practice for the Pavement ME data sets. This will help identify risks in the current application of Pavement ME Design and evaluate if new climatic calibration is required. • Aggregate Coefficient of Thermal Expansion (PCC Paving)—Track data on extreme climate event impacts on concrete aggregate expansion and contraction. Evaluate whether there is a meaningful difference between design and construction values for aggregate thermal expansion and if any differences would have an impact on roadway service life. • PG Binder Grading Selection (HMA Paving)—ITD uses FHWA's LTTPBind software to specify project-specific asphalt binders based on climate and traffic conditions. FHWA has updated the software for a web-based version that allows expanded use of MERRA climatic data and Long-Term Pavement Performance (LTPP) climatic data which is not addressed in the desktop ver. 3.1 currently used by ITD. Continue working with FHWA support staff to evaluate if the benefits of using the expanded climactic data sets and documenting reasons for any changes.					
Responsible Agencies: Lead: ITD					
Reporting Committee: Executive Committee					
Hazards Mitigated: Flood, Landslide, Severe Weather, Wildfire					
Statewide	Both	Transportation	Medium: $10,000 to $100,000	Staff Time; State Funds; HMA (HMGP, BRIC, PDM)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2023-009: Develop a statewide avalanche vulnerability assessment to inform the public of current risk.					
Responsible Agencies: Lead: IDPR (Idaho Department of Parks and Recreation, State Hazard Group Support: All Avalanche Centers, IOEM					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Avalanche					
Statewide	**Both**	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	Low: $1,000-$10,000	(HMGP, BRIC); State funds	**New**
Action 2020-001: Ensure downstream entities are made aware of HHPD risk status as it will impact their mission/operations.					
Responsible Agencies: IDWR					
Reporting Committee: Dam/Levee/Canal TWG					
Hazards Mitigated: Flood, Severe Weather					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Low: <$10,000	HHPD	Ongoing
Action 2020-002: Propose land use regulations, ordinances, and/or construction standards to protect life and property from eligible high hazard potential dams.					
Responsible Agencies: IDWR					
Reporting Committee: Dam/Levee/Canal TWG					
Hazards Mitigated: Earthquake, Flood, Severe Weather					
Statewide	Both	Safety and Security, Food, Water, Shelter; Health and Medical; Transportation	Low: <$10,000	HMA (HMGP, BRIC, PDM): HHPD	Ongoing
Action 2020-003: Rehabilitating and/or removing eligible high hazard potential dams.					
Responsible Agencies: IDWR					
Reporting Committee: Dam/Levee/Canal TWG					
Hazards Mitigated: Earthquake, Flood, Severe Weather					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	High: <$100,000	HHPD; HMA (BRIC, PDM, HMGP, FMA)	Ongoing
Action 2020-004: Working with eligible dam owners to create/ update and share EAPs or dam incident annex to emergency operations plans (EOPs).					
Responsible Agencies: IDWR, IOEM					
Reporting Committee: Dam/Levee/Canal TWG					
Hazards Mitigated: Earthquake, Flood, Severe Weather					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Low: <$10,000	HHPD; HMA (BRIC, PDM, HMGP, FMA)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2018-001: Create State Cyber Incident Response plan and integrate planning through TWG.					
Responsible Agencies: Lead: ITS Support: IOEM					
Reporting Committee: Cyber Disruption TWG					
Hazards Mitigated: Civil Disorder, Cyber Threats					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	Low: <$10,000	HMA (HMGP, BRIC, PDM); Homeland Security Grant Program	Short-Term
Action 2018-002: Develop a template for industry use to understand attack cycles and penetration testing for Cyber Security					
Responsible Agencies: Lead: ITS Support: IOEM					
Reporting Committee: Cyber Disruption TWG					
Hazards Mitigated: Civil Disorder, Cyber Threats					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	Low: <$10,000	HMA (HMGP, PDM); Homeland Security Grant Program	Short-Term
Action 2018-006: Create all-hazards publications for public education.					
Responsible Agencies: Lead: IOEM					
Reporting Committee: Executive Committee					
Hazards Mitigated: Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Low: <$10,000	HMA (HMGP, BRIC, PDM)	Ongoing
Action 2018-007: Produce digital inundation maps with depth grids for Hazus vulnerability and loss analysis for major dams within the state. (Digital Elevation Model (DEM) needs to be improved with statewide LIDAR coverage.)					
Responsible Agencies: Lead: IOEM					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Low: <$10,000	HMA (HMGP, FMA); HHPD	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2018-008: Conduct engineering study to identify and replace undersized and damaged culverts and bridges throughout the state.					
Responsible Agencies: Lead: ITD Support: IOEM					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood, Severe Weather, Avalanche					
Statewide	Existing	Safety and Security; Health and Medical; Transportation	High: <$100,000	ITD; HMA (HMGP, BRIC, PDM, FMA)	Ongoing
Action 2018-010: Flood Alert Monitor Network Stream Gage Sensor Project. (Install and maintain.)					
Responsible Agencies: Lead: USGS Support: IDWR, ITD, IOEM					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Medium: $10,000 to $100,000	USACE (Silver Jackets USGS)	Ongoing
Action 2018-012: High water marks post-flood statewide.					
Responsible Agencies: Lead: NWS Support: IDWR, IOEM					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood, Severe Weather					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Medium: $10,000 to $100,000	USACE (Silver Jackets USGS)	Ongoing
Action 2018-016: Create statewide ice jam inventory.					
Responsible Agencies: Lead: USACE Support: BOR					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood, Severe Weather					
Statewide	Both	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Medium: $10,000 to $100,000	USACE (Silver Jackets USGS); HMA (HMGP, FMA)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2018-017: Create household hazardous waste collection sites in rural counties that are without a program.					
Responsible Agencies: Lead: DEQ Support: IOEM					
Reporting Committee: HazMat & Radiological TWG					
Hazards Mitigated: Hazardous Materials					
Statewide	Existing	Hazardous Materials	Medium: $10,000 to $100,000	DEQ; HMGP	Ongoing
Action 2018-018: Create program to go through all levels of educational institutions throughout the state and collect chemical / hazardous waste and provide ongoing education, outreach, guidance, and monitoring assistance.					
Responsible Agencies: Lead: DEQ Support: IOEM					
Reporting Committee: HazMat & Radiological TWG					
Hazards Mitigated: Hazardous Materials Release, Radiological Accidents					
Statewide	Both	Hazardous Materials	Medium: $10,000 to $100,000	DEQ; HMA (HMGP, PDM)	Ongoing
Action 2018-019: Inventory landfills for hazardous waste disposal presence and capability.					
Responsible Agencies: Lead: DEQ Support: IOEM					
Reporting Committee: HazMat & Radiological TWG					
Hazards Mitigated: Hazardous Materials Release					
Statewide	Both	Hazardous Materials	Medium: $10,000 to $100,000	DEQ; HMA (HMGP)	Ongoing
Action 2018-020: Adult immunization clinics for vulnerable populations with limited access to healthcare (e.g., homeless persons, low-income healthcare workers).					
Responsible Agencies: Lead: IDHW					
Reporting Committee: Pandemic TWG					
Hazards Mitigated: Pandemic					
Statewide	Existing	Health and Medical	Low: <$10,000	IDHW	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2018-022: Fund local veterinarians to educate local jurisdictions on passage of rabies control ordinances requiring rabies vaccination of dogs, cats, and ferrets.					
Responsible Agencies: Lead: IDHW					
Reporting Committee: Pandemic TWG					
Hazards Mitigated: Pandemic					
Statewide	Existing	Health and Medical	Medium: $10,000 to $100,000	State Public Health Veterinarian; IDHW	Ongoing
Action 2018-023: Purchase of mobile self-contained housing for Idaho Public Health Districts to borrow or use for isolation of infectious or exposed persons who do not require hospitalization and are not able to be isolated in other accommodations.					
Responsible Agencies: Lead: IDHW					
Reporting Committee: Pandemic TWG					
Hazards Mitigated: Pandemic					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical	Medium: $10,000 to $100,000	IDHW	Ongoing
Action 2018-024: Create a revolving loan fund for start-up mosquito abatement districts to use prior to receipt of tax money and prior to a disaster declaration.					
Responsible Agencies: Lead: IDHW					
Reporting Committee: Pandemic TWG					
Hazards Mitigated: Pandemic					
Statewide	Existing	Safety and Security; Health and Medical	Medium: $10,000 to $100,000	IDHW	Ongoing
Action 2018-025: Exercise Earthquake Clearinghouse and Communications Plan.					
Responsible Agencies: Lead: Earthquake Engineering Research Institute Support: IOEM					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Earthquake					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation	Medium: $10,000 to $100,000	NEHRP; HMA (HMGP, BRIC, PDM)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2018-027: Exercise Rapid Visual Assessment Teams.					
Responsible Agencies: Lead: IOEM					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Earthquake					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	Medium: $10,000 to $100,000	NEHRP; WSSPC; HMA (HMGP, BRIC, PDM)	Short-Term
Action 2018-028: Shakecast computer modeling after an earthquake event to determine highest likelihood of infrastructure that is damaged from the epicenter.					
Responsible Agencies: Lead: ITD Support: IGS, IOEM					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Earthquake					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	High: <$100,000	UTD; HMA (HMGP, BRIC, PDM); NEHRP	Ongoing
Action 2018-029: Northern Idaho seismic assessment, outreach, and replacement to include: hazard analysis of rail shipping Crude Oil, Coal, and other Petroleum Products; property inventory and seismic inspection; update of building codes; earthquake awareness and education; development of multi-state groups, joint exercises between Washington/Idaho, and replacing/improving RR highway crossings, bridges, high risk areas.					
Responsible Agencies: Lead: IGS Support: IOEM, IGS, ITD, IDHW					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Earthquake					
Northern Idaho	Existing	Transportation; Hazardous Materials	Medium: $10,000 to $100,000	NEHRP; Public / Private partnerships with BNSF; Montana LINK; Union Pacific RR; IDWR; USGS; ITD; Federal RR Administration; HMA (HMGP, BRIC, PDM)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2018-030: Drills/training for major rail derailment/accident involving explosions, fires, spills.					
Responsible Agencies: Lead: IGS Support: IOEM, IGS, ITD, IDHW					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Hazardous Materials Release, Radiological Accidents, Wildfire					
Statewide	Existing	Safety and Security; Health and Medical; Transportation; Hazardous Materials	Medium: $10,000 to $100,000	NEHRP; Public / Private partnerships with BNSF; Montana LINK; Union Pacific RR; IDWR; USGS; ITD; Federal RR Administration; HMA (HMGP, PDM)	Ongoing
Action 2018-032: Create statewide landslide inventory.					
Responsible Agencies: Lead: IGS Support: ITD					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Landslide					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	Medium: $10,000 to $100,000	ITD; HMA (HMGP, BRIC, PDM)	Ongoing
Action 2018-033: Post wildfire soil study using ubiquitous sensors for understanding landslide / mudslide hazard.					
Responsible Agencies: Lead: BSU Support: IOEM, IDL					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Landslide, Wildfire					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical	Medium: $10,000 to $100,000	IDL; HMA (HMGP, BRIC, PDM)	Ongoing
Action 2018-034: Statewide hazard fuels reduction.					
Responsible Agencies: Lead: IDL					
Reporting Committee: Wildfire TWG					
Hazards Mitigated: Wildfire					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation	Medium: $10,000 to $100,000	IDL; HMA (HMGP, HMGP-PFA, PDM); FMAG	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2013-002: Establishment of Rangeland Fire Protection Associations					
Responsible Agencies: Lead: IDL Support: BLM, State Fire Marshal's Office, Governor's Office					
Reporting Committee: Fire TWG					
Hazards Mitigated: Wildfire					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation	High: <$100,000	Volunteer Fire Assistance Grant; Western States Fire Assistance WUI Grant; Governor's Office; HMA (HMGP, PDM, HMGP-PFA); FMAG	Ongoing
Action 2013-004: West Mountain Corridor Mitigation & Education Project					
Responsible Agencies: Lead: Idaho Lands Resource Coordinating Council Support: Valley County, IDL, USFS, Local Fire Departments, University of Idaho					
Reporting Committee: Fire TWG					
Hazards Mitigated: Wildfire					
Valley County	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation	High: <$100,000	Western State Fire Manager WUI State and Private Competitive Grant; HMA (HMGP, BRIC, PDM)	Ongoing
Action 2013-007: Annual ATC-20, BCA training, and other mitigation training					
Responsible Agencies: Lead: IOEM					
Reporting Committee: Executive Committee					
Hazards Mitigated: Earthquake					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation; Hazardous Materials	Low: <$10,000	HMA (HMGP, BRIC, PDM)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2013-009: Annual review of policies and Executive Orders to promote mitigation activities					
Responsible Agencies: Lead: IOEM, Human-Caused TWG					
Reporting Committee: Human-Caused TWG					
Hazards Mitigated: Civil Disorder, Cyber Threats, Hazardous Materials Release, Radiological Accidents					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Low: <$10,000	State Funds	Ongoing
Action 2013-010: Rapid Visual Assessment of EOCs, Critical Infrastructure, Unreinforced Masonry Buildings, etc.					
Responsible Agencies: Lead: IOEM Support: Division of Occupational and Professional Licenses					
Reporting Committee: Executive Committee					
Hazards Mitigated: Earthquake					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Medium: $10,000 to $100,000	NEHRP; HMA (HMGP, BRIC, PDM)	Ongoing
Action 2013-012: Create a repository and clearing house of risk assessment data.					
Responsible Agencies: Lead: Department of Administration Support: Information Technology Resource Management Council, IOEM, IDWR					
Reporting Committee: Executive Committee					
Hazards Mitigated: Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	High: <$100,000	State agencies; Local Governments; FEMA (RiskMAP); DHS; HMA (HMGP, PDM)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2010-001: Establish communication and procedures with State Department of Administration related to cybersecurity, purchasing land/buildings in relation to natural hazards protection.					
Responsible Agencies: Lead: IOEM Support: Department of Administration					
Reporting Committee: Executive Committee					
Hazards Mitigated: Cyber Threats, Drought, Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation	Low: <$10,000	HMA (HMGP, BRIC, PDM, FMA)	Ongoing
Action 2010-003: Create a working group to oversee data sharing, database construction, and maintenance (Hazus input datasets)					
Responsible Agencies: Lead: Idaho Spatial Data Officer Support: IDWR, IOEM					
Reporting Committee: Executive Committee					
Hazards Mitigated: Earthquake, Flood					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials	Medium: $10,000 to $100,000	FEMA RiskMAP and Hazard Mitigation Management Funds; HMA (HMGP, PDM)	Ongoing
Action 2010-004: Develop and deliver 2 workshops every other year in different parts of the State for local officials on low impact development, No Adverse Impact, etc. and how to implement these activities					
Responsible Agencies: Lead: IDWR					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood					
Statewide	Future Development	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Medium: $10,000 to $100,000	FEMA; EPA; USACE	Ongoing
Action 2010-006: Expand statewide Flood Awareness Week to include school activities, promote community activities, and look at all flooding sources.					
Responsible Agencies: Lead: Silver Jackets Project					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation	Medium: $10,000 to $100,000	Agency in-kind; HMA (HMGP, BRIC, PDM)	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2010-008: In order to improve analysis of flood, landslide, seismic and wildfire hazards, obtain new or compile existing LIDAR data for populated areas of Idaho					
Responsible Agencies: Lead: IOEM Support: IGS, USGS, FEMA, FS, IDWR, BSU					
Reporting Committee: Executive Committee					
Hazards Mitigated: Earthquake, Flood, Landslide, Volcano, Wildfire					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	High: <$100,000	FEMA RiskMAP and Hazard Mitigation Management Funds; HMA (HMGP, HMGP-PFA, BRIC, PDM, FMA)	Ongoing
Action 2010-009: Produce liquefaction susceptibility maps for populated areas					
Responsible Agencies: Lead: BSU Support: IGS					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Earthquake, Landslide, Volcano					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation	High: <$100,000	FEMA/IOEM	Ongoing
Action 2010-013: Adopt and enforce statewide building codes					
Responsible Agencies: Lead: State Legislator, Division of Occupational and Professional Licenses Support: Industry, Western States Seismic Policy Council					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Earthquake, Landslide, Volcano					
Statewide	Both	Safety and Security; Food, Water, Shelter	High: <$100,000	Industry; HMA (HMGP, BRIC, PDM)	Ongoing
Action 2010-016: Conduct outreach activities and assessments of critical infrastructure to better inform local jurisdictions regarding protection of critical infrastructure					
Responsible Agencies: Lead: IOEM					
Reporting Committee: Human-Caused TWG					
Hazards Mitigated: Civil Disorder, Cyber Threats					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation	High: <$100,000	DOE; DHS; Agency in-kind	Ongoing

Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
Action 2010-017: Standardized regulation of HVAC, plumbing, electrical, and life safety codes					
Responsible Agencies: Lead: DBS, Industry Legislature					
Reporting Committee: Seismic TWG					
Hazards Mitigated: Drought, Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire					
Statewide	Future	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Hazardous Materials	Medium: $10,000 to $100,000	Industry Code Boards; HMA (HMGP)	Ongoing
Action 2010-020: Increase capacity of State dam safety program directed at partnering with Federal agencies to fund & perform repair/rehabilitation of poor condition dams.					
Responsible Agencies: Lead: IDWR					
Reporting Committee: Flood TWG					
Hazards Mitigated: Earthquake, Flood, Severe Weather					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	High: <$100,000	USACE Planning Assistance to States; IDWR; HMA (HMGP); HHPD	Ongoing
Action 2010-021: Increase participation in the National Levee Safety Program Database					
Responsible Agencies: Lead: USACE Support: IOEM, IDWR					
Reporting Committee: Flood TWG					
Hazards Mitigated: Flood					
Statewide	Existing	Safety and Security; Food, Water, Shelter; Health and Medical; Transportation	Low: <$10,000	USACE; HMA (HMGP, PDM)	Ongoing

24.3 PRIORITIZATION

As described in Section 22.2, IOEM prioritized actions for this SHMP by answering 14 questions, weighing the responses, and assigning a priority ranking from 0 to 3. Total scores from 0 to 14 defined a low priority, 15 to 30 were medium priority, and actions with scores between 31 and 45 ranked high priority. Of the 51 actions in the plan, most were ranked with a high priority (35), and the remainder (16) were ranked medium.

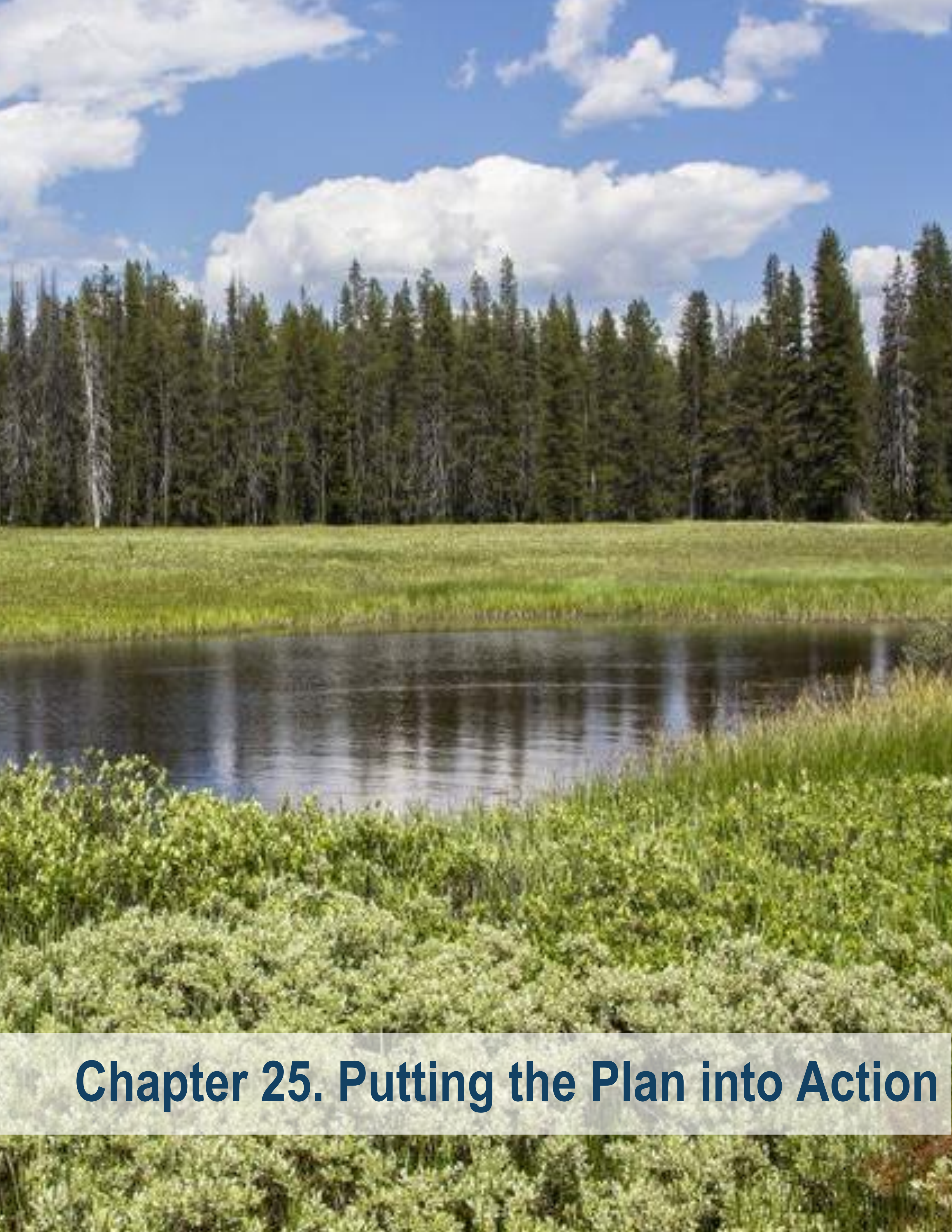
Table 24-2 shows the implementation priority for each action included in the 2023 SHMP update, and the following characteristics of the action:

- **Mitigation Goals and Objectives**—Goals and objectives are listed in detail in Chapter 21.
- **Action Type**—Mitigation actions are summarized into the following four types define by FEMA:
  - **State & Local Plans and Regulations**—Include government authorities, policies, or codes that encourage risk reduction, such as building codes and state planning regulations. This may also include planning studies.
  - **Structure & Infrastructure Projects**—Involve modifying existing structures and infrastructure or constructing new structures to reduce the impact of hazards.
  - **Natural Systems Protection**—Minimize losses while also preserving or restoring the function of natural systems.
  - **Education and Awareness Programs**—Include long-term, sustained programs to inform and educate citizens and stakeholders about hazards and mitigation options. This category could also include training.
- **Implementation Priority**—The ranking criteria discussed above. See Appendix G for the prioritization summary of each action.

Table 24-2. 2023 Idaho SHMP Action Plan Goals, Objectives, Action Type, and Priority

Action Number	Mitigation Goals	Mitigation Objectives	Action Type				Priority
			State & Local Plans and Regulations	Structure & Infrastructure Project	Natural Systems Protection	Education & Awareness Programs	
2023-01	1, 2, 3, 4, 5	1, 4, 7	X				High
2023-02	1, 2, 3, 4, 5	1, 4, 6, 7	X			X	High
2023-03	1, 2, 3, 4, 5	1, 4, 6, 7, 9	X				High
2023-04	3	2, 3, 4, 6				X	High
2023-05	1, 2, 3, 4, 5	2, 3, 4, 5, 6				X	High
2023-06	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6, 8	X				High
2023-07	1, 2, 3, 4, 5	1, 3, 4, 6, 8	X				High
2023-08	2, 4	2, 6, 7, 9	X	X			Medium
2023-09	1, 2, 3, 4, 5	1, 4, 7	X	X	X	X	High
2020-01	1, 2	1, 2, 3, 5				X	High
2020-02	1, 2, 3, 4	1, 5, 9	X				Medium
2020-03	1, 2, 3, 4, 5	1, 5, 8				X	Medium
2020-04	1, 2, 3	1, 2, 4	X				Medium
2018-01	2, 3, 4	1, 9	X				High
2018-02	2, 4	1, 2, 4, 8	X			X	Medium
2018-06	1, 2, 3, 4	2, 9				X	High

Action Number	Mitigation Goals	Mitigation Objectives	Action Type				Priority
			State & Local Plans and Regulations	Structure & Infrastructure Project	Natural Systems Protection	Education & Awareness Programs	
2018-07	5	4, 6, 7	X	X			High
2018-08	1, 2, 4	2, 3, 8		X	X		High
2018-10	1, 2, 3, 5	5, 7, 9	X			X	High
2018-12	1, 2	2, 5				X	High
2018-16	5	9	X	X	X	X	Medium
2018-17	2, 4	5			X	X	Medium
2018-18	2, 4	5	X			X	Medium
2018-19	2, 5	3	X			X	Medium
2018-20	1, 4	1, 5	X		X	X	Medium
2018-22	1, 3	5, 9	X			X	Medium
2018-23	1, 2	1	X		X	X	Medium
2018-24	1, 2	1, 8	X			X	Medium
2018-25	5	4	X			X	High
2018-27	5	1, 2, 4, 6, 7	X	X		X	High
2018-28	5	2	X	X		X	Medium
2018-29	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6, 7, 8, 9	X	X	X	X	High
2018-30	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 6, 7, 8, 9	X	X	X	X	High
2018-32	2, 3, 4, 5	7	X			X	High
2018-33	2, 3, 4, 5	7	X			X	High
2018-34	1, 2	1, 2, 3, 4, 5, 8	X		X	X	High
2013-02	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 8	X				High
2013-04	1, 2, 3, 4, 5	1, 2, 3, 4, 5, 8				X	High
2013-07	3	1, 3, 5, 8				X	High
2013-09	1, 2, 3, 4	1, 3, 4, 5	X				High
2013-10	1, 2	3, 4, 7		X			High
2013-12	3, 5	2, 4, 6, 7, 9	X				High
2010-01	3	1, 2		X			High
2010-03	3, 5	1, 5, 6		X			High
2010-04	2	3, 4				X	High
2010-06	1, 2	2, 3				X	High
2010-08	5	5, 6	X				High
2010-09	5	5, 6	X				High
2010-13	1, 2, 4	4	X				High
2010-16	1, 2, 3	1, 2, 3				X	Medium
2010-17	2	1	X				High
2010-20	1, 2, 3	1, 2, 3	X				High
2010-21	1, 2, 4, 5	1	X				Medium



Chapter 25. Putting the Plan into Action

25. PUTTING THE PLAN INTO ACTION

The IOEM Mitigation Section oversees maintenance and updates of the SHMP. The process is a collaborative partnership with numerous stakeholders from local, Tribal Nation, regional, state, and federal government agencies, community-based organizations, academic institutions, and other non-governmental entities. The SHMP is a living document that must remain relevant to guide the implementation of mitigation actions, reduce risk from future hazard events, and build statewide resilience. A system for monitoring, evaluating, and updating the actions and content of the SHMP is critical to ensuring that the Plan remains on course. The following sections support and document the State's ongoing efforts to monitor, evaluate, and update the SHMP during its five-year life cycle.

25.1 ADOPTION

Adoption of the SHMP signifies the State's commitment to implementing a mitigation strategy that will guide hazard mitigation and resilience efforts over the next five years.

The IOEM Director recommends the SHMP for adoption. The Governor and Adjutant General formally adopt the SHMP as required by 44 CFR 201.4(c)(6). On XXXX, the Governor of the State of Idaho and the Idaho Military Division Adjutant General adopted the SHMP after receiving "Approvable Pending Adoption" status from FEMA on XXXX. The adoption resolution was submitted to FEMA, and FEMA provided full approval of the SHMP on XXXX, making the SHMP effective as of XXXX.

Copies of the adoption resolution and FEMA approval letter are included in Appendix K documenting the successful completion of the update of the SHMP.

25.2 IMPLEMENTING, MONITORING, AND REVIEWING MITIGATION ACTIONS

A mitigation action implementation plan establishes continuous tracking of recommended mitigation actions. This tracking enables the State to document the progress being made toward the SHMP's goals and objectives.

An implementation plan serves as a catalyst to implementing mitigation actions by ensuring that stakeholders and implementing agencies are engaged in the SHMP implementation process. The implementing agencies participated in the identification and development of mitigation actions to foster interagency support and accountability. Once actions were established, the planning process evaluated the potential implementation costs, timeframe, and funding sources. Completing these steps better ensures that mitigation actions will be implemented, making the SHMP an actionable plan.

The SHMP Executive Committee meets annually each fall to monitor and review mitigation action implementation over the past year and set priorities for the coming year.

25.2.1 Outreach to Agencies and Stakeholders

Monitoring the implementation of mitigation actions may include periodic reporting and site visits, regular contact and communication with responsible agencies, and stakeholder forums to discuss the status of actions, successes, and challenges.

25.3 MONITORING, EVALUATING AND UPDATING THE PLAN

Section 201.4(c) requires that the SHMP be reviewed, revised, and submitted for approval to the Regional Administrator of FEMA every five years. The regulations require a plan maintenance process that includes an established method and schedule for monitoring, evaluating, and updating the plan. The Idaho Office of Emergency Management – Mitigation Section is the agency primarily responsible for the plan maintenance, but it will utilize the review and comments from other entities as part of the maintenance process.

The Idaho SHMP is a living document and will be reviewed and potentially updated constantly. The plan will be revised if the conditions under which the plan was developed change, such as new or revised State policies, a major disaster, or the availability of funding. This section describes how the SHMP will be monitored, evaluated, and updated.

The SHMP Executive Committee will meet annually in the fall to evaluate the SHMP. Minutes from the 2019 through 2022 meetings are included in Appendix A. The Executive Committee will evaluate the Plan based on the following criteria:

- How much progress has been made on mitigation actions and projects
- Implementation problems (technical, political, legal, and financial)
- Relevancy of goals, objectives, and actions and whether they need to be discontinued or changed
- Level of involvement by the public and other agencies
- Accuracy and precision of the risk assessments, availability of new data, and whether such data needs to be reflected in the plan immediately

After each major disaster in Idaho declared by the President, the IOEM Mitigation Section will incorporate an action for the disaster in the Mitigation Strategy, to evaluate and assess whether the SHMP addresses the reality resulting from the disaster (i.e., does the risk assessment need updated, are the goals/objectives/actions are still relevant). This evaluation will be provided to the Executive Committee.

Every five years, as required by 44 CFR § 201.4, the State Hazard Mitigation Officer (SHMO) is responsible for submitting the revised SHMP to the FEMA Regional Administrator and for facilitating the adoption of the plan by the State. The SHMO uses the FEMA Standard State Hazard Mitigation Plan Review Crosswalk as a tool for updates with a review panel and a secondary reviewer and submits the revised Plan with the completed crosswalk to FEMA.

IOEM will revise the Plan more frequently if the conditions under which the Plan was developed materially change through new or revised State policy, a major disaster, or availability of funding. Future updates of the SHMP will involve the technical working groups and their recommendations.

The method to update the Plan is for planning committee members to utilize the on-line planning tool to edit sections as changes are needed. Recommended updates will be vetted through the Executive Committee and technical working groups (as applicable). Recommended updates will then be provided to the IOEM Mitigation Section for consideration. Upon acceptance, the IOEM Mitigation Section will develop the draft updates, circulate draft updates for review to the Executive Committee and technical working groups, incorporate review comments, provide the public with an opportunity to review and comment, and forward the draft plan for final State approval.

25.3.1 Local Plan Coordination and Linkage

As part of the SHMP update, local plans were assessed, focusing on three areas: risk assessment, mitigation strategy, and local capability. As part of this and previous updates, a database was developed that rolls up data from the local plans. This data was analyzed to ensure that the State mitigation goals and objectives are compatible with local actions and to compare the State risk assessment to local risk assessments. This data will be continuously updated and incorporated into the 2023 SHMP.

25.3.2 System for Tracking Progress

Tracking progress on all state-level mitigation activities will continue to be led by IOEM. To continue a standardized collection of progress data and information on the specific mitigation actions in the SHMP, IOEM will continue to use the Mitigation HUB that allows TWG members and other state agencies and stakeholders to login to a secure site and provide a status update to their mitigation actions. The complete schedule of tracking and other plan maintenance activities is provided in Table 25-1.

Table 25-1. Plan Maintenance Strategy for the 2023 SHMP Update

Year	Implementation Milestone
October 2023	• FEMA-approval and State adoption of the 2023 SHMP Update
2024 (Year 1)	• IOEM will schedule quarterly meetings with the Technical Working Groups to review the following: ➢ Avalanche, Cyber threats, Civil Disorder, Drought, Earthquake, Flood, Hazardous Materials, Landslide, Pandemic, Radiological, Severe Weather, Volcanic and Wildfire. Report any progress on mitigation projects for the first year. • In September-October 2024, IOEM will reach out to all state agencies and stakeholder groups to submit status updates on the mitigation actions they are responsible for and save to the state plan with meeting minutes, sign-in sheets and any updates. • In November 2024, IOEM will schedule a meeting with the Executive Committee to review the following: ➢ Mitigation action implementation progress ➢ Challenges/problems faced for actions not implemented ➢ Review the relevancy of goals, objectives, and actions ➢ Public and stakeholder involvement ➢ Accuracy and precision of the risk assessment • By end of November 2024, develop meeting minutes that summarize the outcomes of the Executive Committee and include in Appendix A of the 2023 SHMP Update. • IOEM Mitigation Section will lead incorporating any updates to the SHMP and circulate for review to the Executive Committee and Technical Working Groups • The updated SHMP will be posted on the IOEM website for public review

Year	Implementation Milestone
2025 (Year 2)	• IOEM will schedule quarterly meetings with the Technical Working Groups to review the following: ➢ Avalanche, Cyber threats, Civil Disorder, Drought, Earthquake, Flood, Hazardous Materials, Landslide, Pandemic, Radiological, Severe Weather, Volcanic and Wildfire. Report any progress on mitigation projects for the second year. • In September-October 2025, IOEM will reach out to all state agencies and stakeholder groups to submit status updates on the mitigation actions they are responsible for and submit. • In November 2025, IOEM will schedule a meeting with the Executive Committee to review the following: ➢ Mitigation action implementation progress ➢ Challenges/problems faced for actions not implemented ➢ Review the relevancy of goals, objectives, and actions ➢ Public and stakeholder involvement ➢ Accuracy and precision of the risk assessment • By end of November 2025, develop meeting minutes that summarize the outcomes of the Executive Committee and include in Appendix A of the 2023 SHMP Update. • IOEM Mitigation Section will lead incorporating any updates to the SHMP and circulate for review to the Executive Committee and Technical Working Groups • The updated SHMP will be posted on the IOEM website for public review
2026 (Year 3)	• IOEM will schedule quarterly meetings with the Technical Working Groups to review the following: ➢ Avalanche, Cyber threats, Civil Disorder, Drought, Earthquake, Flood, Hazardous Materials, Landslide, Pandemic, Radiological, Severe Weather, Volcanic and Wildfire. Report any progress on mitigation projects for the third year. • In September-October 2026, IOEM will reach out to all state agencies and stakeholder groups to submit status updates on the mitigation actions they are responsible for and submit. • In November 2026, IOEM will schedule a meeting with the Executive Committee to review the following: ➢ Mitigation action implementation progress ➢ Challenges/problems faced for actions not implemented ➢ Review the relevancy of goals, objectives, and actions ➢ Public and stakeholder involvement ➢ Accuracy and precision of the risk assessment • By end of November 2026, develop meeting minutes that summarize the outcomes of the Executive Committee and include in Appendix A of the 2023 SHMP Update. • IOEM Mitigation Section will lead incorporating any updates to the SHMP and circulate for review to the Executive Committee and Technical Working Groups • The updated SHMP will be posted on the IOEM website for public review
2027 (Year 4)	• Continue Technical Working Group and Executive Committee meetings • Commence 2028 SHMP Update • Request mitigation action progress by July 2027 • Develop annual review report by November 2027 and update the HI-EMA website with the new information
2028 (Year 5)	• Continue Forum meetings • Continue preparation of the 2028 SHMP Update • Submit updated SHMP to FEMA by August 2028

25.4 ASSURANCES

In accordance with 44 CFR 201.4(c)(7), the State assures that it will manage and administer FEMA funding and comply with all applicable federal statutes and regulations in effect with respect to the periods for which the State receives grant funding. These efforts will comply with the following:

- 2 CFR Part 200—Office of Management and Budget Guidance: Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards

- 2 CFR Part 3002—Department of Homeland Security adoption of the Office of Management and Budget Guidance listed in 2 CFR Part 200, giving regulatory effect to the guidance and supplementing the guidance as needed for the Department of Homeland Security

The State also assures that it will amend the State of Idaho SHMP as required by 44 CFR 201.4(c)(7) to reflect changes in State or federal statutes and regulations.

The SHMP assurances were reviewed and updated for the 2023 SHMP. Appendix J contains additional information about assurances and compliance with federal and state regulations.

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State of Idaho Hazard Mitigation Plan

Appendix A. Planning Process Documentation

A. Planning Process Documentation

This appendix provides supporting information on the planning process captured in Chapter 1. Information on TWG, agency, and stakeholder coordination that was conducted as part of the 2023 SHMP update planning process and is not already captured in Chapter 1 is included below. Applicable meeting summaries and presentations are also included in this appendix. Additional meeting information is available upon request.

Technical Working Groups

With so many agencies having a stake in hazard mitigation, technical working groups were formed around all of Idaho's assessed hazards. Technical Working Groups (TWGs) were used to provide expertise and detail beyond the scope of the Planning Executive Committee. Four main groups were utilized as part of the 2023 Plan update: Flood, Wildfire, Seismic, and Human-Caused. The working groups assisted in updating the risk assessment and formulating mitigation strategies for their hazards. The working groups will also champion the implementation of the mitigation strategies after the Plan is adopted. For the three key hazards of flood, wildfire, and earthquake, Idaho already benefitted from organized, multi-agency groups that could fill the role of technical working groups in the Idaho SHMP update effort. The pre-existing groups already had track records for maintaining a regular meeting schedule and could focus their attention on their topics of expertise and not have to grapple with edits to the entire SHMP. The technical working group concept also allowed proper coordination and integration with other statewide planning efforts (Idaho Implementation Strategy for National Fire Plan, Silver Jackets Implementation Plan), because members were involved in both efforts. Table A-1 summarizes those hazards assigned to each working group.

Table A-1. IOEM Technical Working Group Hazard Assignments

Flood TWG	Wildfire TWG	Seismic TWG	Human-Caused TWG
Flood • Dam, Levee, Canal Failure	**Drought**	**Avalanche**	**Civil Disorder**
Severe Weather • Winter Storms • Thunderstorm • Lightning • Hail • Straight-Line Winds • Tornadoes	**Wildfire**	**Earthquake**	**Cyber Threats**
		Landslide	**Hazardous Materials**
		Volcanic Eruptions	**Pandemic**
			Radiological

Flood TWG

IOEM turned to the Idaho Silver Jackets Team, which is the State-level implementation of the USACE's National Flood Risk Management Program. The Idaho chapter of the Silver Jackets was established by a USACE charter in the summer of 2009. The group holds meetings at least on a quarterly basis, but it has met nearly every month in the year since its charter. Meeting minutes are posted publicly at http://www.nfrmp.us/state/factIdaho.cfm. As described in their charter, the group's vision is to "serve as a catalyst in developing comprehensive and sustainable solutions to flood hazard issues, including mitigation planning, flood hazard mapping, risk reduction activities, and response and recovery planning." Silver Jackets team members with different areas of expertise provide one-stop information to State and local government to help them identify solutions to flood hazards. In addition, Silver Jackets educate the public about flood risks, so communities can better understand flood-related problems and assistance programs. This allows for integration with FEMA's mitigation programs and initiatives.

Membership in the Idaho Silver Jackets varies based on available resources and team focus; however, the core member agencies involved at all times include USACE, FEMA, IDWR, IOEM, and National Oceanic Atmospheric Administration National Weather Service (NOAA/NWS). Those individuals that participated directly as part of the 2023 Plan update included:

- Brandon Hobbs, U.S. Army Corps of Engineers
- John Falk, Maureen O'Shea, Idaho Department of Water Resources
- Neal Murphy, Idaho Department of Transportation
- Troy Lindquist, National Oceanic and Atmospheric Administration/National Weather Service
- Alexis Clark, Idaho Geographical Survey
- Mike Dimmick, Flood Control District #10
- Tyre Holfeltz, Idaho Department of Lands
- Kyle McCormick, FEMA
- Janice Witherspoon, IOEM
- Mark Zirschky, Pioneer Irrigation
- Tom Ritthaler, Boise Project
- Mary Quarles, IOEM
- Brenda Hughes, Military Accounting
- Susan Cleverly, Lorrie Pahl, Lucille Webster, Mary Mott, Traci Stewart, IOEM

Wildfire TWG

The working group consisted of a pre-existing team that already focused on the hazard of wildfire in the State: the Idaho Lands Resource Coordinating Council (ILRCC). This council was formed from three existing advisory groups within the Idaho Department of Lands (IDL). The Idaho State Plan Working Group, formed in 2002, had previously assisted with Plan updates and is charged with assisting counties and Tribal Nations with their local Wildfire Protection Plans and their associated local working groups, disseminating information, and providing oversight to facilitate the implementation of the National Fire Plan in Idaho. Group members participating as part of the 2023 Plan update included:

- Tyre Holfeltz, Idaho Department of Lands
- Knute Sandahl, Idaho Department of Insurance, State Fire Marshal’s Office
- David Hoekema, Idaho Department of Water Resources
- Jon Hanian, IOEM
- Kyle McCormick, FEMA
- Addie Woods
- Jen Pierce, BSU
- Robin Kiska, IOEM
- Susan Cleverly, Lorrie Pahl, Lucille Webster, Mary Mott, Traci Stewart, IOEM

Seismic TWG

Another pre-existing group was used by IOEM as the technical working group: the Seismic Advisory Committee. The Idaho Seismic Advisory Committee is a multidiscipline, interagency group that has been meeting since September 2007. In early 2010, the Committee incorporated the SHMP update as part of its ongoing agenda. The Seismic Advisory Committee was organized by IOEM to develop and implement statewide earthquake preparedness and mitigation efforts. It is composed of members representing Idaho’s local, State and Federal agencies, professional engineers, and universities. Membership that participated in the 2023 Plan update included the following people:

- Zach Lifton, Idaho Geological Survey
- Lee Liberty, Boise State University
- Richard Gummersall, Idaho Department of Parks and Recreation
- Kyle McCormick, FEMA
- Robin Kiska, IOEM
- Mike Munger, Division of Building Safety
- Neal Murphy, ITD
- Sarah McClendon, McClendon Engineering
- Dave Ayers, IOEM
- John Hanian, IOEM
- Pascal Schuback, CREW
- Kyra Nourse, CREW
- Chris DuRoss, USGS
- Susan Cleverley, Lorrie Pahl, Lucille Webster, Mary Mott, Traci Stewart, IOEM

Human-Caused TWG

A diverse group representing a number of agencies and organizations was assisted IOEM with the 2023 update. The Human-Caused technical working group included Civil Disorder, Cyber Threats, Hazardous Materials and Radiological, and Pandemic.

Members of the **Civil Disorder** Technical Working Subgroup included:

- Idaho State Police and Idaho Criminal Intelligence Center
- Idaho National Guard
- Idaho Department of Homeland Security
- Susan Cleverley, Lorrie Pahl, Lucille Webster, Mary Mott, IOEM

Members of the **Cyber Threats** Technical Working Subgroup included:

- Idaho Department of Information Technology Services
- Idaho National Guard

- Micron
- Idaho National Laboratory
- Boise State University
- Ben Roeber, Susan Cleverley, Lorrie Pahl, Lucille Webster, Mary Mott, IOEM

Members of the **Hazardous Materials & Radiological** Technical Working Subgroup included:

- Idaho Department of Environmental Quality
- Susan Cleverly, Lorrie Pahl, Lucille Webster, Mary Mott, IOEM

Members of the **Pandemic** Technical Working Subgroup included:

- Kris Carter and members of the Idaho Department of Health and Welfare
- Susan Cleverly, Lorrie Pahl, Lucille Webster, Mary Mott, IOEM

State Hazard Data Group

In 2013, Idaho Statute 67-830 through 67-833 established the Idaho Technology Authority (ITA) which combines the business perspective of state government and the private sector with the technical expertise of its subcommittees to coordinate the design, procurement and implementation of information technology. One of the goals of the ITA is to identify statewide programs that are effective, beneficial, and utilized on a statewide basis.

The Idaho Geospatial Council Executive Committee (IGC-EC) is one of the subcommittees organized under the ITA, and is focused on GIS coordination, including the development of the Idaho Spatial Data Infrastructure which is colloquially referred to as The Idaho Map (TIM).

The IGC-EC and Idaho's Geographic Information Officer (GIO) have been working on developing TIM. The vision is to determine which GIS datasets in Idaho should be part of TIM and then document those datasets extensively with standards and metadata. To officially recognize a GIS dataset as being part of TIM it goes through a nomination process and is then formally adopted by the IGC-EC. GIS datasets are selected by topic-specific Technical Working Groups (TWGs) with members that have the expertise in the data topics under consideration. Data selected for inclusion in TIM should be statewide, authoritative, and meet the approval of both the appropriate TWG and the IGC-EC.

Datasets in Idaho fall within one of 17 data themes shown in Figure A-1, and each theme is associated with its own Technical Working Group. To help determine the best available, authoritative hazard related datasets, IOEM and the consultants at Tetra Tech, along with the GIO housed at the Office of Information Technology Services, worked closely with the State Hazard Data Group. Benefits of working with this group include:

- Access to a large group of professionals creating and using different hazard themed GIS data layers.
- Consensus on the best available data. In the near future the Office of the GIO will release The Idaho Map that will include a map with the data, as well as access to the associated standards along with access capabilities through an Open Data Portal, including a representational state transfer (REST) service. This will make it easier for local jurisdictions to use the same data sources as those used in the SHMP.
- TIM is a long-term strategy so other efforts in Idaho, including potentially an update to the SHMP in 5 years, will benefit from the work being done now.

Figure A-1. Data Themes

The State Hazard Data Group has been meeting since March 2022 and has identified which datasets should be included in TIM for the following topics:

- Landslide Inventory
- Dam Inventory
- Historic Earthquakes
- Radon Gas
- Active Faults
- Flood

Additionally, discussions about fire risk maps and other hazard related data are ongoing. The State Hazard Data Group has been meeting monthly for most of 2022 and increased the frequency to bi-weekly meetings in 2023 to accommodate the needs of the SHMP planning process. Additionally, Idaho State University and ITS funded an intern to support efforts by the State Hazard Data Group.

The State Hazard Data Group includes a large group of participants and is led by Dr. Brittany Brand from Boise State University and Zach Lifton from the Idaho Geological Survey. Attendance at those meetings varies depending on the topic discussed. Meetings have included personnel from:

- Ada County
- Albertsons
- Boise Fire
- Boise State University
- Boise State Geosciences
- Cascadia Region Earthquake Workgroup (CREW)
- FEMA
- Idaho Department of Administration
- Idaho Department of Commerce
- Idaho Department of Corrections
- Idaho Department of Environmental Quality (DEQ)
- Idaho Department of Lands
- Idaho Department of Water Resources, including the State Dam Safety Coordinator
- Idaho Department of Health & Welfare
- Idaho Fish and Game
- Idaho Geological Survey
- Idaho Information Technology Services
- Idaho Military Division
- Idaho Office of Emergency Management (IOEM)
- Idaho Public Utilities Commission
- Idaho State Police
- Idaho State University
- Idaho Technology Authority (ITA)
- Local Highway Technical Assistance Council
- Pioneer Irrigation
- Tetra Tech, Inc.
- University of Idaho
- USDA
- U.S. Department of Housing and Urban Development
- USGS
- Water Users Association

Executive Committee Meeting Summaries

STATE OF IDAHO
OFFICE OF EMERGENCY MANAGEMENT
4040 W. GUARD STREET, BLDG. 600
BOISE, IDAHO 83705-5004

BRAD LITTLE
GOVERNOR

BG MICHAEL J. GARSHAK
ADJUTANT GENERAL

BRAD RICHY
DIRECTOR

13 November 2019

MEMORANDUM FOR RECORD

FROM: ADMINISTRATIVE SPECIALIST

SUBJECT: State of Idaho Annual Hazard Mitigation Plan Annual Executive Committee Meeting

1. The Annual Executive Committee Meeting was held on Wednesday, 13 November 2019, 0900L.

2. Participants:
   Susan Cleverley, Mitigation Section Chief, IOEM
   Maija Reed, IOEM Emergency Planner, IOEM
   Mary Mott, IOEM Mitigation Assistant, IOEM
   Zach Lifton, Geologic Hazards Geologist, Idaho Geological Survey
   John Faulk, Dam Safety Manager, IDWR
   Brandon Hobbs, Project Manager/ Idaho Outreach Coordinator, US Army Corps of Engineers
   Tyre Holfeltz, Fire Prevention/ Risk Mitigation Program Manager, IDL
   Diego Curt, Chief Compliance Officer, Office of the Governor, ITS
   Maureen O'Shea, State NFIP Coordinator
   Jen Pierce, Associate Professor, Department of Geoscience, BSU
   Brittany Brand, Associate Professor, Department of Geoscience, BSU
   Troy Lindquist, Service Hydrologist, National Weather Service
   Ben Call, Branch Chief, Communications and IT Services, IOEM
   Karissa Hardy, Environmental, Staff Engineer, LHTAC
   Bret Kessinger, Sergeant, Idaho Criminal Intelligence Center, Idaho State Police
   Rob Littrell, Emergency Management Planner/Analyst, BSU
   Jerry Miller, Economic Development Specialist, Idaho Dept. of Commerce
   Janice Witherspoon, Economic Development Specialist, IOEM
   Aaron Blake, Communications Manager, IOEM
   Hope Allen, Administrative Assistant, IOEM
   Kyle McCormick, Hazard Mitigation Community Planner, FEMA
   Kris Carter, Epidemiologist, IDHW (via telephone)
   David Hoekema, IDWR (via Telephone)

3. Agenda items:

   2019 Weather Recap and Decision Support- Troy Lindquist

Recap of extreme events that occurred Nationwide. Billion-dollar disasters of 2019 are trending above average, but still below average compared to past years. Disasters in Idaho are not as big as other parts of the country, but still have big impacts on homeowners. Many rural communities were impacted by flooding. This year had below average snowpack until March and well above average precipitation in February. National Weather Service has the sole responsibility of issuing weather forecast and warnings to the state.

Implementation Problems
- Licensing/ Permits
- Concern over liability/civil suit, if you act (map) and cause damage or if you do not - are you liable?
- Faith Cox- Risk Management/ Dept. of Admin, explains what they do and the protections afforded State Employees
- Lack of technical assistance concern
- Non-subject matter expertise trying to map a project
- Susan Cleverley says Mitigation can recommend some if asked

Public/ Agencies Involvement
- Who should be brought in?
- Is there an umbrella agency that covers businesses? Things are often approached through individuals, but business might be a better avenue
- Perhaps through Jon Hanian?
- US Dept. of Agriculture, Idaho Assoc. of Counties, League of Cities... suggested- Should be involved?
- Invite Tribes, Bureau of Rec
- Use ESF partners as starting point, but not single point of contact

Risk Assessments/ New Data
- How is the new LiDAR data being integrated?
- New update may look very different due to new LiDAR mapping, suggest to start that integration now
- Suggest to use Boise State students who are always looking to learn/support
- Perhaps some of this new technology can help alleviate some of the implementation problems

Executive Committee Items
- Implement the goals/objectives: (spreadsheet) maybe need to change to “coordinate” instead of current language
- Discussion of taking the training/distributing the training to the groups, rather than have the parties come to us, take it out to them
- “To provide all Hazard Training to local governments”
- Rapid Visual Assessments, perhaps make them separate (CIRK and EOCS) since they’re not being done together

4. Presentations

John Faulk
- Each damn listed has a front- and back-page image associated with it in packet
- Some of the dams are over 100 yrs. old/ have received no maintenance
- "Unacceptable Risk to downstream public"-The criteria a dam needs to meet to be put on the Hazard Dam list.

Brandon Hobbs: Silver Jackets
- Post Wildfire Guide- Aimed at individuals/ is now available online

Tyre Holfeltz
- Over 50% of fires this year were human caused
- Hiring/looking into a new position to help find ways to change that

Diego Curt
- Introduction of "VERIS"- Vocabulary for Event Recording/ Information Sharing

Maureen O'Shea
- Neither FEMA or the State has a definition for dredging- so we use the corps, which does require a permit

Zach Lifton
- Did Zach provide his presentation?

Brittany Brand and Jen Pierce
- 2020 May 1st- Hazard/ Climate Resiliency Consortium Conference

Future
- Discussion of a Slush Fund for smaller, local counties to borrow money from to complete projects, while waiting for the guaranteed Federal Highway Grant Funds

5. Next meeting: TBD. Meeting adjourned at 1500L.

6. If you have any questions, please contact Susan Cleverly at 208-258-6545 or scleverly@imd.idaho.gov.

//SIGNED//

HOPE ALLEN
Administrative Specialist

Executive Working Group Meeting	**November 17, 2020** **1:00 – 3:30 pm** **Virtual Webex Meeting** https://ioem.webex.com/ioem/j.php?MTID=m27978f416e763b2f67fe54cfedf8e543
Attendees:	Lee Liberty, Zach Lifton, Robin Kiska, Neil Murphy, Kyle McCormick, Susan Cleverley, Lorrie Pahl, Mary Mott, Traci Stewart, Brittany Brand, Ben Call, Alexis Clark, Brian Dale, Mark Dietrich, Dean Ehlert, Dave Evetts, John Falk, Karissa Hardy, Brandon Hobbs, David Hoekema, Tyre Holfeltz, Tricia Hosch-Hebdon, Brooke Jacobson, Josh McIntosh, Jerry Miller, Neal Murphy, Carissa Nelson, Jen Pierce, Maija Reed, Kristin Ryan, Knute Sandahl, Bruce Sandoval, Jeff Weak
Lee Liberty Boise State University	• Acknowledgements to Stanley earthquake collaborators and working group • Technical Paper " The 31 March 2020 6.5 Stanley, Idaho Earthquake: Seismotectonics and Preliminary Aftershock Analysis by Lee M. Liberty, Zachery M. Lifton and T. Dylan Mikesell • Understanding Earthquake Cycles: The past is the key to the future • Earthquake predictions and forecasts • March 31, 2020 Stanley Earthquake • Moment Release Through Time – Stanley earthquake (temporally very predictable) • Seismicity in Idaho • Earthquakes in Central Idaho • Temporary Network Plans • Summary: March 31, 2020 6.5 Stanley Earthquake
Zach Lifton Idaho Geological Survey	• Stanley Earthquake Field Recon and Future Work • Need for Permanent Seismic Network (since 1989) • Map showing permanent seismic stations in Idaho and neighboring states

Susan Cleverley Idaho Office of Emergency Management	Added that after meeting with other Earthquake Program Managers learned that Oregon is releasing an early earthquake warning system around March 2021 that will spill over into western Idaho. We are having our Public Relations Officer coordinate with Oregon and Washington on some messaging that can be put out to the public in our region. Hopefully it will give the seconds needed to drop, cover and hold. Also, there have been a multitude of slides in the Sawtooth. There is a trail organization that's over the trails that are facing a great deal of work to deal with those slides • There is an International Building code that is currently adopted and is just at a level that will allow people to evacuate, and does not protect the building from damage. Just want to make people aware that we can always increase safety in our building code levels to protect our citizens as well as our structures.
Tyre Holfeltz Idaho Department of Lands	• 2020 Fire Season Review • Map Showing Wildland Fires in Idaho • Mitigation Efforts Tyre added some good news, they received funding for six months (possibly extended to nine months) to restore sagebrush habitat and protect communities. They have been working with private land owners and the BLM Forestry and by next year will have completed 2200 acres of sagebrush restoration. Tyre gave a shout out to Pheasants Forever who has lead this effort.
Susan Cleverley Idaho Office of Emergency Management	Reviewed the Mitigation Dashboard with the group and updated status online to many of the mitigation actions. More updates need reporting and IOEM will reach out to the responsible organizations.

State of Idaho Hazard Mitigation Plan

Annual Executive Team Meeting

November 18, 2021
1:00 - 4:00 pm

Virtual Webex Meeting

Join from the meeting link
https://ideoc.webex.com/ideoc/j.php?MTID=m01088d3652bcd5b4

Join by meeting number
Meeting number (access code): 2599 096 3422
Meeting password: rG3qqbrGH48

Tap to join from a mobile device (attendees only)
+1-415-655-0001,,25990963422## US Toll

Join by phone
+1-415-655-0001 US Toll
Global call-in numbers

Host: IOEM

Attendees:	Brittany Brand, Blake Brandon, Kris Carter, Alexis Clark, Faith Cox, Brian Dale, Mark Dietrich, Mike Dimmick, Dean Ehlert, Karissa Nelson, Alexis Carson, Brandon Hobbs, Tyre Holfeltz, Ryan Bender, Rob Feeley, Ben Roeber, Bret Kessinger, David Hoekema, Jon Hanian, John Falk, Darin Letzring, Kyle McCormick, Josh McIntosh, Jerry Miller, Steve Gorski, Becky Rose, Natalie Shaver, Mark Zirschky, Dave Ayers, Susan Cleverley, Lorrie Pahl, Mary Mott, Traci Stewart, Carson MacPherson-Krutsky, Mike Munger, Maja Reed, Heidi Novich
Susan Cleverley and Lorrie Pahl	Welcome and Introduction
Ben Roeber - COVID Review	• We are in unified command with the Idaho Department of Health and Welfare working with them in conjunction with providing them support as they have that heavy lift in the response area, we provide support to them logistics functions, access to funding delivery of PPE etc. • EOC activation we are on day 612. Health and Welfare activated their EOC 2-3 months prior to that. • EOC activities are just shy of 4M items of PPE delivered to facilities throughout the state. Currently our primary focus of support has been for staffing concerns through our health care systems clinical staff requests such as nurses, LPNs and respiratory therapists and non-clinical staff such as door screeners and janitorial functions. • Currently we have mission assigned out 624 staffing position requests to 16 to 17 facilities across the state. • Lessons learned to date is leveraging those partnerships with huge support from FEMA, HHS, our VA and federal and state

	relationships, Idaho Department of Health and Welfare as well as Department of Administration. • Funding provided through FEMA, presidential order extended through April 1st, allows for helping us pay for 100% funding on Public Assistance activities and that will continue with no cost share for local jurisdictions on PPE delivery and staffing support.
Brittany Brand - Boise State Hazard and Climate Resiliency Institute Presentation	**We foster collaborations between disciplines and across sectors to build connected, thriving, resilient communities** **Our vision and what we're working to become** • Fostering community and connections • Public hazard education strategies • Community-based resilience assessments and resilience strategies • Addressing data gaps and research needs • Developing tools with and for decision makers • Grant writing • Education opportunities for Boise State students and practitioners **Resilience Needs & Actions Webinar** • Fostering Community and Connections (3rd Thursday of every month) - Shared some webinars they have already had and listed webinars that they have scheduled, these are all available on YouTube on Boise State website • We have created a COVID Dashboard that is available in both English and Spanish • We also have developed hazard pages focusing on Treasure Valley – Including Wildfire, Flooding, Extreme Winter Weather, Earthquake, Drought, Extreme Summer Weather, Heat, Air Quality & Smoke and a Changing Climate • Upcoming project working with the City of Kamiah's Direct Technical Assistance grant through FEMA and IOEM to do a resilience assessment • Talking to as many people as we can to bring as many stakeholders to the table as we can. In doing this we'll be talking with the city, county, tribe, tribal government, forest service, transportation, facilities • Look at areas of strength and areas of what their needs are • Addressing data gaps and research needs looking at Idaho - will be kicking off in January • Humanizing flood and other hazard data for use in local resilience planning, taking the data that is already out there and making it more accessible
Dave Ayers - Cascadia Rising Review	• Cascadia 2022 is a large-scale operation based functional exercise

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Participants include FEMA Region 10; Oregon, Washington, Idaho and Alaska
We're very excited about keeping things going, however due to COVID things have evolved from preparation that go into national level exercise. About a month ago I decided to scale back a little bit so we could still have a relevant exercise without the huge lift of a national exercise.
Now it is more a discussion based rather than operations based which will include virtual workshops, table top activities and group discussions
It's still going to happen just not sure on when or what it will look like.

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<td>Dr. Kris Carter - Pandemic Presentation</td>
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Emerging Infectious Diseases

"Diseases that have newly appeared in a population or have existed but are rapidly increasing in incidence or geographic range"

New diseases

COVID-19, MERS, SARS-CoV, Nipah virus disease

Variants of known pathogens

Drug resistant organisms
Influenza

Previously unrecognized infections detected by new technology

Discovery of hepatitis C virus

Known pathogens that have emerged or re-emerged in new geographies

Climate change expanding vector habitat (chikungunya, Zika virus, STARI & lone star tick)
Travel - or trade-associated (West Nile virus, cholera, monkeypox)
Healthcare-associated infections moving into the community

Spillover Events

"60% of emerging infectious diseases of humans originate in animals, of these, 72% are from wildlife reservoirs"
"Spillover" is a term used for events when an organism that exists in a reservoir population is transmitted to a new host population
Commonly used to describe events where pathogens in animals are transmitted to the human population
Most spillover events are "dead ends" - the agent infects a novel host, but is not capable of sustaining a transition cycle
"Spark" risk - where a pandemic is likely to arise (the spark before the wildfire)

Pandemic Predictions

Pandemic widely viewed as rare events
Data suggests risk is accelerating

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- “The next pandemic could be much sooner and more severe than we think.” *- Smitham and Glassman, Center for Global Development*
- Estimated probability of future zoonotic spillover event resulting in a pandemic
  - 2.5% - 3.3% chance in any given year
  - 22% - 28% chance in the next 10 years
  - 47% - 57% chance in the next 25 years

Why Historical Records are Insufficient

- Pandemic events don’t have consistent pattern
- Large variation in severity
- Biases in observed data

Drivers of Spillover Events and Pandemics

- Human population density
- International travel
- War, conflict (deforestation, expansion of agricultural land, wildland interface)
- Animal density (intensification of livestock productions)
- Hunting and trading of wildlife
- Biologic characteristics - changing characteristics of pathogenic characteristics

Consequences of Pandemics

- Large-scale mortality - Social effects
- Large-scale morbidity – Typically only acute care concerns are addressed, mental health, long-term effects (chronic disease, disability)
- Trade disruption - Supply chain
- Travel disruption - Economic consequences to tourism industries
- Civil unrest - Social inequity, Civil liberty
- Economic Costs of COVID 19 – 16 Trillion globally

Health Sector bias toward present disease

- Medications and equipment to treat existing illness far better developed, financed and profitable than preventive measures
- Clinicians dominate leadership and policy-making
- Budgets for contingent capacities and preparedness are first to be cut

Mitigation

- Focus has been on responding to pandemics after they have already spread
- Imperative to human health to develop systems to prevent novel pandemics before they are established

Most cost-effective strategies

- Strengthen core public health infrastructure
- Increasing situational awareness
- Early detection critical with speed of global distribution through travel

	• Risk communication • Education and behavior modifications **Personal Perspective** • Send clinicians to other countries to improve recognition of and response to diseases uncommon in the United States • Improve public understanding of science, public health, government • Improve critical thinking ability among public • Proactively combat misinformation and actively engage in rumor control by explaining origins of myths • Engage psychosocial scientists • Build and sustain comprehensive public health workforce - not just money - need trained workforce, doesn't happen in an instant • Not just science, medicine & technology - modelers, data scientists, laboratorians, clinicians, behavioral health practitioners, information technology specialists • Often overlooked – administrative staff, financial specialists, grants managers • Address disparities that make people unable to follow public health recommendations without compromising basic needs **Combatting Misinformation (Global and USA)** • May 2020 WHO resolution WHA73.1 calls on member states "to provide the population with reliable and comprehensive information on COVID-19 and the measures taken by authorities in response to the pandemic, and to take measures to counter misinformation and disinformation as well as malicious cyber activities" • Boston University's Center for Emerging Infectious Diseases Policy and Research (launched May 2021) will fund research on how to help people debunk online misinformation, including articles and videos posing as science that contain false claims and glaring errors
Tyre Holfeltz - Fire Season Review	**Total Fires: 1,318** • USFS - 496 • Private - 353 • BLM - 263 • State - 105 • BIA/Tribal - 91 • Other - 10 • Total Acres: 441,920 • To-Date Estimated Cost: $68 million • Team Fires: $51.5 million **Fire Cause** **Human: 632** • Camp Fire: 65 (1,036 acres) • Debris Burning: 110 (2,337 acres)

	• Equipment: 74 (6,533 acres) • Shooting: 107 (56 acres) • Other: 190 (8,987 acres) • Utilities: 27 (207 acres) • Undetermined: 42 (11,694) **Natural/Lightning: 588 (408,846 acres)** **Undetermined: 98 (1,606) Human or Natural?** **Notable Events with assigned teams** • Cougar Rock Complex - geographically the largest fire area, not largest acreage burned. Covered 17 fires and approximately 1,500 sq. miles because of a lightning event that came through the area. • Leland Complex and Snake River Complex both started at approximately the same time and impacted communities from Moscow to Lewiston • Bedrock - only FMAG Declaration this year
David Hoekema - Drought Update	**Current conditions have most of the state at severe drought or worse with 28% in extreme drought and 5% at exceptional drought** **Water Year 2021 Drought Statistics** • Hottest June and July on Record • Driest Spring we've seen since 1924 • Chickpea yields dropped by 50% • Wheat across the state dropped 20%-30% • Palouse region had areas where the entire field was lost • On the Wood, the Big Lost and up into the Lemhi – we're going in to their second year of drought • Better than 70-80% chance of La Nina Conditions OND • Successive La Ninas are drier • We need at least 100% snow pack if not more • Wet fall starts WT-YR 2022 • 13.5% of the Median Annual Snowpack • Similar years ended in drought
Kyle McCormick - State Consultation Follow-up	**Meeting Goal** • Identify progress, successes and challenges to achieving mitigation goals • Improve FEMA's understanding of state priorities and capabilities in each of the mitigation areas (FIMA, HMA, Risk Analysis) • Identify opportunities for enhanced collaboration

	• Identify opportunities to incorporate equity into mitigation programs
	• Identify opportunities for incorporating climate change and future conditions into mitigation programs
	
	Work with IOEM on carrying out 2021 priorities
	• Increase mitigation plan and grant trainings
	• Streamline mitigation grants and plans
	• Increase participation with Public/Private Partnership Coordinator
	• Collaborating with Operational Planners on Long Term Recovery Planning
	• Work with integrating lifelines/critical infrastructure in mitigation plans
	
	Additional Follow Up Requested from Brief Outs
	• **Mitigation Disaster Operations:** What info would benefit you for help with mitigation disaster operations?
	  ○ Laura McSweeney - Region 10 Disaster Ops Coordinator
	• **Risk Map**
	  ○ Work with Risk Analyst on ways to link Risk Map data to ongoing projects in communities
	  ○ Marshall Rivers (R10 Risk Analyst) & Lorrie Pahl
	• **Hazard Mitigation Assistance**
	  ○ Work with HMA on BRIC 2020 Non-Financial Technical Assistance for Kamiah, ID – Followed up with Brenna Meneghini (HMA BRIC Lead, R10)
	
	Incorporated climate change impacts into State Hazard Profiles
	• Currently working on update to State Plan – Coordinate with State partners on updates to drought impacts and future scenarios planning
	Leverage integration with other programs to support climate change adaptation
	• Seismic Retrofits of URMs can be combined with climate change retrofits (energy upgrades and decarbonizing) to support holistic mitigation
	Equity Discussions:
	• Improve technical assistance to small/impoverished communities – start developing a list of communities that meet these standards for additional support
	
	Please reach out to Kyle McCormick if you have ideas for trainings, research, gaps in data/expertise that we could potentially help support

Zach Lifton - Seismic Update	**A New Fault Database for Idaho**

	• Idaho Geological Survey is working on this new active fault database partially funded by a FEMA NERHP grant through IOEM
	    ○ Depicts “Active” faults in Idaho - essential for evaluating seismic hazards, e.g., in National Seismic Hazard Model
	    ○ USGS is now relying on state surveys to update the national database
	
	• **Previous fault map needed an update -** PDF, KMZ, Interactive maps and GIS data had not been updated since 2006
	• **Fault Database**
	    ○ Modern web map interface
	    ○ Digitized hardcopy references
	    ○ New imagery and Lidar provide better base maps
	    ○ Still a work in progress - Showed example fully interactive and you can add your own GIS data

Lorrie Pahl - State Annual Review of Mitigation Actions	• Lorrie Pahl went through some of the actions we need status on • Susan gave a reminder regarding the State Plan, in addition to providing status on existing actions we encourage everyone to submit actions they would like added to the plan.
Lorrie Pahl - Canal Video https://youtu.be/ZmAnoAq-Cfk – https://youtu.be/HW4HSHkLjbM	Shared both videos with the group
Adjourn	Thank you to our presenters, the presentations were excellent. We want to thank everyone who took the time to participate.

State of Idaho Hazard Mitigation Plan **Annual Executive Team Meeting**	**November 16, 2022** **1:00 - 4:00 pm** **Virtual Webex Meeting** **Join from the meeting link** https://ideoc.webex.com/ideoc/j.php?MTID=m0fc9dcd76e66b720(**Join by meeting number** Meeting number (access code): 2597 864 2218 Meeting password: TUyUSWtH483 **Tap to join from a mobile device (attendees only)** +1-415-655-0001,25978642218## US Toll **Join by phone** +1-415-655-0001 US Toll
Host: IOEM	
Attendees:	Alexis Clark, Sara Bemisdarfer, Christina Lazar, Corrie Ivey, Darin Letzring, Dean Ehlert, John Falk, Jon Hanian, Josh McIntosh, Keith Weber, Kevin Benton, Lorrie Pahl, Maija Reed, Mark Dietrich, Mike Dimmick, Matt McCarter, Natalie Shaver, Troy Lindquist, Ryan Bender, Sophia Adams, Susan Cleverley, Tricia Hebdon, Brittany Brand, Brandy Nisbet-Wilcox, Conley Hefley, April Durant, Mark Zirschky, Rich Gummersall, Kris Carter, Heidi Novich, Becky Rose, Traci Stewart, Mary Mott, Talissa Cota, Dana Drinkall, Tyler Morvant, Ryan Healey, Brandy Nisbet-Wilcox, Sarah Adams
Susan Cleverley and Lorrie Pahl	Welcome and Introduction
Susan Cleverley - Year in Review	Everything with mitigation starts with the plan. The state also has a mitigation plan that must be updated every 5 years. Every state in the nation is required by the Code of Federal Regulations (CFR) to have a mitigation plan. Our State Plan is due to be updated, formally adopted, and approved by FEMA by October 31st, 2023, so we are on a short timeline. I'd like to show the local mitigation plans and their status by bringing up our Idaho map reflecting the status by county. You can see almost every county in the state is current on their plan with some counties showing as expired, but those are currently updating their plan. These plans document the hazard risks, what's vulnerable and strategies to mitigate the risk with projects they hope to get funded that will reduce their damages. We also need to document events that occurred during the past year. Two that I can think of are our wildfires. We received declarations for the Four Corners Fire that was in Valley County, Adams County and

	Gem County. We also had the Ross Fork Fire in Blaine County that got declared. Are there others that you can think of? Ryan - In June of 2022 we had a declaration for flooding in North Central Idaho. Traci - The Moose Fire which was on Federal land so did not get declared. Kevin - The Kootenai River Complex that was a county declaration. Susan - Whether it's a declaration or not we want it in our plan because it documents how many times the event occurs, and we can go back and say this area has been hit 8 times. It will help when we are seeking grant funds. Corey Ivey - I think it's also important for us to include local declarations. Susan - We will reach out to our Emergency Managers for a list of their local declarations. Darin Letzring - Drought we've had for all Southern Idaho. Becky Rose and Darin - we're just saying we practically had the whole state declared for drought this year. Ryan Bender - Idaho County had two separate local declarations in May and June for severe weather and landslides. Susan - These will all be added to the state plan. Plan coordination is a requirement, and we are required to look at what other plans can influence the mitigation plan and vice versa. The plans we look at are the state draft plan, the fire action plan that the Department of Lands is over, and the Department of Water Resources is over the drought plan. So, we want to make sure that we capture different agency's plans. We also try and coordinate with some national plans as well such as the National Mitigation Strategy. Another one that comes to mind is the Governor's Cyber Security Task Force report that was recently discussed at our conference in October. We will be talking about this again as we get closer towards the end of updating our state plan. I will be reaching out to all of you at some point. We shouldn't only be capturing grants that come through, we should also be capturing different agency's mitigation funding as well because a lot of good is being accomplished in the state that we aren't capturing in our plan. Mike Dimmick - Would the purchase of an ambulance be considered mediation mitigation? Susan - Not really because it's response and mitigation has more to do with long term resilience to natural hazards. Darin – Rocky Mountain Power probably has a mitigation plan. Other electric utility companies as well, like Idaho Power. Susan – That's good to know and we should reference those in our plan.

There are some new focuses, one is climate change and the other is social vulnerabilities.

Corey Ivey - You may want to reach out to the Office of Energy and Mineral Resources as they just dumped a bunch of money for various utilities across the state.to make their infrastructure more resilient. We've had applications to make infrastructure more resilient. Some were burying power lines. Another was wrapping power poles with fire retardant material.

For mitigation to our state, the Storms Act is a revolving loan program where jurisdictions are going to be able to get almost no interest loans for their match.

The goals from our mitigation plan are:

- To save lives and reduce public exposure to risk from natural, technological, and human caused hazard events
- Reduce or prevent damage to public and private property from natural technological and human caused events
- Enhance coordination between state, tribal, regional, local agencies and non-governmental organizations and consistency of hazard, reduction policy
- Reduce the adverse economic and environmental impacts of natural technological and human cost
- Enhance vulnerability and risk assessments through development and collection and analysis of data

Susan - Showing a chart from the 2018 update which had over 30 new action items or suggested projects. And we've had more as we've met each year. If you have a project that is already in the plan we would like to know if it's been completed, deferred or ongoing. We've developed a mitigation dashboard where we have all of the actions out of the state plan, and we can go in there and add or edit projects and can submit a pre-application for funding.

Susan - Showing the dashboard online and the link is: https://idahohub.maps.argis.com

Susan - Showing some pictures online to attendees.

I thought I would highlight a couple of projects that have been completed this year. The City of Eagle had a greenbelt pathway flood mitigation project. They did some stream restoration along the bank of the Boise River as well. The City of Hailey retrofitted their fire station to be stronger during seismic activity. And the City of Rupert did a stormwater improvement project. They expanded their stormwater system to areas of the city where it wasn't adequate to handle the volume of storm water causing flooding. They also put piping underneath a canal and then up and over into a detention basin.

There was a lot of floodplain training throughout the state, so we can certainly add this. We also did regional seismic awareness workshops that was funded through the National Earthquake Hazard Reduction (NEHRP) program. We went to 6 different areas of the state and presented some displays and information on earthquakes. We were able to do a Clearinghouse Coordination plan which is to help folks know what's going on when there's an

	earthquake. This included Washington, Oregon, California, and Idaho, and we have buy-in from Nevada, Utah, Wyoming, and Montana that also want to participate in the plan. This plan reports the type of response, how the earthquake community is responding, the scientists and people gathering all the earthquake data and mapping, and feeds information into an Emergency Operations Center or like we call it now Idaho Response Center. One last thing, we have all hazard mitigation plans and our County Wildfire Protection Plans (CWPP) doing joint reviews and approvals. I think a benefit of integrating these two options opens you up for eligibility for FEMA mitigation dollars but also some of the Idaho Department of Lands funding. I just want to point out our group email here: 2018MitigationGrants@imd.idaho.gov Everyone is welcome to email us with any of your suggestions. SHMP Annual Executive Committee
Wilma Robertson - The HUB, State Hazard Group and ITS Data Collection and Mapping	Wilma Robertson provided her pre-recorded presentation. File Name: GIS Data for Hazard Mapping Presentation 20221116 Due to the file size, we could not attach, but we are happy to provide upon request.
Break	15-minute break
NASA DEVELOP Group Presentation on Drought by: • Talissa Cota • Dana Drinkall • Ryan Healey • Tyler Morvant	File Name: 2022Fall_ID_IdahoWildfires_Presentation_FD-final Due to the file size, we could not attach, but we're happy to provide upon request. Brandy Nisbet-Wilcox DEVELOP Idaho Lead/ Project Coordination Fellow Science Systems and Applications, Inc. Idaho, Pocatello | NASA DEVELOP National Program
Kyle McCormick - Changes in FEMA State Review Tool Requirements	PlanningPolicyUpd ates_State_IdahoExe
Kris Carter, DVM, MPVM, DACVPM **Idaho Dept. of Health and Welfare - Pandemic Review**	File Name: Pandemic_SHMP Executive Committee Presentation 2022.11.16 Due to the file size, we could not attach, but we are happy to provide upon request.
Consequence Analysis Excercise	Consequence Analysis form - Blank

	We are requesting these Consequence Analysis forms be completed and submitted to IOEM. The results will be compiled, and the results used for the corresponding hazard sections of our state plan.
Roundtable	
Adjourn	We thank everyone for their time and participation and a special thank you to our presenters.

TWG Meeting Highlights and Presentations

All Technical Working Group members representing each sector were invited to the three SHMP update meetings and encouraged to participate in the interactive portions of each program. Meeting highlights are listed below, followed by presentations for each meeting.

April 6, 2023—Technical Working Groups Update Meeting

- 21 attendees
- Discussion ensued about developing an enhanced plan or a standard plan.
- A recommendation was made to consider how FEMA requirements may influence local code regulations and any legislative changes to laws.

May 15, 2023—Action Item Prioritization and Capability Updates Meeting

- 24 attendees
- The meeting focused on mitigation action prioritization with in-person and virtual participation in the ranking process for each action.

June 16, 2023—Risk Assessment Presentation Meeting

- 14 attendees
- A recommendation was made to consider liquefaction potential when assessing the earthquake hazard.

STATE OF IDAHO

TETRA TECH

State of Idaho 2023 Hazard Mitigation Plan

Technical Working Groups Update Meeting

April 6, 2023

Susan Cleverley, IOEM
Lorrie Pahl, IOEM
Megan Brotherton, Tetra Tech

Agenda

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1. **Welcome and Introductions** (Lorrie Pahl, IOEM)
2. **Review of State Mitigation Plan Update including brief of updates that have been received** (Susan Cleverley, Lorrie Pahl, IOEM)
3. **Public Outreach** (Susan Cleverly, IOEM)
4. **Format of the updated plan including timeline** (Megan Brotherton, Tetra Tech)
5. **Review of Goals and Objectives** (Megan Brotherton, Tetra Tech)
6. **Expectations for Group** (Megan Brotherton, Tetra Tech)
7. **Roundtable** (Entire Group)

Timeline

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New FEMA Planning Policy

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Assess **climate change** impacts on natural hazards.

Assess **future changes** in population and development.

Incorporate considerations for **underserved communities and socially vulnerable populations**.

Assess adoption and enforcement of **building codes**.

New FEMA Planning Policy

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Evaluate all **dam risk** and include criteria required under High Hazard Potential Dam grant program.

Demonstration **integration of FEMA programs** (e.g., Community Lifelines, Fire Mitigation Assistance Grant, NFIP, Risk MAP, etc.).

Detailed description of **planning process and stakeholder engagement**.

Detailed description of State support for **local hazard mitigation planning**.

Vision for 2023 Update

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Streamlined format designed to:

- Meet new FEMA requirements
- Provide a useable resource and overarching guide for local planning efforts
- Provide support and data for future grant applications
- Incorporate Seismic Vulnerability Assessment

Vision for 2023 Update - Goals

TETRA TECH

2018 Goals:

- **Goal 1**— Save lives and reduce public exposure to risk from natural, technological, and human-caused hazard events.
- **Goal 2**—Reduce or prevent damage to public and private property from natural, technological, and human-caused hazard events.
- **Goal 3**—Enhance coordination between Federal, State, Tribal, regional, local agencies, and non-governmental organizations and consistency of hazard impact reduction policy.
- **Goal 4**—Reduce the adverse economic and environmental impacts of natural, technological, and human-caused hazard events.
- **Goal 5**—Enhance vulnerability and risk assessments through the development and collection and analysis of data.

Vision for 2023 Update - Objectives

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2018 Objectives:

- **Objective 1**— Improve State agency administrative and legislative coordination, cooperation, and capacity to identify and implement effective hazard mitigation strategies. (Goal 3)
- **Objective 2**—Increase awareness of hazards and their impacts. (Goals 1, 2, 4, 5)
- **Objective 3**—Increase knowledge of hazard mitigation options. (Goals 1-5)
- **Objective 4**—Improve statewide understanding of risk and vulnerability. (Goals 1-5)
- **Objective 5**—Motivate communities and citizens to take preparedness and mitigation actions. (Goals 1,2)
- **Objective 6**—Identify, analyze, and integrate existing data. (Goal 5)
- **Objective 7**—Develop common statewide datasets to enhance vulnerability, risk assessments, and impact. (Goal 5)
- **Objective 8**—Develop cost-effective and feasible mitigation grant projects. (Goals 1-5)
- **Objective 9**—Influence policy based on risk assessment and historical events. (Goals 1-5)

TWG Expectations

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Role:

- Provide best available data
- Inform plan decisions
- Update 2018 mitigation strategies
- Identify new mitigation strategies
- Support public outreach
- Review draft plan sections

Idaho State Hazard Mitigation Plan 2023

Action Item Prioritization
Capability Updates

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TETRA TECH

Susan Cleverly, IOEM
Lorrie Pahl, IOEM
Megan Brotherton, Tetra Tech

May 15, 2023

Today's Agenda

- **Purpose and timeline of the Idaho State Hazard Mitigation Plan**
- **Capabilities Overview**
  - What is a capability?
  - How does the 2018 capability list need to be updated?
  - What new capabilities have become available over the past five years?
- **Mitigation Actions**
  - Prioritization methodology
  - Review and prioritize new and carryover mitigation actions

Purpose of the State Hazard Mitigation Plan (SHMP)

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- Identifies the natural hazards and assesses their impacts on the State and our communities
- Assesses State's capacity to respond to and recover from the impacts of the natural disasters
- Develops strategies to reduce or eliminate these impacts on lives and property and to ensure the continued functionality of critical services
- Reduces the disaster assistance costs resulting from natural disasters
- FEMA mitigation grant funding streams are tied to an approved Plan

Timeline

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What are Capabilities?

- Mitigation capabilities are the resources the State of Idaho can use to reduce risk and support resilience.
- Capabilities may be:
  - Laws
  - Regulations
  - Plans
  - Policies
  - Programs
  - People
  - Partners
  - Funding
- In the capability assessment, the State identifies, reviews, and analyzes its current resources for reducing risk.

Capabilities Requirements

Element S8 and 44 CFR § 201.4(c)(3)(ii): The State plan must include a discussion of the evaluation of the State's hazard management policies, programs, capabilities, and funding sources to mitigate the hazards identified in the risk assessment. This includes an evaluation of State laws, regulations, policies, and programs related to hazard mitigation; State funding capabilities for mitigation actions and projects; and obstacles, challenges, and proposed solutions.

Element S13, HHPD6, and 44 CFR § 201.4(c)(3)(ii): The State plan must include a general description and analysis of the effectiveness of local government mitigation policies, programs, and capabilities. The plan must include a summary of current local government policies, programs, and capabilities. The plan must identify challenges to implementing these mitigation policies, programs, and capabilities; these should include gaps and disparities in serving underserved communities and challenges resulting from the impacts of climate change. If the State is interested in HHPD funding, the plan must generally describe and analyze the effectiveness of local mitigation policies, programs, and capabilities that address high hazard potential dams.

2018 vs. 2023 Capability Analysis

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2018 State HMP analyzed included:

- Capability Description
- Whether it applied pre- or post-disaster
- Effect on loss reduction
- Whether the capability changed
- Integration with the mitigation plan

2023 State HMP to align with FEMA guidance:

- Description of notable changes
- Challenges
- Opportunities
- Effect on Future Conditions
- Equitable Outcomes

Please complete and return to IOEM no later than May 31, 2023

2023 Capability Analysis

Tetra Tech is completing some of the analysis for you:

- **Mitigation Plan goals that each capability aligns with**
- **Mitigation categories:**
  - Planning and Regulatory
  - Administrative and Technical
  - Capital Projects and Maintenance
  - Financial
  - Education, Outreach, and Capacity Building
  - Disaster Response/Recovery
- **Community Lifelines:**
  - Safety and Security
  - Food, Water, Shelter
  - Health and Medical
  - Energy
  - Communications
  - Transportation
  - Hazardous Materials

New Capabilities

Add any new mitigation capabilities that State agencies began using over the past five years.

These may include:

- Laws passed
- Regulations
- Plans developed
- Policies
- Programs
- People (i.e., subject matter experts)
- Partners (i.e., organizations within State agencies)
- Funding

For Discussion:

- What barriers or limitations hinder the advancement of hazard mitigation?
- What gaps or disparities in mitigation efforts exist for socially vulnerable communities?
- What challenges to mitigation efforts result from the impacts of climate change?
- Proposed solutions?

Mitigation Action Prioritization

FEMA Requirement:

Element S10, FMAG2, HHPD4, and 44 CFR 201.4(c)(1), 201.4(c)(3)(i), 201.4(c)(4)(ii), and 204.51(d)(2): The State plan must prioritize mitigation actions to reduce vulnerabilities identified in the risk assessment to reduce the vulnerability of jurisdictions within the state as well as the vulnerability of State-owned assets. The plan must describe the process to evaluate and prioritize actions that are cost-effective, environmentally sound, and technically feasible. Actions must contribute to goals and the State must describe how local government mitigation strategies link to the State mitigation strategy.

Example Action Plan Categories

Responsible Departments or Agencies	Location	Existing or Future Development	Community Lifelines Addressed	Estimated Costs	Potential Funding Sources	Timeline
2018-33— Post-wildfire soil study using ubiquitous sensors for understanding landslide/mudslide hazard						
Lead: BSU **Support: IOEM, IDL**	Statewide	Both	Food, Water, Shelter; Transportation	\$10,000 - \$100,000	IDL; HMGP	Ongoing
2018-34— Statewide hazard fuels reduction						
Lead: IDL	Statewide	Both	All	\$10,000 - \$100,000	IDL; HMGP	Ongoing

Example Action Plan Categories, cont.

Action Number	Mitigation Goals	Mitigation Objectives	Action Type				Priority
			State & Local Plans and Regulations	Structure & Infrastructure Project	Natural Systems Protection	Education & Awareness Programs	
2018-33	2, 3, 4, 5	7	◆			◆	Medium
2018-34	1, 2		◆		◆	◆	High

Mitigation Action Prioritization Methodology

- Will the action result in life safety?
- Will the action result in property protection?
- Will the action be cost-effective? (future benefits exceed cost)
- Is the action technically feasible?
- Will the action mitigate impacts from climate change?
- Does the State have the legal authority to implement?
- Is funding available for the action?
- Will the action have a positive impact on the natural environment?
- Does the action benefit socially vulnerable communities?
- Does the State have the administrative capability to execute the action?
- Will the action reduce risk to more than one hazard?
- Can the action be completed in less than 5 years?
- Is there an agency/department champion for the action?
- Will the action support other objectives (such as capital improvements, economic development, environmental quality, or open space preservation?) or policies of other plans and programs?

The answers to each of these questions are weighted as follows:

- Yes = 3 points
- Not sure, could be either yes or no, or question is difficult to quantify = 1 point
- No = 0 points

The combined score will indicate the priority:

- High = 31 or more
- Medium = 15 to 30
- Low = 0 to 14

Interactive Working Session

- Develop the new mitigation action details
- Prioritize all mitigation actions

Next Steps

- By May 31, 2023:
  - Complete Capabilities updates
  - Add new Capabilities
  - Add new Mitigation Actions
- June 8, 2023 Risk Assessment Presentation (virtual only)
- June 29, 2023 Public Comment Draft Presentation (virtual only
- June 29-July 10 Public comment period

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Idaho State Hazard Mitigation Plan 2023

Risk Assessment Presentation

STATE OF IDAHO

TETRA TECH

Susan Cleverley, IOEM
Lorrie Pahl, IOEM
Megan Brotherton, Tetra Tech

June 16, 2023

Today's Agenda

- Purpose and timeline of the Idaho State Hazard Mitigation Plan
- Federally declared disasters since 2018
- Risk Assessment Methodology
- Risk Assessment *Draft* Results

Purpose of the State Hazard Mitigation Plan (SHMP)

- Identifies the natural hazards and assesses their impacts on the State and our communities
- Assesses State's capacity to respond to and recover from the impacts of the natural disasters
- Develops strategies to reduce or eliminate these impacts on lives and property and to ensure the continued functionality of critical services
- Reduces the disaster assistance costs resulting from natural disasters
- FEMA mitigation grant funding streams are tied to an approved Plan

Timeline


We are here
March
April
May
June
Planning Process
Develop/Track Schedule
Integration of Mitigation Programs
Support TWG Meeting Process
Agency Coordination
Memorialize the Planning Process
Review of Laws, Programs and Policies
Program Administration
Funding Capability Review
Integrated Planning
Progress Reporting
Risk & Vulnerability Assessment
Hazard Data
Hazard Identification
Vulnerability Assessment
Outreach Strategy
Plan Assembly and Review

Federally-Declared Disasters 2018 - 2022

Incident Begin Date	Incident Type	Disaster Number	Declaration Type	Counties Affected
September 5, 2022	Ross Fork Fire	5452	Fire Management Assistance Declaration	Blaine
August 18, 2022	Four Corners Fire	5449	Fire Management Assistance Declaration	Adams, Gem, Valley
August 12, 2021	Bedrock Fire	5407	Fire Management Assistance Declaration	Nez Perce, Nez Perce Indian Reservation
January 13, 2021	Severe Storm and Straight-line Winds	4589	Major Disaster Declaration	Benewah, Bonner, Kootenai, Shoshone
January 20, 2020	COVID-19 Pandemic	4534	Major Disaster Declaration	Statewide, Including All Reservations
April 7, 2019	Severe Storms, Landslides, Flooding, Mudslides	4443	Major Disaster Declaration	Adams, Idaho, Latah, Lewis, Valley, Nez Perce Indian Reservation
July 28, 2018	Grassy Ridge Fire	5263	Fire Management Assistance Declaration	Clark

Risk Assessment Analysis

Three levels of analysis were used depending on the data available for each hazard:

- **Qualitative Analysis and Historical Occurrences** —Qualitative assessments used best available data and professional judgement. Historic impacts were examined to understand potential future events of similar size.

- **Exposure Assessment**—Hazards with defined extent and locations were overlayed with assets in GIS to determine which assets are exposed to the hazard.

- **Hazus Loss Estimation**—Hazus modeling software was used to estimate potential losses for Earthquake and Flood hazards.

What is Hazus?

Hazus is a nationally standardized risk modeling methodology. FEMA's Hazus program provides standardized tools and data for estimating impacts from:

Earthquake

Flood

Hazus can quantify and map the following:

- **Physical damage** to residential and commercial buildings, schools, critical facilities and infrastructure.
- **Economic loss**, including lost jobs, business interruptions, and repair and reconstruction costs.
- **Social impacts**, including estimates of displaced households, shelter requirements, and populations exposed to floods, earthquakes, hurricanes and tsunamis.

Risk Assessment Analysis Summary (**Q**ualitative, **E**xposure, **H**azus)

Hazard	Data Analyzed					
	State Buildings	State Roads	State Bridges	State Dams	Community Lifelines & Critical Facilities	Total Population & Vulnerable Population
Avalanche	Q	Q	Q	Q	Q	Q
Civil Disturbance	Q	Q	Q	Q	Q	Q
Cyber Threats	Q	Q	Q	Q	Q	Q
Drought	Q	Q	Q	Q	Q	Q
Earthquake	E, H	E, H	E, H	E, H	E, H	E, H
Flood	E, H	E, H	E, H	E, H	E, H	E, H
Hazardous Materials	Q	Q	Q	Q	Q	Q
Landslide	E	E	E	E	E	E
Pandemic	Q	Q	Q	Q	Q	Q
Radiological	Q	Q	Q	Q	Q	Q
Severe Weather	Q	Q	Q	Q	Q	Q
Volcanic Eruptions	E	E	E	E	E	E
Wildfire	E	E	E	E	E	E

New Risk Assessment Data

The 2023 Idaho SHMP update analyzes:

- **Critical Facilities are organized by Community Lifelines**—The seven Community Lifeline categories are included in the risk assessment.
- **Total Population *and* Socially Vulnerable Population**—Tracts that met the overall Social Vulnerability Index score of >=80% are included in the socially vulnerable population analysis.

Community Lifelines

- Lifelines are the most fundamental services in the community that, when stabilized, enable all other aspects of society to function.
- FEMA has developed a construct for objectives-based response that prioritizes the rapid stabilization of Community Lifelines after a disaster.

Safety and Security - Law Enforcement/Security, Fire Service, Search and Rescue, Government Service, Community Safety

Food, Water, Shelter - Food, Water, Shelter, Agriculture

Health and Medical - Medical Care, Public Health, Patient Movement, Medical Supply Chain, Fatality Management

Energy - Power Grid, Fuel

Communications - Infrastructure, Responder Communications, Alerts Warnings and Messages, Finance, 911 and Dispatch

Transportation - Highway/Roadway/Motor Vehicle, Mass Transit, Railway, Aviation, Maritime

Hazardous Material - Facilities, HAZMAT, Pollutants, Contaminants

Avalanche

Qualitative Assessment based on data from:

- Subject-matter expert resources
- FEMA
- National Weather Service

Civil Disturbance

- FEMA's Homeland Security funds are available for civil disturbances
- Qualitative analysis is based on input from subject-matter experts
- Historical occurrences come from news sources throughout the state

Misty Inglet/KTVB

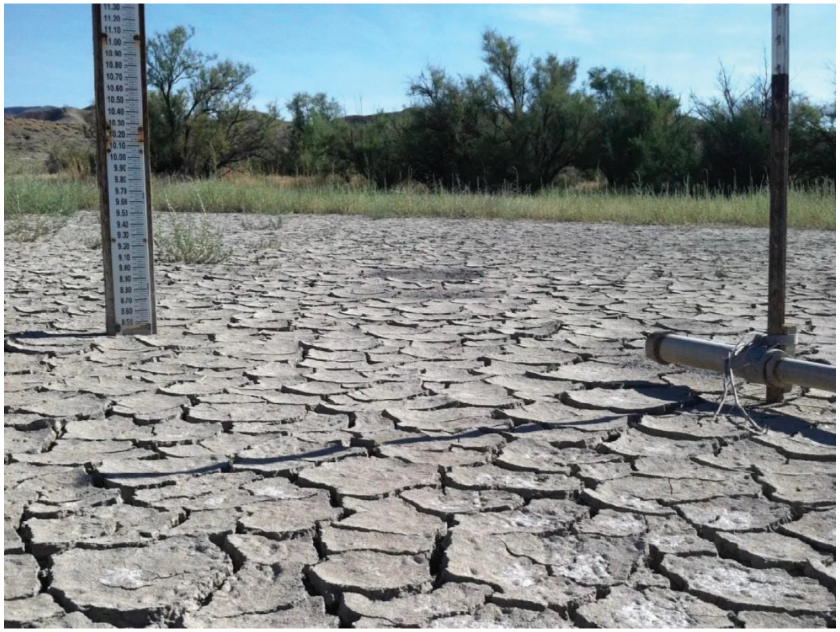
Cyber Threats

- FEMA's Homeland Security funds are available for cyber threats
- Qualitative analysis is based on input from subject-matter experts
- No sensitive or proprietary information is discussed in the section

Drought

Qualitative Assessment based on data from:

- Idaho Drought Monitor
- Idaho Department of Water Resources
- Natural Resources Conservation Service
- Idaho Drought Plan
- Subject-matter expert resources



Mike Duniway/USGS

Earthquake
Hazard Scenarios and Select Vulnerability Results

Hazus:

- 4 USGS ShakeMap scenarios:
  - Eastern Bear Lake M7.3 (Pocatello)
  - Lemhi M7.0 (Idaho Falls)
  - Squaw Creek M7.0 (Boise)
  - Historic Borah Peak event M6.9

NEHRP soils map and liquefaction susceptibility data from Idaho Geological Survey as supplemental data

State Bridges in the Seismic Hazard Area:

- Total: 142
- Counties with the greatest number:
  - Custer: 47
  - Caribou: 22
  - Bear Lake: 21
  - Franklin: 18

Draft Results

Flood
Hazard Scenarios and Select Vulnerability Results

Hazus:

- **Riverine Flood**
  - 1% annual chance flood using DFIRM data where available, and the digitized effective FIRM maps in areas not covered by DFIRM data
- **Dam Failure Flood**
  - Black Canyon, Blacks Creek, Crowther, Deep Creek (Lower Dam), Fish Creek, Lucky Peak, Mackay, Mountain Home, Oakley, Strong Arm Dam #1 (Treasureton Reservoir), and Winchester, using the data provided by Gem County, USACE, and IDWR.

State-Owned and -Leased Facilities Exposed to the 1% Annual Chance Flood Hazard:

- Statewide Replacement Cost Value: $47.98 million
- Agencies with the most structures exposed:
- Department of Fish and Game: 83
- Department of Parks and Rec: 69

Draft Results

Flood
Hazard Scenarios and Select Vulnerability Results

Levee Failure

- Exposure analysis using areas with reduced flood risk due to levees from effective FEMA DFIRM

Canal Failure

- Qualitative Analysis

Population Exposed to Levee Failure:

- Statewide population: 1,261
- Socially vulnerable population: 301
- County with the greatest population impact: Kootenai County

Draft Results

Hazardous Materials

- FEMA's Homeland Security funds are available for hazardous materials
- Qualitative analysis is based on input from subject-matter experts

Landslide
Hazard Data Source and Select Vulnerability Results

Exposure analysis:

- Idaho Geological Survey Landslide Inventory Database for Idaho

State-Owned and -Leased Facilities Exposed to Landslide:

- Total: 29
- Structure Replacement Cost Value: $3.14 million
- County with the greatest number of facilities in the hazard area: Custer County

Draft Results

Pandemic

- FEMA's Homeland Security funds are available for pandemic
- Qualitative analysis is based on input from subject-matter experts

Darin Oswald/Idaho Statesman via AP

Radiological

- FEMA's Homeland Security funds are available for radiological
- Qualitative analysis is based on input from subject-matter experts

AP Photo/John Bazemore

Severe Weather

Qualitative assessment based on data from:

- National Oceanic and Atmospheric Association (NOAA)
- National Weather Service
- FEMA
- Input from subject-matter experts

Associated Press

Volcanic Eruptions

Qualitative assessment based on data from:

- Input from subject-matter experts
- FEMA

Associated Press

Wildfire
Hazard Scenario and Select Vulnerability Results

Exposure analysis based on:

- Idaho Department of Lands wildfire hazard data

National Forest Service

State Highways Exposed to the Wildfire Hazard Area:

- 321.4 Miles
- Counties with the greatest number of miles in the hazard area:
  - Idaho County: 54.5 miles
  - Kootenai County: 49.6 miles

Draft Results

Next Steps

- **June 27, 2023**: Public Outreach Event at Julia Davis Park in Boise
- **June 29, 2023**: Public Comment Draft Presentation (virtual only)
- **June 29-July 10**: Public comment period
    - Draft SHMP will be posted on the IOEM website
- **End of July**: FEMA submittal

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Public Meeting Presentation

The virtual public comment draft presentation highlights are listed below, followed by the presentation.

June 28, 2023—Public Comment Draft Presentation

- 11 attendees
- A recommendation was made to revise the hazard impact maps in the hazard dashboards to reflect statewide impacts.

Idaho State Hazard Mitigation Plan 2023

Public Comment Draft Presentation

STATE OF IDAHO

TETRA TECH

Susan Cleverley, IOEM
Lorrie Pahl, IOEM
Rob Flaner, Tetra Tech
Megan Brotherton, Tetra Tech

June 28, 2023

Public Meeting Participants

- **Susan Cleverley**, State Hazard Mitigation Officer, IOEM
- **Lorrie Pahl**, Mitigation Planner, IOEM
- **Rob Flaner**, Project Manager | Program Manager, Tetra Tech, Inc.
- **Megan Brotherton**, Lead Project Planner, Tetra Tech, Inc.
- and **YOU**!

Today's Agenda

PLANNING PROCESS SCHEDULE AND PUBLIC ENGAGEMENT

PURPOSE OF THE STATE OF IDAHO HAZARD MITIGATION PLAN

DRAFT PLAN OVERVIEW

DRAFT PLAN INPUT

COORDINATION WITH OTHER PLANNING EFFORTS

QUESTIONS AND COMMENTS

Planning Process Schedule and Public Engagement

Timeline


We are here
March
April
May
June
Planning Process
Develop/Track Schedule
Integration of Mitigation Programs
Support TWG Meeting Process
Agency Coordination
Memorialize the Planning Process
Review of Laws, Programs and Policies
Program Administration
Funding Capability Review
Integrated Planning
Progress Reporting
Risk & Vulnerability Assessment
Hazard Data
Hazard Identification
Vulnerability Assessment
Outreach Strategy
Plan Assembly and Review

Public Hazard Awareness Survey

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Please use the link or scan the QR code
to take a brief hazard awareness survey.

https://www.surveymonkey.com/r/IdahoStateHMP2023

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Purpose of the State of Idaho Hazard Mitigation Plan

Purpose of the State Hazard Mitigation Plan (SHMP)

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FEMA and the Emergency Management Community acknowledge that our communities are subject to natural hazards and recognize that Hazard Mitigation Planning provides a framework to:

- Identify the natural hazards and assess their impacts on the State and our communities,
- Assess State's capacity to respond to and recover from the impacts of the natural disasters,
- Develop strategies to reduce or eliminate these impacts on lives and property and to ensure the continued functionality of critical services, and
- Reduce the disaster assistance costs resulting from natural disasters

Purpose of the State Hazard Mitigation Plan (SHMP), cont.

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FEMA emphasizes the importance of the SHMP by tying grant funding to an approved and adopted Plan

- Certain categories of Public Assistance (PA Categories C-G)
- Hazard Mitigation Grant Program (HMGP)
- Building Resilient Infrastructure and Communities (BRIC)
- Fire Management Assistance Grants (FMAG)
- Rehabilitation of High Hazard Potential Dam (HHPD)

Draft Plan Overview

Draft Plan Overview – Contents

Part 1. Background Information

- Introduction
- Idaho's Hazards of Concern
- Idaho State Profile

Draft Plan Overview – Contents

Part 2. Hazard Profiles and Risk Assessments

- What's at Risk
    - State Facilities
    - Highways, Bridges, Dams, and Canals
    - Community Lifelines
    - Population
- 8 Natural Hazards
- 5 Other Hazards of Interest

Draft Plan Overview – Contents

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Part 3. Hazard Mitigation for Local Jurisdictions

Part 4. Mitigation Strategy

- Mitigation Goals and Objectives
- Progress on the 2018 Mitigation Actions
- Capability Assessment
- 2023 Mitigation Actions
- Putting the Plan into Action

Draft Plan Overview – Hazard Chapter Contents

- Description
- Location
- Previous Occurrences
- Probability of Future Events
- Impact Analysis
- Vulnerability of People and Assets
- Mitigating the Hazard

Drought

Drought originates from a deficiency of precipitation over an extended period of time, usually a season or more, resulting in a water shortage for some activity, group, or environmental sector. A condition perceived as drought in a given location is the result of a significant decrease in water supply relative to what is normal in that area.

CHANGES SINCE 2018

+0 Federal Disasters

+59 Significant Drought Events

STATE IMPACT RATING

High (33)

SOCIALLY VULNERABLE POPULATION

21.9% Of Total Population

384,570 Persons

CLIMATE PROJECTIONS

While extremely unlikely, climate change impacts may act as an aggravating factor for civil disturbance

Climate impacts create the potential for the disadvantaged to riot or protest when the resources they need are unavailable

CANALS

8,278 Miles

COMMUNITY LIFELINES

3,238 Total

Drought may directly or indirectly impact these physical state assets.

State Bridges

State Buildings

State Dams

Miles of State Roads

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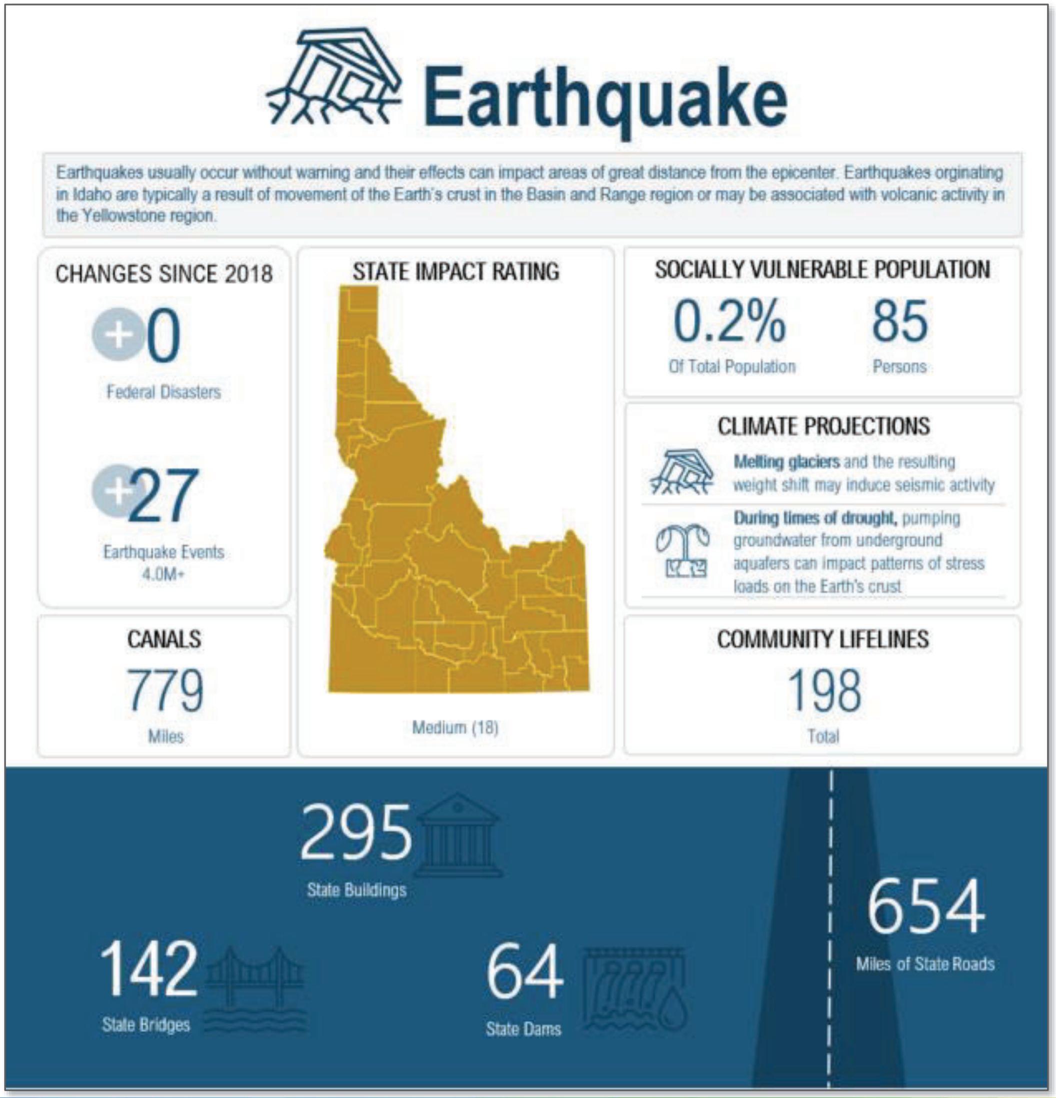
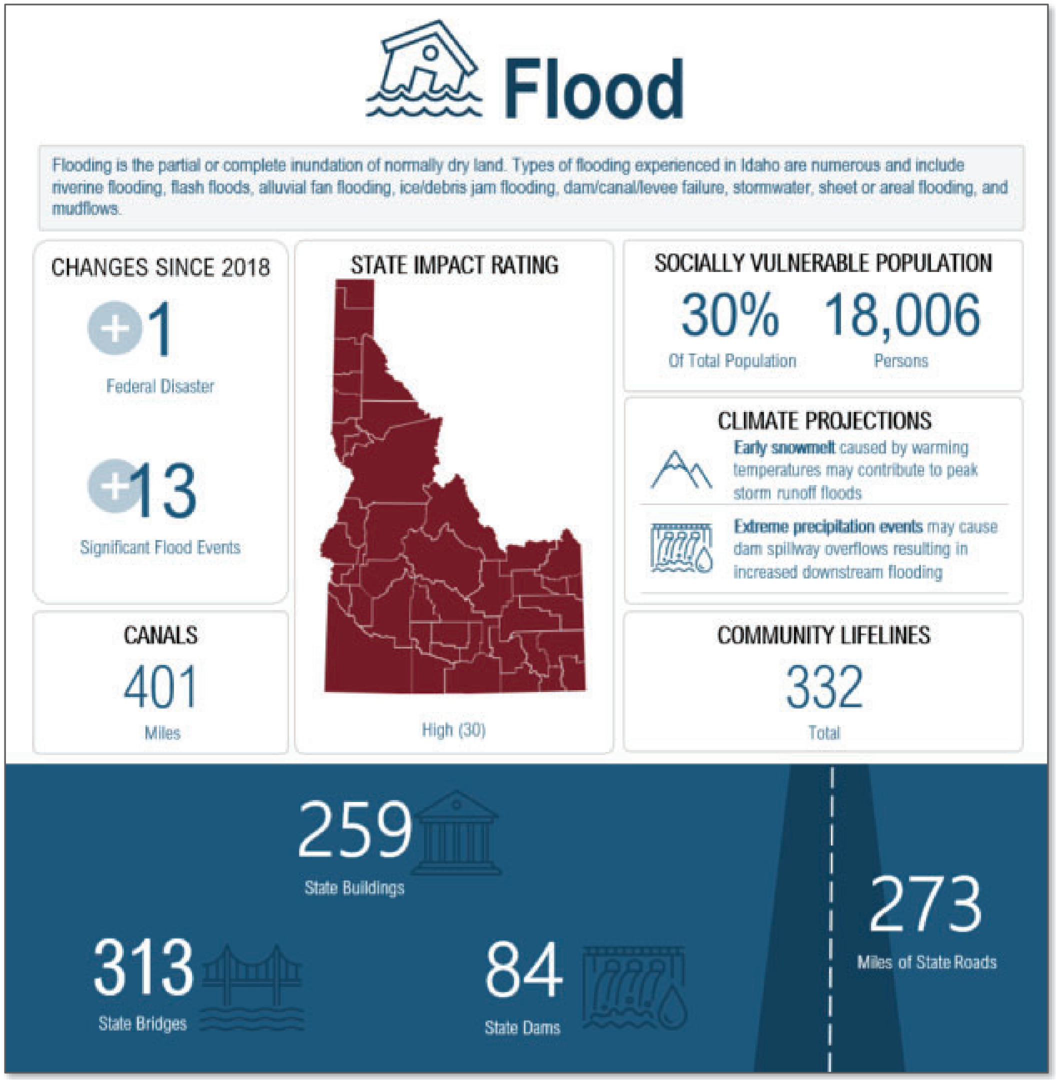
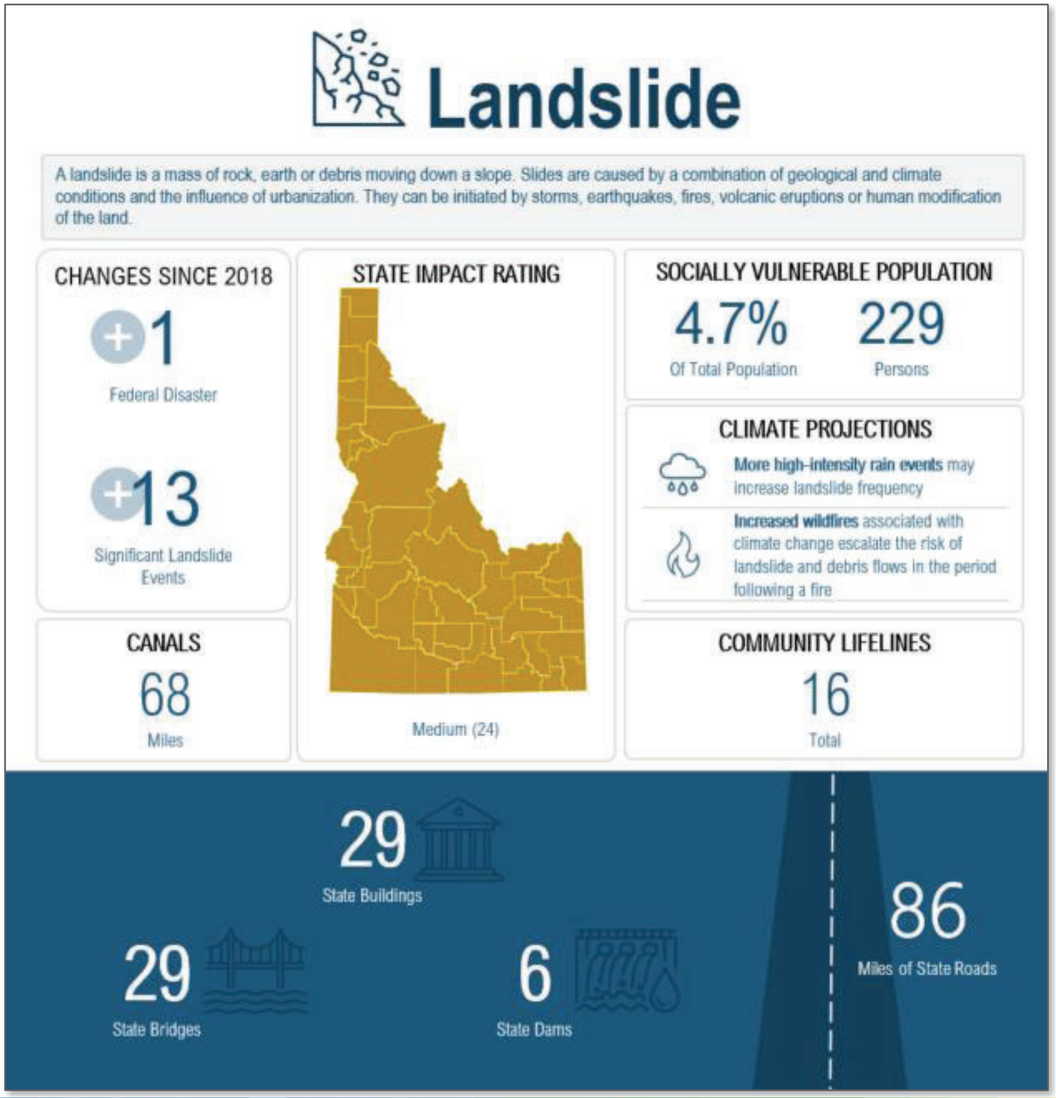



Flood
Flooding is the partial or complete inundation of normally dry land. Types of flooding experienced in Idaho are numerous and include riverine flooding, flash floods, alluvial fan flooding, ice/debris jam flooding, dam/canal/levee failure, stormwater, sheet or areal flooding, and mudflows.
CHANGES SINCE 2018
+1
Federal Disaster
+13
Significant Flood Events
STATE IMPACT RATING
High (30)
SOCIALLY VULNERABLE POPULATION
30%
Of Total Population
18,006
Persons
CLIMATE PROJECTIONS
Early snowmelt caused by warming temperatures may contribute to peak storm runoff floods
Extreme precipitation events may cause dam spillway overflows resulting in increased downstream flooding
CANALS
401
Miles
COMMUNITY LIFELINES
332
Total
259
State Buildings
313
State Bridges
84
State Dams
273
Miles of State Roads



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Pandemic

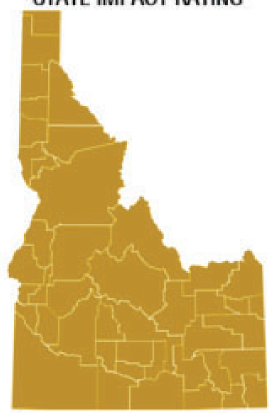
Pandemic is defined as an epidemic occurring worldwide, or over a very wide area, crossing international boundaries and usually affecting a large number of people. Organisms that cause pandemics may be transmitted from animals to humans, but the potential to cause a pandemic is increased when organisms are readily transmitted from human to human, especially before a person has any symptoms.

CHANGES SINCE 2018

+1 Federal Disasters

+1 Pandemic Events

STATE IMPACT RATING



Medium (27)

SOCIALLY VULNERABLE POPULATION

21.9% Of Total Population

384,570 Persons

CLIMATE PROJECTIONS

Over half of known infectious diseases can be aggravated by climate change

Changes in temperature and precipitation can influence seasonality, distribution, and prevalence of vector-borne diseases

CANALS

Pandemic impacts on canals are unknown at this time

COMMUNITY LIFELINES

3,238 Total

Pandemic impacts on these physical state assets are unknown at this time.

State Bridges

State Buildings

State Dams

Miles of State Roads

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Severe Weather

Severe weather events described in this plan are atmospheric disturbances that can include winter storms, lightning, hail, straight-line winds, and tornadoes. They range in size, duration, and intensity but all severe weather events have the potential to impact people, structures, and the environment.

CHANGES SINCE 2018

+1 Declared Disasters

+13 Severe Weather Events

STATE IMPACT RATING

High (39)

SOCIALLY VULNERABLE POPULATION

21.9% Of Total Population

384,570 Persons

CLIMATE PROJECTIONS

An increase in severe storms is anticipated as a result of a changing climate, including intense rain and snowfall, powerful winds, and more destructive hailstorms

CANALS

8,278 Miles

COMMUNITY LIFELINES

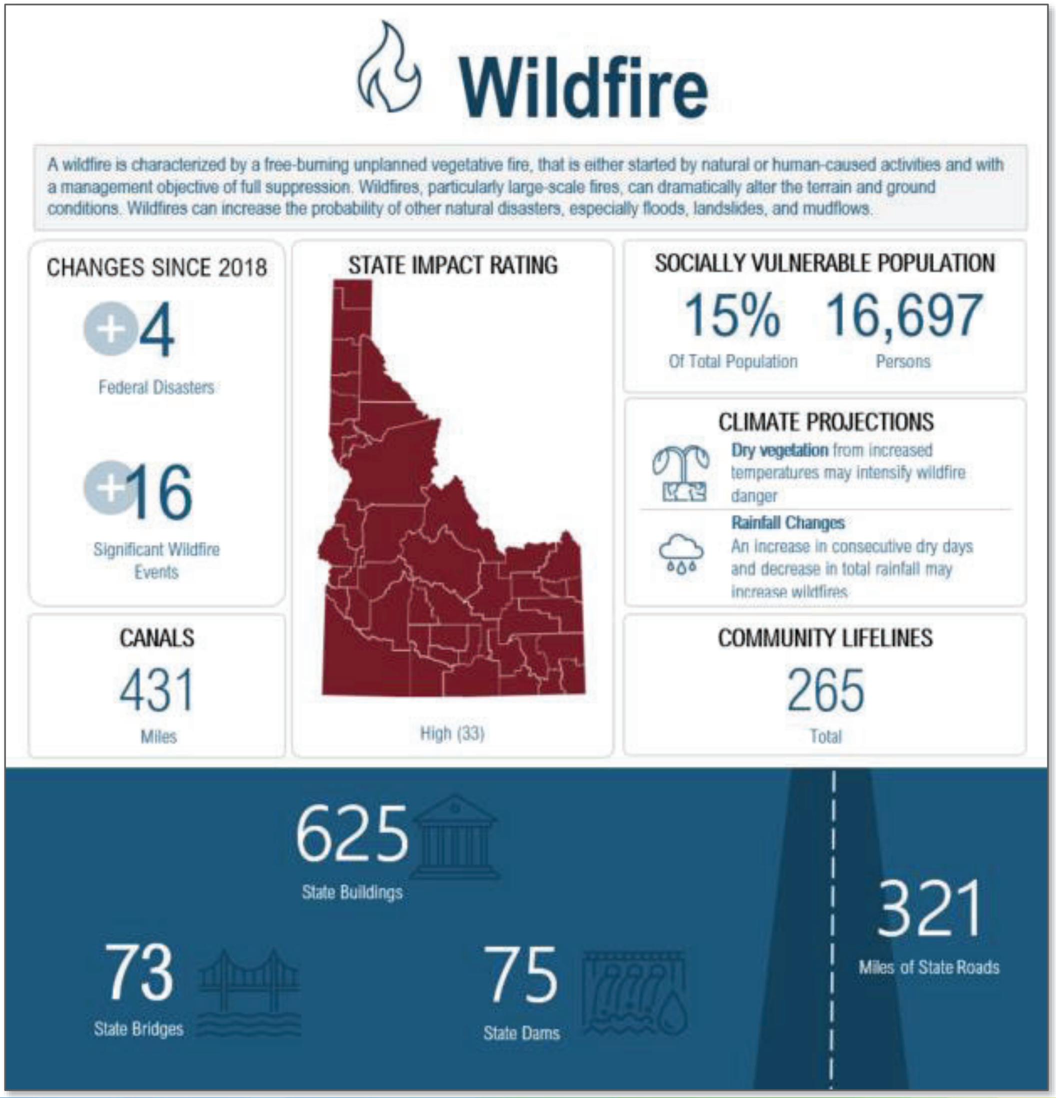
3,238 Total

5,339 State Buildings

1,830 State Bridges

380 State Dams

5,935 Miles of State Roads



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Draft Plan Input

Public Comment on the Draft Plan - Beginning Friday, June 30

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Please use the link or scan the QR code to access the public comment tool.

https://www.surveymonkey.com/r/IdahoSHMP2023

https://ioem.idaho.gov/preparedness-and-protection/mitigation/state-hazard-mitigation-plan/

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Coordination with Other Planning Efforts

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State of Idaho Hazard Mitigation Plan

Local Hazard Mitigation Plans

Community Wildfire Protection Plans, Economic Recovery Plans, General Plans, Climate Adaptation Plans, and more!

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Questions and Comments

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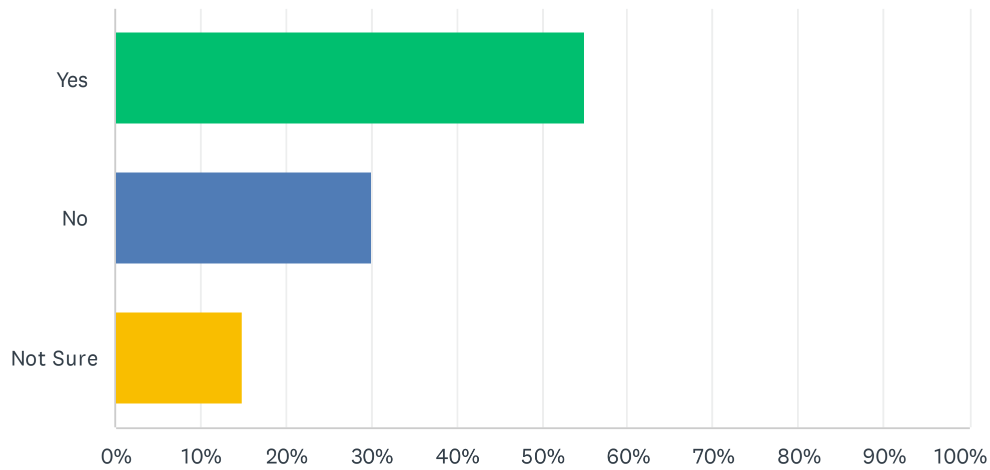
Public Survey Results

Q1 Community where you live:

Answered: 40 Skipped: 0

Q2 Has your community experienced a disaster?

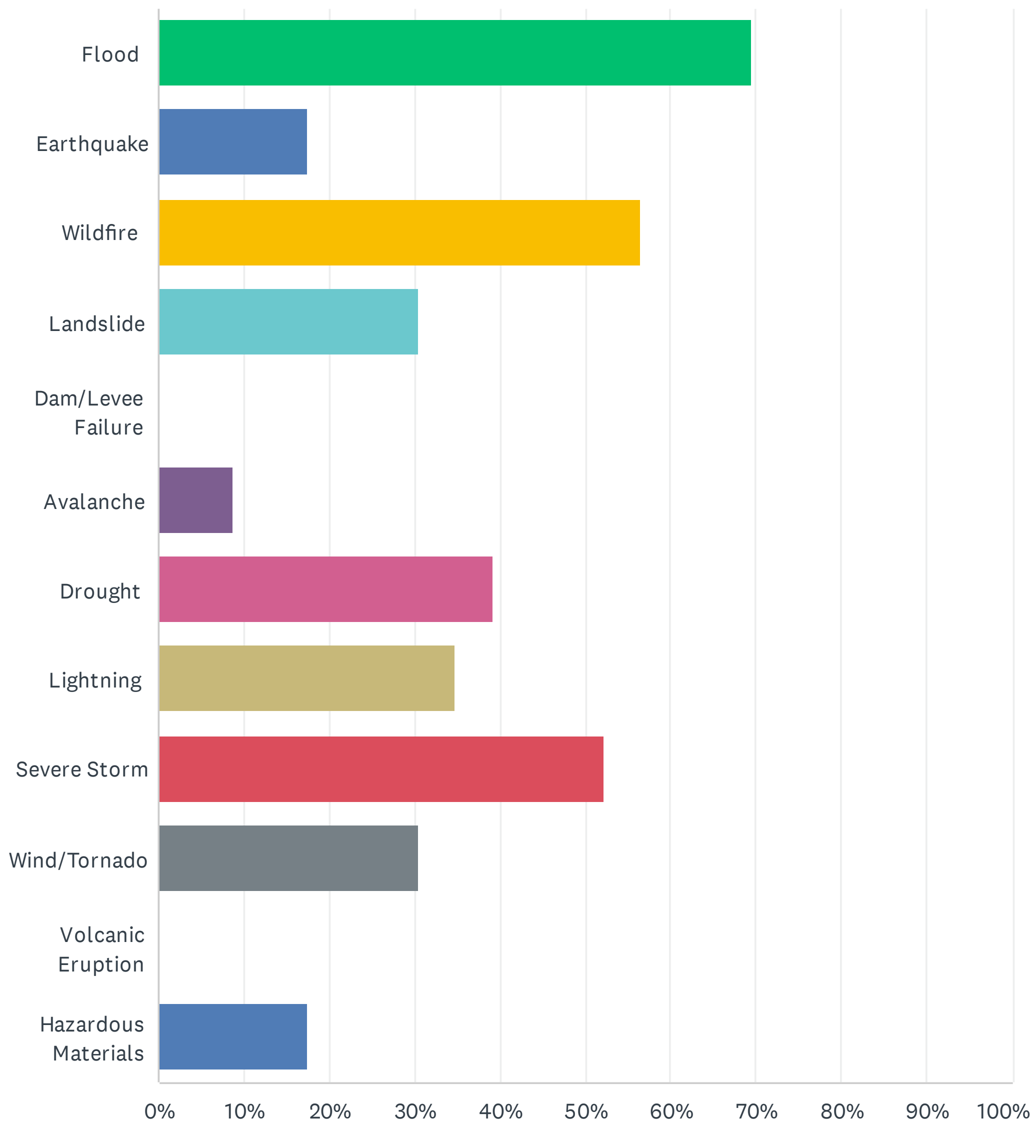
Answered: 40 Skipped: 0



ANSWER CHOICES	RESPONSES	
Yes	55.00%	22
No	30.00%	12
Not Sure	15.00%	6
TOTAL		40

Q3 If Yes, please indicate which type of disaster(s):

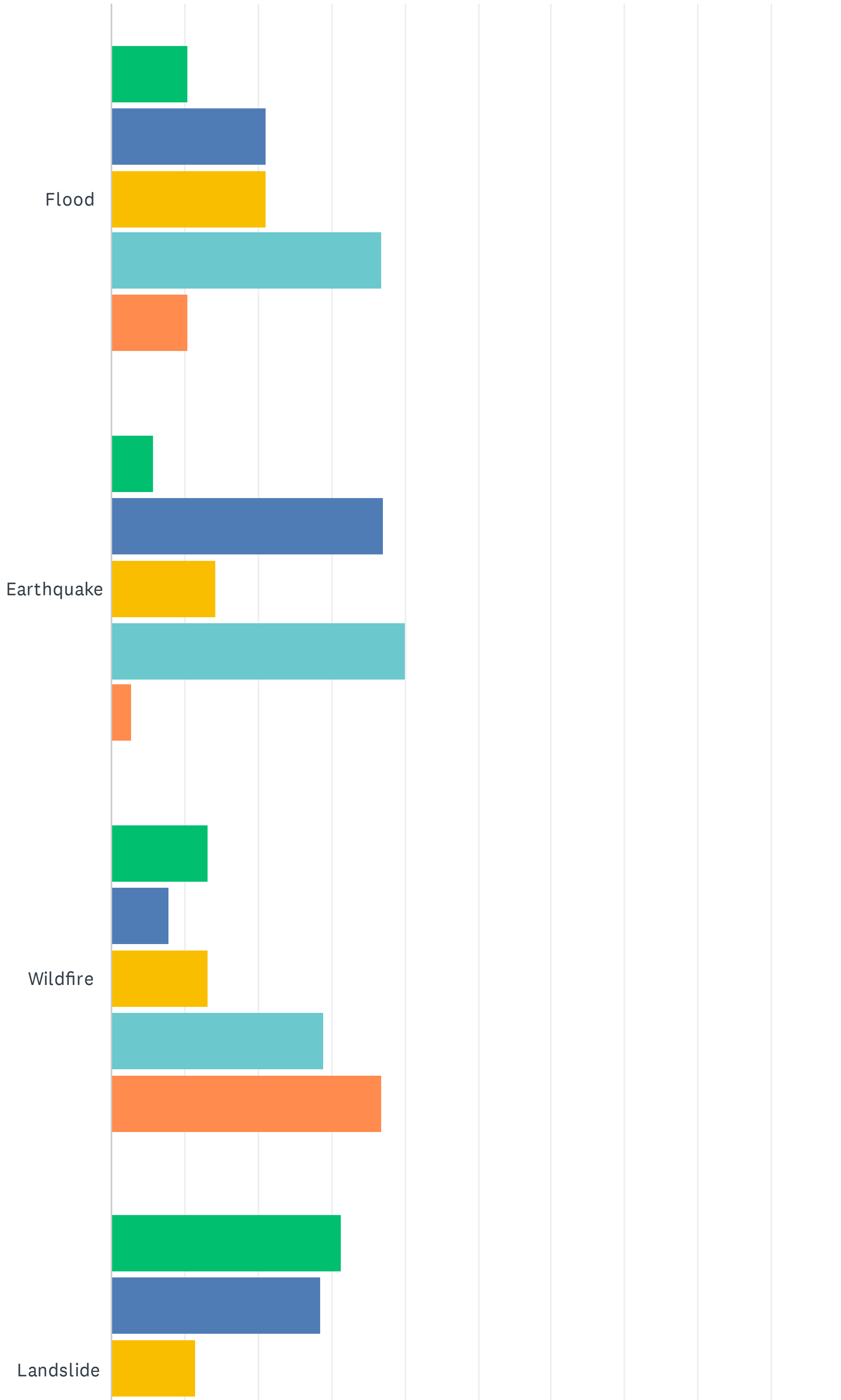
Answered: 23 Skipped: 17

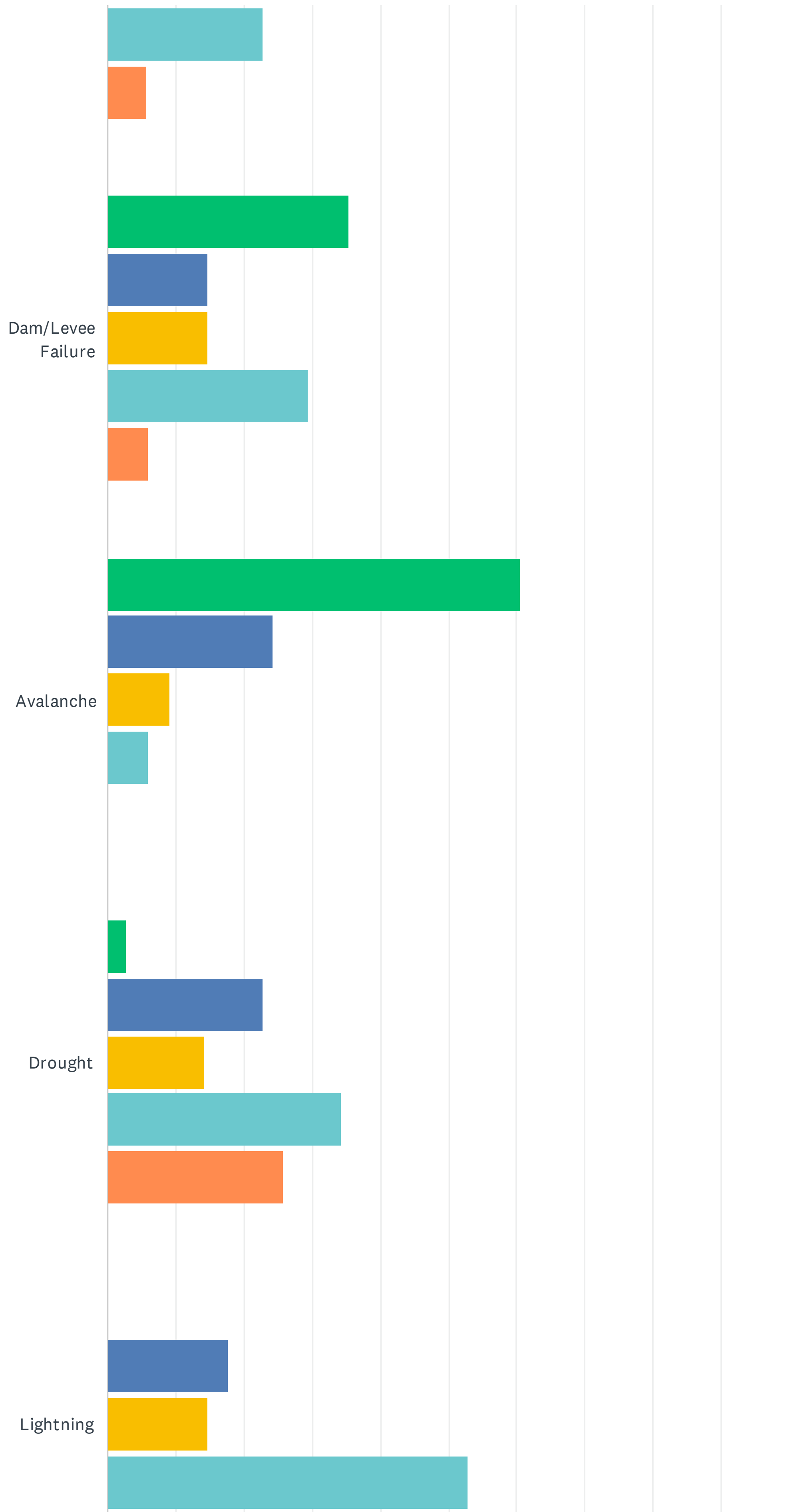


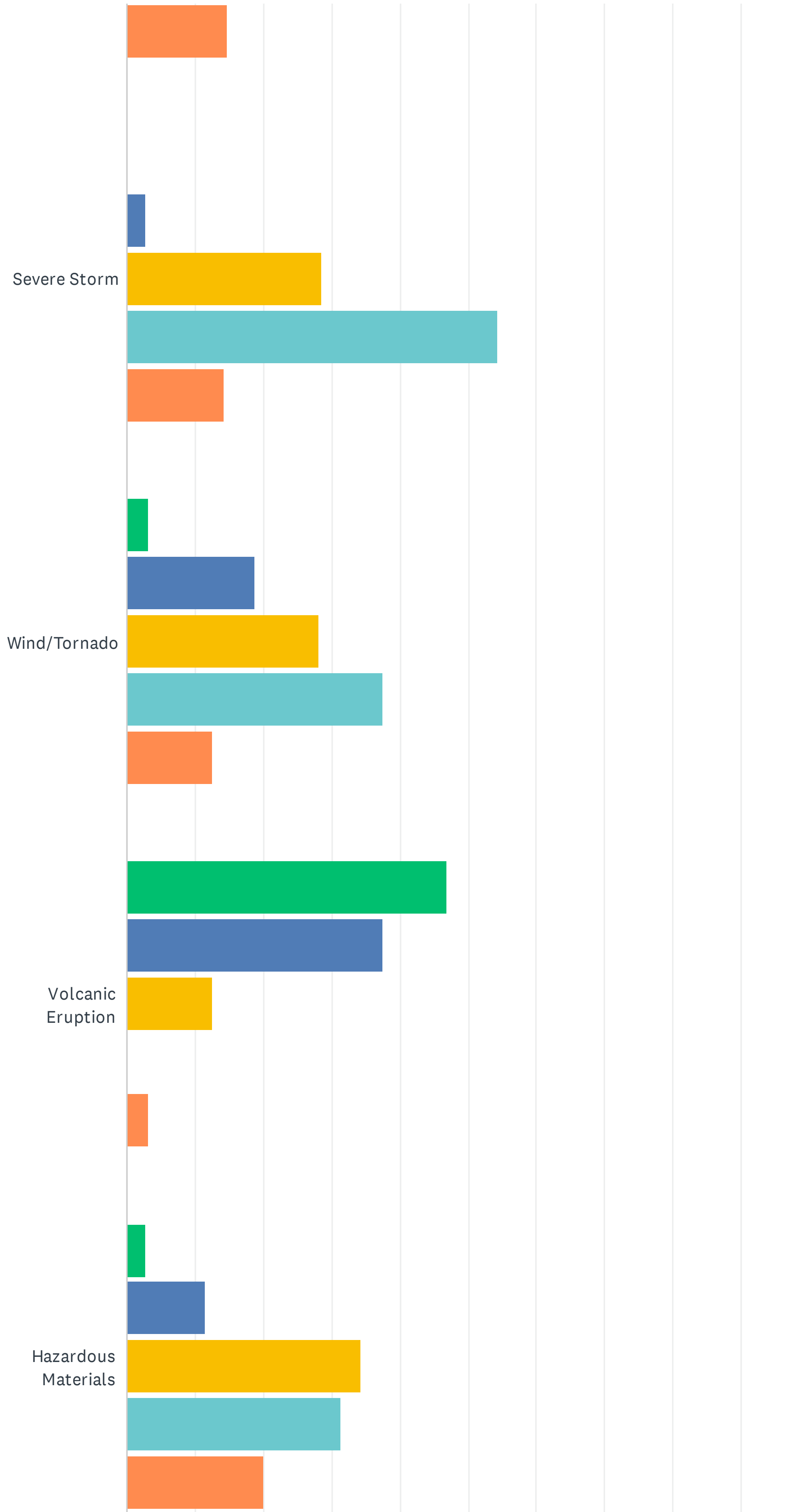
ANSWER CHOICES	RESPONSES	
Flood	69.57%	16
Earthquake	17.39%	4
Wildfire	56.52%	13
Landslide	30.43%	7
Dam/Levee Failure	0.00%	0
Avalanche	8.70%	2
Drought	39.13%	9
Lightning	34.78%	8
Severe Storm	52.17%	12
Wind/Tornado	30.43%	7
Volcanic Eruption	0.00%	0
Hazardous Materials	17.39%	4
Total Respondents: 23		

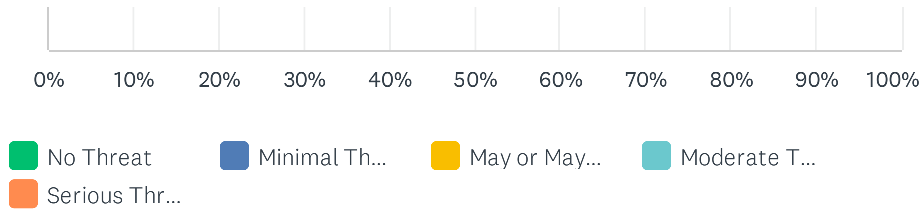
Q4 Please indicate the level of threat you feel the following hazards pose in your community:

Answered: 40 Skipped: 0




Dam/Levee Failure
Avalanche
Drought
Lightning

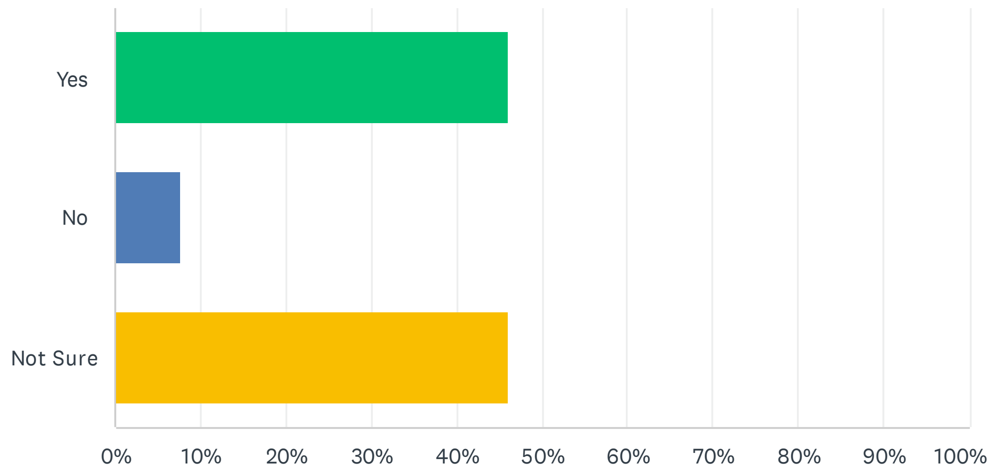

Severe Storm
Wind/Tornado
Volcanic Eruption
Hazardous Materials



	NO THREAT	MINIMAL THREAT	MAY OR MAY NOT BE A THREAT	MODERATE THREAT	SERIOUS THREAT	TOTAL	WEIGHTED AVERAGE
Flood	10.53% 4	21.05% 8	21.05% 8	36.84% 14	10.53% 4	38	3.16
Earthquake	5.71% 2	37.14% 13	14.29% 5	40.00% 14	2.86% 1	35	2.97
Wildfire	13.16% 5	7.89% 3	13.16% 5	28.95% 11	36.84% 14	38	3.68
Landslide	31.43% 11	28.57% 10	11.43% 4	22.86% 8	5.71% 2	35	2.43
Dam/Levee Failure	35.29% 12	14.71% 5	14.71% 5	29.41% 10	5.88% 2	34	2.56
Avalanche	60.61% 20	24.24% 8	9.09% 3	6.06% 2	0.00% 0	33	1.61
Drought	2.86% 1	22.86% 8	14.29% 5	34.29% 12	25.71% 9	35	3.57
Lightning	0.00% 0	17.65% 6	14.71% 5	52.94% 18	14.71% 5	34	3.65
Severe Storm	0.00% 0	2.86% 1	28.57% 10	54.29% 19	14.29% 5	35	3.80
Wind/Tornado	3.13% 1	18.75% 6	28.13% 9	37.50% 12	12.50% 4	32	3.38
Volcanic Eruption	46.88% 15	37.50% 12	12.50% 4	0.00% 0	3.13% 1	32	1.75
Hazardous Materials	2.86% 1	11.43% 4	34.29% 12	31.43% 11	20.00% 7	35	3.54

Q5 Is there ongoing public awareness/education in your community to help individuals and/or businesses to inform citizens about hazards and the ways to protect themselves and their property? (e.g., outreach projects, school education, library materials, etc.)

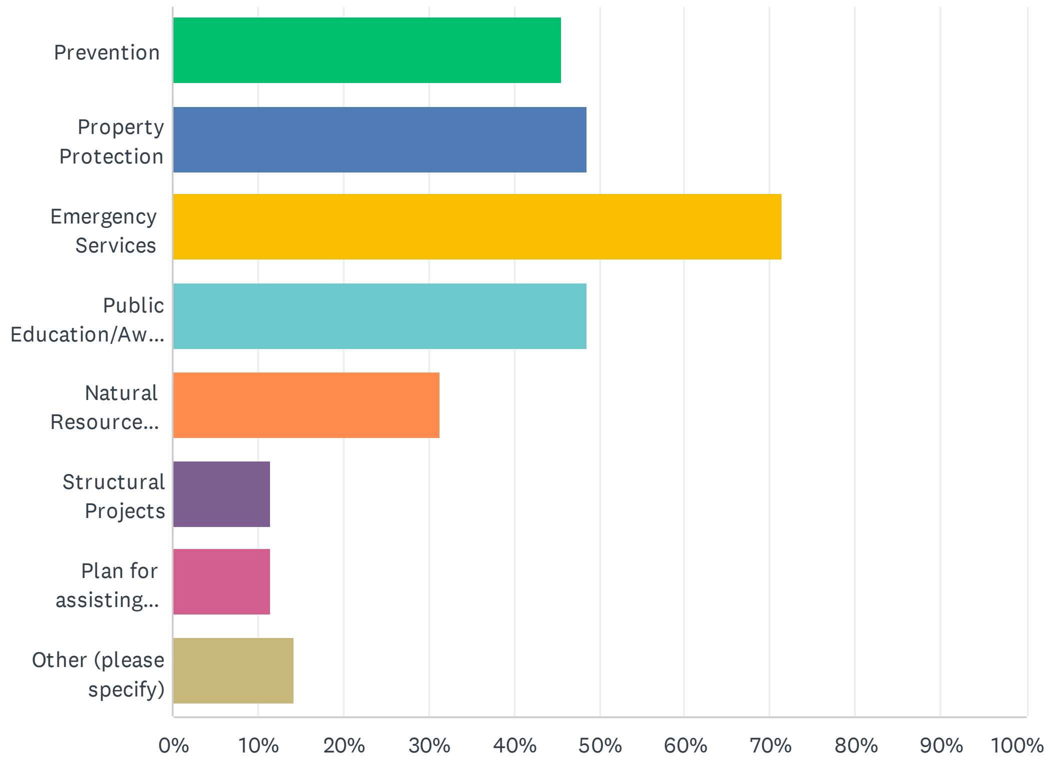
Answered: 39 Skipped: 1



ANSWER CHOICES	RESPONSES	
Yes	46.15%	18
No	7.69%	3
Not Sure	46.15%	18
TOTAL		39

Q6 In your community, which of the following activities have taken place to reduce risk?

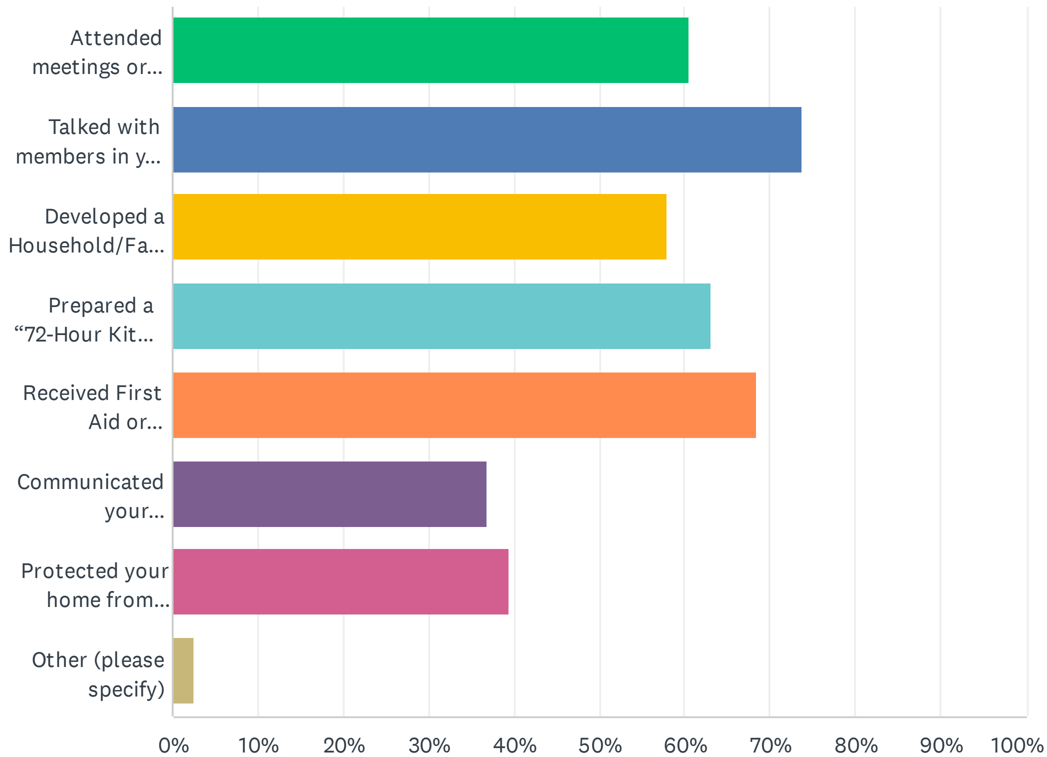
Answered: 35 Skipped: 5



ANSWER CHOICES	RESPONSES	
Prevention	45.71%	16
Property Protection	48.57%	17
Emergency Services	71.43%	25
Public Education/Awareness	48.57%	17
Natural Resource Protection	31.43%	11
Structural Projects	11.43%	4
Plan for assisting vulnerable groups (children, refugees, elderly, handicapped, non-English speaking)	11.43%	4
Other (please specify)	14.29%	5
Total Respondents: 35		

Q7 Which of the following preparedness activities have you done in your household?

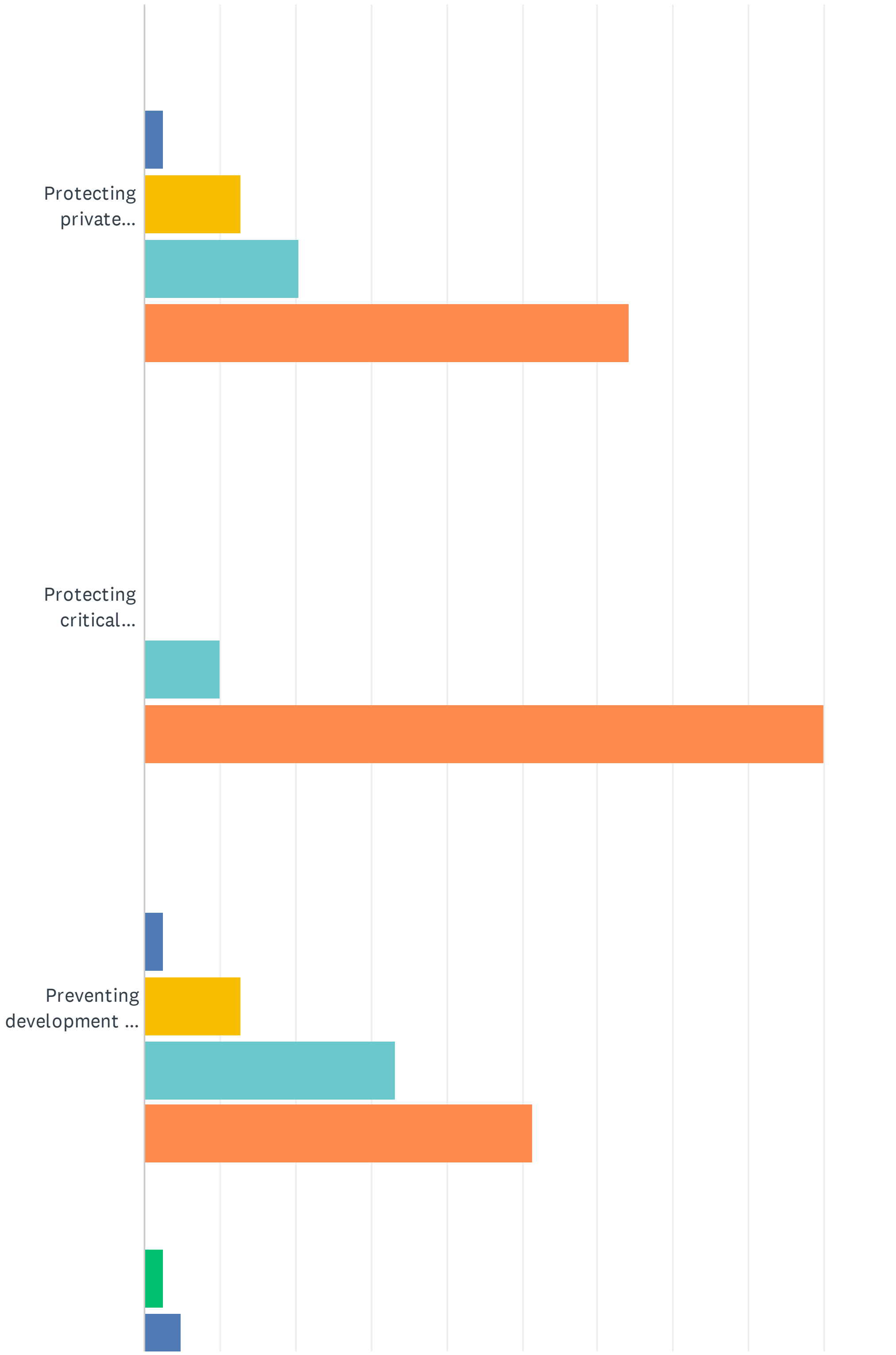
Answered: 38 Skipped: 2

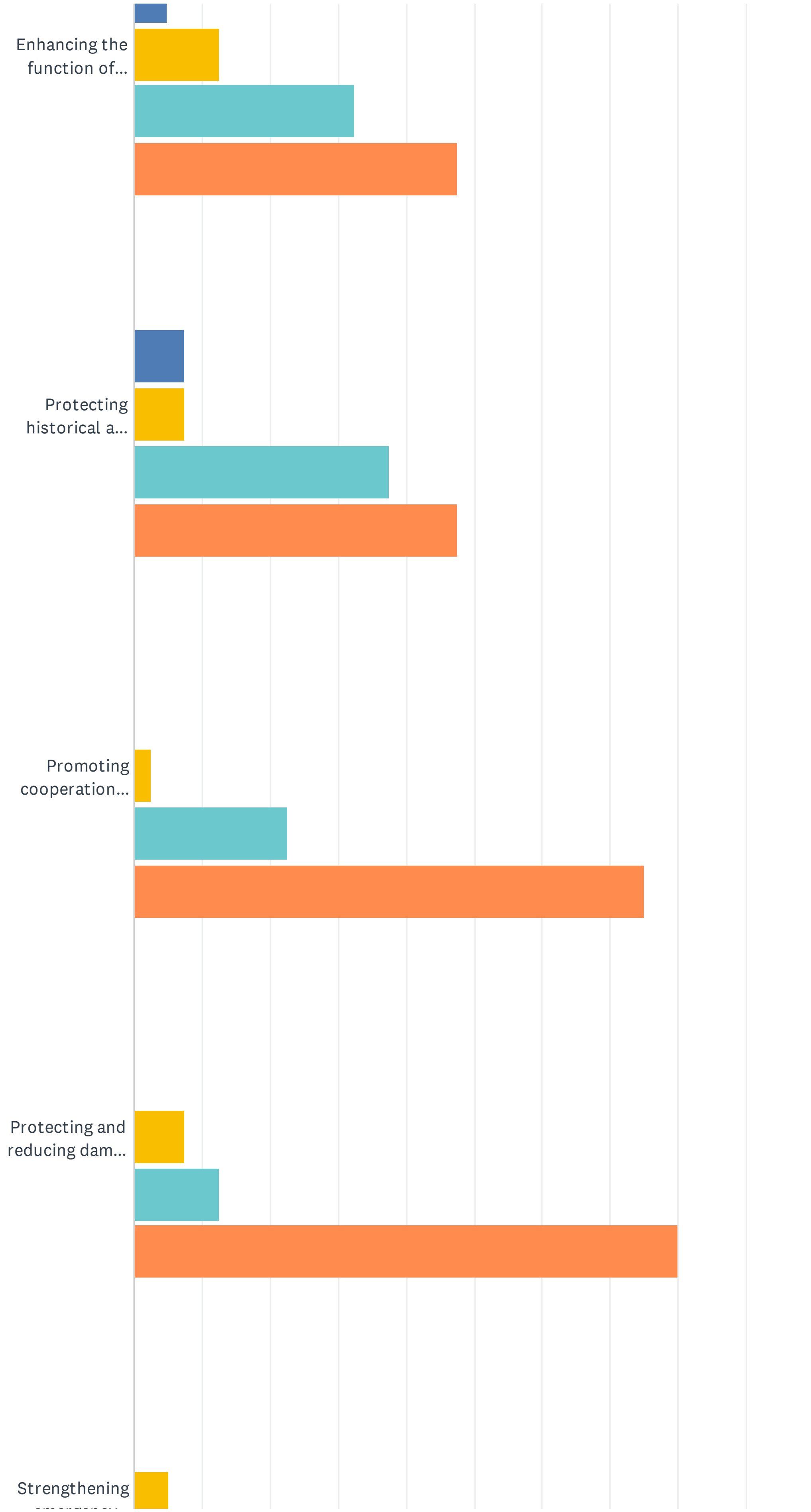


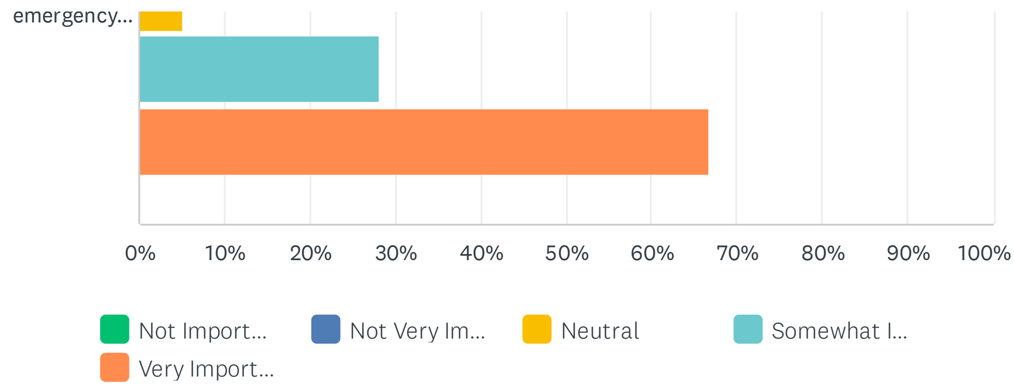
ANSWER CHOICES	RESPONSES	
Attended meetings or received information on disasters and emergency preparedness	60.53%	23
Talked with members in your household about what to do in case of a disaster or emergency	73.68%	28
Developed a Household/Family Emergency Plan in the event of a disaster	57.89%	22
Prepared a "72-Hour Kit" (Stored extra cash, food, water, batteries, or other supplies)	63.16%	24
Received First Aid or Cardio-Pulmonary Resuscitation (CPR) training	68.42%	26
Communicated your Household/Family Emergency Plan to family outside of your area.	36.84%	14
Protected your home from disasters (secured water heaters, purchased flood insurance, firewise landscaping, etc.)	39.47%	15
Other (please specify)	2.63%	1
Total Respondents: 38		

Q8 Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities for planning. Please tell us how important each one is to you:

Answered: 40 Skipped: 0




Enhancing the
function of...
Protecting
historical a...
Promoting
cooperation...
Protecting and
reducing dam...
Strengthening



	NOT IMPORTANT	NOT VERY IMPORTANT	NEUTRAL	SOMEWHAT IMPORTANT	VERY IMPORTANT	TOTAL	WEIGHTED AVERAGE
Protecting private property	0.00% 0	2.56% 1	12.82% 5	20.51% 8	64.10% 25	39	4.46
Protecting critical facilities (transportation networks, hospitals, fire stations, etc.)	0.00% 0	0.00% 0	0.00% 0	10.00% 4	90.00% 36	40	4.90
Preventing development in hazard areas	0.00% 0	2.56% 1	12.82% 5	33.33% 13	51.28% 20	39	4.33
Enhancing the function of natural features (streams, wetlands, etc.)	2.50% 1	5.00% 2	12.50% 5	32.50% 13	47.50% 19	40	4.17
Protecting historical and cultural landmarks	0.00% 0	7.50% 3	7.50% 3	37.50% 15	47.50% 19	40	4.25
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	0.00% 0	0.00% 0	2.50% 1	22.50% 9	75.00% 30	40	4.72
Protecting and reducing damage to utilities	0.00% 0	0.00% 0	7.50% 3	12.50% 5	80.00% 32	40	4.72
Strengthening emergency services (police, fire, ambulance)	0.00% 0	0.00% 0	5.13% 2	28.21% 11	66.67% 26	39	4.62

Q9 In your opinion, what could the State of Idaho do to help your community reduce or eliminate risk of future hazard damages in your community?

Answered: 26 Skipped: 14

Q10 Additional Comments:

Answered: 5 Skipped: 35

State of Idaho Hazard Mitigation Plan

Appendix B. Emergency Management Accreditation Program

B. EMERGENCY MANAGEMENT ACCREDITATION PROGRAM

The Emergency Management Accreditation Program (EMAP) is a voluntary program with the intent to evaluate federal, State, local, Tribal, and higher education emergency management programs based on a set of 66 standards designed to identify opportunities for continuous improvement.

The *Emergency Management Standard* covers the following topic areas:

- Program Management, Administration and Finance, and Laws and Authorities
- Hazard Identification, Risk Assessment and Consequence Analysis
- Hazard Mitigation
- Prevention
- Operational Planning and Procedures
- Incident Management
- Resource Management, Mutual Aid and Logistics
- Communications and Warning
- Facilities
- Training
- Exercises, Evaluations and Corrective Action
- Emergency Public Education and Information

These areas are evaluated to promote excellence and accountability within the emergency management program and may serve to inform strategic planning, improvement efforts, and resource allocations.

Standards that are inclusive of mitigation efforts include provisions for goal setting and developing Hazard Identification and Risk Assessment (HIRA) and Consequence Analysis. In addition to these components, the standards call for the emergency management program to have a mitigation program that addresses the vulnerabilities identified in the HIRA. Compliance with the hazard mitigation relevant standards in the *2019 EMAP Standard* is demonstrated below.

Chapters 5 through 17 of the 2023 SHMP profile 13 natural and human-caused hazards impacting the State of Idaho. These hazards were identified based on Idaho’s hazard history statewide and locally, climate change projections, stakeholder input, and technical analysis. The hazard profiles in each chapter include an impact and vulnerability analysis to evaluate the risk and vulnerability of people, State-owned and -leased property and the environment.

The consequence analysis and short- and long-term scores are located in Table B-1

Table B-1 Consequence Analysis

Subject	Short-term Score	Long-Term Score	Impacts
Avalanche			
Public	4.4	0.8	The fact that avalanches occur in remote settings far from large population centers means they do not pose the same danger to life and property as other hazards do. The people and structures most vulnerable to avalanches tend to be skiers, snowboarders, and others engaged in recreational activities in snow-covered, mountainous areas, along with the transportation infrastructure that serves those areas.
First Responders	4.4	0.2	Responders may be faced with assisting with evacuation for avalanches. In addition, responders will be needed to close roads, assist injured members or the public, and manage the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	3.0	0.6	The impacts on continuity of operations would be limited unless a facility is within an impacted area. Delivery of services may be slowed or halted in these areas if key roadways become impassable.
Property, Facilities, Infrastructure	4.0	1.4	Impacts to facilities are likely to be limited unless the facility is located within the impact area.
Economic Conditions	3.8	2.2	Avalanche events are typically more localized and, therefore, more likely to impact the local economy.
Public Confidence in Government	3.4	2.4	Public confidence will depend on how well the State manages response and recovery processes. Timely and accurate distribution of public information and notification during these events will also impact public trust.
Environment	2.0	1.2	Avalanches might cause erosion on sloped terrain, thereby increasing the likelihood of future landslides. In addition, debris deposited in a river or stream because of avalanches might alter its flow and contribute to flooding later. There are numerous positive impacts, including the chutes and debris created by avalanches that help provide favorable habitats for various flora and fauna. Avalanches can also form firebreaks that help limit wildfires in wooded areas. Moreover, a self-regulating feedback loop occurs between avalanches and the trees in a forest. Trees that experience avalanches become stronger and more resilient, and these more robust trees, in turn, reduce the frequency of avalanches by reinforcing the snowpack and minimizing the effects of strong winds.
Civil Disturbance			
Public	3.0	0.9	Civil disturbance incidents can lead to injury or death for involved persons and innocent bystanders. The number of people exposed to a civil disturbance depends on the population density and the location of the civil disturbance. Increases in population or the hosting of major political, economic, or social events could increase the likelihood and severity of a civil disturbance incident.
First Responders	4.5	1.0	If a civil disturbance event turns violent, it can lead to injury or death for personnel responding to the incident.
Continuity of Operations	4.3	2.5	State-owned or -leased facilities are often targets of civil disturbances, making them more vulnerable to the effects of these events. They often become the focus of these types of events and disruptions in service may occur, resulting in utility failure and transportation interruption.

Subject	Short-term Score	Long-Term Score	Impacts
Property, Facilities, Infrastructure	3.1	1.6	State-owned or -leased facilities are often targets of civil disturbances, making them more vulnerable to the effects of these events. They often become the focus of these types of events. Critical facilities and community lifelines can become targets during civil unrest, resulting in utility failure and transportation interruption
Economic Conditions	1.0	0.6	Fires set by protesters can spread through communities, damaging homes and businesses.
Public Confidence in Government	4.1	2.5	The perception of how well the State responds to and recovers from civil disturbances will directly impact the public's confidence in state governance. Indications that the State was not well prepared and equipped to manage the response and recovery process will harm the State's reputation. Counter to that, a well-executed response and proper management of the event will boost public confidence in state governance. A well-executed response to a civil disturbance incident may include preventing violence, restoring services, making repairs promptly, and ensuring community concerns are heard.
Environment	0.9	0.1	Civil disturbances can result in environmental impacts, but they are likely to be limited. Fires that are started during civil disturbance events can spread throughout cities, burning through areas that may include natural resources or hazardous materials and facilities.
Cyber Threats			
Public	4.6	3.8	Cyber threats can vary in severity based on the systems affected by an attack, the warning time, and the ability to preempt an attack. These factors impact the potential for a cyber-attack to have impacts on public health and safety, national security, economic security, foreign relations, civil liberties, and public confidence. Impacts to the public ranges from being inconsequential to resulting in an imminent threat to services, government stability, and life.
First Responders	3.8	2.6	Responders may be susceptible to their computer systems also being a target for cyber-attacks; however, no direct physical impacts are anticipated.
Continuity of Operations	4.6	3.6	The systems within State-owned and -leased facilities may serve as targets for cyber-attacks. Cyber-attacks on these systems can potentially disrupt daily operations and electronic functions throughout the state. These disruptions could last several months, and state agencies may lose access to their systems.
Property, Facilities, Infrastructure	4.4	2.8	While the physical structures of the buildings are typically not at risk, information systems and data storage within those buildings are vulnerable. Computer networks may contain sensitive information and data, making them targets for cyber-attacks.
Economic Conditions	4.8	4.0	A large-scale cyber threat could lead to significant economic losses to impacted state departments and agencies, businesses, and other industries.
Public Confidence in Government	4.6	3.2	The State's management of preparedness, response and recovery efforts will influence public trust. Timely and accurate distribution of public information and notification during these events will also impact public trust
Environment	4.8	3.2	Cyber threats generally do not have direct impacts on the environment; however, computer system failures have the potential to result in hazards such as energy outages at wastewater treatment plants resulting in the release of untreated effluent; hazardous materials release; oil spills; and impacts to gas pipes.
Drought			
Public	2.8	2.4	Droughts cause public health and safety impacts associated with water shortage risks for small rural water systems and private residential wells. The public may be subjected to water rationing, limited availability of water sources, increased risk of wildfire, and scarcity of fresh, local foods.

Subject	Short-term Score	Long-Term Score	Impacts
First Responders	1.2	1.6	Secondary impacts from droughts, such as wildfires, would increase the impacts on responders. In the event of a wildfire, responders may be called upon to assist with evacuation, close roads, and provide care to injured members of the public. As a result, responders may face an increased risk of personal injury.
Continuity of Operations	3.0	2.8	Impacts to the continuity of operations are limited. Organizations responsible for providing potable water may experience disruptions in water supplies.
Property, Facilities, Infrastructure	3.6	2.6	Drought events generally do not impact buildings. No structures are anticipated to be directly affected by a drought, and all are expected to be operational during a drought event. However, facilities that provide potable water may be affected by short water supplies.
Economic Conditions	4.0	4.0	Drought can impact the economy, including loss of business function and damage and loss of inventory. The following economic impacts may include loss of crops, livestock, timber, and aquaculture production; loss of recreational and tourism opportunities; and increased energy costs. Regional consequences to onion crops are likely to occur.
Public Confidence in Government	2.6	2.0	Long-term severe droughts may cause public confidence to decline if state-led water utilities cannot provide adequate and continuous water service. Additionally, public confidence may be impacted by the State's decision to enact or not enact rations on water usage.
Environment	1.4	1.2	Drought can create hazardous conditions in forests and other vegetation-covered spaces, fueling wildfires. Droughts can also create more prolonged fires fueled by excessively dry vegetation and reduced water supply for firefighting. Droughts put stress on trees and make them more susceptible to pest infestations. This, in turn, can lead to more diseased, dying, and dead trees. An increase in groundwater pumping may lead to subsidence and dimmish water quality.
Earthquake			
Public	4.83	4.46	Earthquakes pose a significant threat to the public. The public may sustain injuries from collapsing structures, falling materials, and damaged utilities. Additionally, the public is at risk of loss of life.
First Responders	4.92	2.88	Responders face risks related to injury and loss of life from aftershocks while responding to assist with managing an earthquake event.
Continuity of Operations	4.71	2.17	Earthquakes can have significant impacts that result in damage to structures, roads, and utilities. Depending on the sustained damage, it may take several days, weeks, or months to make necessary repairs. During this time, there may be a disruption to state services.
Property, Facilities, Infrastructure	5.0	4.25	Ground shaking from earthquakes can cause buildings and bridges to collapse; disrupt utility services; and trigger landslides, avalanches, flash floods, fires, and tsunamis. State and federal infrastructure (roads, highways, dams, and state water projects) located in areas with soils that are susceptible to liquefaction or earthquake-induced landslides can experience extensive cracking, ripping apart, settlement, and sloughing during an earthquake.
Economic Conditions	4.71	4.63	Earthquakes can cause damage and the loss of infrastructure that supports agricultural production, storage, and transport. Damage to major hubs, including ports, may have more substantial impacts.
Public Confidence in Government	0.83	3.38	The State's management of response and recovery efforts will influence public trust. Timely and accurate distribution of public information and notification during these events will also impact public trust.

Subject	Short-term Score	Long-Term Score	Impacts
Environment	4.75	4.13	Earthquake-induced landslides can significantly damage the surrounding habitat. It is also possible for earthquakes to reroute streams, which can change the water quality, possibly damaging habitat and feeding areas. Streams fed by groundwater and/or springs may dry up because of changes in underlying geology. Another threat to the environment from earthquakes is the potential release of hazardous materials.
Flood			
Public	2.0	1.3	Persons residing in the 100-year floodplain are the most at risk of impacts from flooding. Flooding can cause injury, loss of life, destruction, and property loss. Flood waters may carry containments impacting public health, and slowly receding floodwaters may harbor disease-carrying insects. A levee system failure or overtopping can create severe flooding and high-water velocities that cause injury or loss of life. Receding flood waters can leave behind stagnant pools that provide breeding grounds for mosquitoes, which can transmit diseases. Dam failure can significantly impact the public based on the warning time, size, and location of the dam. The public is at risk of injury, loss of life, and destruction and loss of property due to flooding caused by dam failure.
First Responders	1.8	1.3	Responders may be faced with assisting with evacuation for flood, levee break, or dam failure events. In addition, responders will be needed to close roads, assist injured members or the public, and manage the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	1.5	1.0	The impacts on the continuity of operations would be limited unless a facility is within a flood hazard area or is directly impacted by flood waters. Delivery of services may be slowed or halted in these areas if key roadways become impassable due to flooding. The impacts on continuity of operations would be limited unless a facility or critical infrastructure component is within the levee or dam failure area. Delivery of services may be slowed or halted in adjacent areas if key roadways become impassable due to flooding or debris blockages.
Property, Facilities, Infrastructure	1.8	1.5	Infrastructure may experience impacts in the form of damage from flooding, debris blockages, temporary closure of transportation routes, and the potential inability of the stormwater system to handle floodwater in a severe event. Critical infrastructure failures such as loss of power, potable and wastewater treatment, and road and bridge failures can be caused by levee failure events, depending on the magnitude of the resulting flood. Transportation routes, including bridges and highways, are vulnerable to dam inundation and can potentially be wiped out, creating isolation issues.
Economic Conditions	1.8	1.5	A major flood, levee break, or dam failure event would be costly for state and local governments in terms of emergency response, delivery of services, disaster cleanup, and future mitigation projects. Some of the costs could be recouped through federal grant reimbursements, but local governments would still feel the fiscal impact of a major event.
Public Confidence in Government	1.3	1.3	Public confidence will be dependent on how well the State manages response and recovery processes. Timely and accurate distribution of public information and notification during major flood, levee break, and dam failure events will also impact public trust. Additionally, any levee or dam failure event may result in a decline in public confidence as the State is responsible for evaluating and ensuring the safety of dams and levees.

Subject	Short-term Score	Long-Term Score	Impacts
Environment	1.8	1.5	Floods impact the environment by spreading pollution, overloading water and wastewater treatment plants, carrying silt and debris, and disturbing wildlife and natural areas. Riverine flooding can cause bank erosion and landslides. Hazardous materials spills can result from flooding if storage tanks rupture and spill into waterways. Wildlife and fish can be impacted if floodwaters from a levee failure destroy or fundamentally alter plant communities and thus reduce habitat. Floodwaters can also erode riverbanks and convey sediment to locations where it can clog riverbeds and streams, smother aquatic organisms, and destroy habitats. Dam failures can cause downstream flooding and transport large volumes of sediment and debris. Other environmental impacts include pollution from septic system failures; pollution of potable water supplies; changes in configurations of streams; loss of wildlife habitats; and degradation of wetlands
Hazardous Materials			
Public	3.0	2.3	Exposure to hazardous materials releases may cause short- and long-term health impacts such as difficulty breathing and eye, nose, throat, and lung irritation.
First Responders	4.8	1.2	Responders may be faced with assisting with evacuation for a hazardous materials incident. In addition, responders will be needed to close roads, assist injured members or the public, and manage the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	3.2	2.0	In the event of a hazardous materials release at or near a state asset, state employees may need to evacuate a building, resulting in productivity loss that can be measured by days and dollar equivalency.
Property, Facilities, Infrastructure	4.2	1.5	State assets near facilities that store or process hazardous materials or transportation corridors that permit the transport of hazardous materials have increased risks. Hazardous material releases may lead to road closures until response and cleanup efforts are completed. This may impact access to communities, commuting to work, and the ability to deliver goods and services efficiently.
Economic Conditions	3.7	2.3	The cost of recovery and cleanup from a hazardous materials release can cause economic hardship. The extent of hardship will depend on the severity of the event.
Public Confidence in Government	3.3	2.2	The State's management of response and recovery efforts will influence public trust. Timely and accurate distribution of public information and notification during these events will also impact public trust.
Environment	2.3	1.8	Hazardous releases can significantly harm wildlife in the surrounding area. The contamination also can make its way up the food chain, affecting the food supply.
Landslide			
Public	4.4	2.4	According to the USGS, slope failures in the United States result in an average of 25 to 50 lives lost per year. The public is at risk of injury and loss of life from landslides, debris flow, and other mass movements.
First Responders	4.8	1.4	Responders may be faced with assisting with evacuation in areas impacted by landslide, debris flow, and other mass movements. In addition, responders will be needed to close roads, assist injured members or the public, and manage the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	4.6	1.8	The impacts on continuity of operations would be limited unless a facility is within an impacted area. Delivery of services may be slowed or halted in these areas if key roadways become impassable due to flooding.
Property, Facilities, Infrastructure	4.6	2.2	Landslides can pose a serious hazard to properties on or below hillsides. When landslides occur, they deform and tilt the ground surface. The result can be the destruction of foundations, offset of roads, breaking of underground pipes, or overriding of downslope property and structures.

Subject	Short-term Score	Long-Term Score	Impacts
Economic Conditions	4.0	2.4	Impacts to business and transportation networks can result in disruptions lasting several days, weeks, or months. Regional impacts to tribal fishery in the state are also a concern.
Public Confidence in Government	4.2	2.6	The State's management of response and recovery efforts will influence public trust. Timely and accurate distribution of public information and notification during these events will also impact public trust.
Environment	3.6	1.4	A landslide alters the landscape. In addition to changes in topography, vegetation and wildlife habitats may be damaged or destroyed, and soil and sediment runoff will accumulate downslope, potentially blocking waterways and roadways and impairing the quality of streams and other water bodies. Landslides that fall into streams may impact fish and wildlife habitats and affect water quality. Hillsides that provide wildlife habitat can be lost for prolonged periods due to landslides.
Pandemic			
Public	4.2	2.2	Widespread sickness and loss of life can result from pandemics. Disease outbreaks reaching pandemic proportions can cause social impacts on a global scale. For example, civil disorder, protests, depression, and anxiety are a few of the social impacts of the COVID-19 pandemic.
First Responders	3.8	2.4	Burnout and workforce shortages among first responders and public health and healthcare workers may be seen.
Continuity of Operations	3.8	1.6	Health hazard events are not likely to result in any losses associated with damage or impairment to state assets. All losses from this hazard would be associated with impacts on operations and the economy.
Property, Facilities, Infrastructure	3.2	1.2	The most significant impact on critical facilities would be the increase in hospitalization and emergency room visits resulting from a health hazard event. This would create a greater demand on these critical facilities, their staff, and resources.
Economic Conditions	3.6	2.4	Potential statewide economic impacts include unemployment, price increases, and supply chain interruptions. Significant economic disruption can occur due to death, loss of work time, food insecurity, and costs of treating or preventing the spread of the virus or disease.
Public Confidence in Government	4.0	2.6	The State's management of preparedness, response and recovery efforts will influence public trust. Timely and accurate distribution of public information and notification during these events will also impact public trust.
Environment	3.0	1.8	Pandemics can be directly or indirectly tied to environmental impacts. Demand for single-use plastics to mitigate the spread of disease and increased waste generated by hospitals has negative environmental impacts. Powerful disinfectants end up in water supplies. Microplastics from degrading personal protective equipment (e.g., masks, gloves) can contribute to high concentrations found in fish, water, sediments, soils, and the air.
Radiological			
Public	4.2	3.4	In the event of an accident, those living and working within a 10-mile radius of the nuclear power plant could be more vulnerable to health and safety impacts from the accident.
First Responders	4.7	1.3	Responders within a 10-mile radius of a radiological accident may be exposed to radioactive materials. In addition, responders may be faced with assisting with evacuation, closing roads, providing medical care to members of the public, and managing the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	1.9	1.1	The impacts on continuity of operations would be limited unless a facility or critical infrastructure component is within the impact area. Delivery of services may be slowed or halted in adjacent areas.

Subject	Short-term Score	Long-Term Score	Impacts
Property, Facilities, Infrastructure	4.0	2.9	Impacts to facilities are likely to be limited unless the facility is located within the impact area.
Economic Conditions	3.0	2.5	A radiological accident could cause regional disruption to transportation networks and businesses.
Public Confidence in Government	2.2	2.3	The State's management of response and recovery efforts will influence public trust. Timely and accurate distribution of public information and notification during these events will also impact public trust.
Environment	4.9	4.2	The impact on the environment will depend on where the event is located and the extent of radiological materials released. Animals, plants, and other wildlife in the surrounding areas of the event can see devastating impacts. Radiation pollution within waterways also accumulates within fish and other aquatic organisms, and runoff from radiation within the soil provides additional contamination. The Snake River is an example of a major body of water that could be impacted by this hazard event.
Severe Storms			
Public	4.0	1.8	Lightning, hail, and high winds from severe storm events puts the public at risk of injury and loss of life.
First Responders	4.8	1.2	Responders may be faced with assisting with evacuation for severe storm events. In addition, responders will be needed to close roads, assist injured members or the public, and manage the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	4.6	2.6	The impacts on continuity of operations would be limited unless a facility is directly adversely affected by lightning or hail caused by a thunderstorm. Delivery of services may be slowed or halted in affected areas as a result of momentary losses in power and communications.
Property, Facilities, Infrastructure	4.8	3.2	Damage to state assets can include roof damage from wind, structural damage from downed trees, and power outages. State infrastructure can be impacted by debris and downed trees/power lines, causing road closures, power outages, and limiting access to emergency personnel.
Economic Conditions	4.6	3.0	A major severe storm event could disrupt the state's economy if damages are severe and widespread. However, impacts are generally limited. Regional consequences to onion crops are likely to occur.
Public Confidence in Government	3.4	2.4	Public confidence would largely depend upon how effectively the State prepares for and responds to a severe storm events.
Environment	3.0	1.6	Severe storms that create long periods of rainfall can erode natural banks along waterways and degrade soil stability for terrestrial species. Tornadoes can tear apart habitats, causing fragmentation across ecosystems. Researchers believe that more diseases can spread across ecosystems because of the impacts that severe storms and climate change have on water supplies. The residual impacts of a community's methods to maintain its infrastructure through winter weather (such as road salting) may also impact the environment.
Volcanic Eruptions			
Public	5.0	3.0	Impacts on the public include injuries related to burns and smoke inhalation, and loss of property and life.
First Responders	5.0	2.4	Responders may be faced with assisting with evacuation for volcanic events. In addition, responders will be needed to close roads, assist injured members or the public, and manage the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	4.8	2.4	The resulting ash and lava flow from volcanic activity could completely disrupt state services due to damage to facilities, utilities, and transportation networks.

Subject	Short-term Score	Long-Term Score	Impacts
Property, Facilities, Infrastructure	4.0	2.8	Impacts to facilities are likely to be limited unless the facility is located within the impact area.
Economic Conditions	4.6	2.6	Volcanic events can have major economic impacts on a community, from the loss of and damage to structures and subsequent economic losses. The Lewiston Port is likely to be impacted by this hazard.
Public Confidence in Government	3.6	2.0	Public confidence will depend on how well the State manages response and recovery processes. Timely and accurate distribution of public information and notification during these events will also impact public trust.
Environment	3.8	1.4	The environment is highly exposed to the effects of a volcanic eruption, including deterioration of water quality, fewer periods of rain, crop damage, and the destruction of vegetation.
Wildfire			
Public	5.0	3.8	Residents in high wildfire risk zones are the most vulnerable to impacts from a wildfire event. Impacts to the public include injuries related to burns, smoke inhalation, and loss of property and life.
First Responders	5.0	1.4	Responders may be faced with assisting with evacuation for wildfire events. In addition, responders will be needed to close roads, assist injured members or the public, and manage the overall incident. Due to these activities, responders may face an increased risk of personal injury.
Continuity of Operations	5.0	2.2	The impacts on continuity of operations would be limited unless a facility or critical infrastructure component is within the impact area. Delivery of services may be slowed or halted in adjacent areas.
Property, Facilities, Infrastructure	5.0	4.0	Impacts to facilities are likely to be limited unless the facility is located within the impact area.
Economic Conditions	5.0	3.8	A major wildfire event would be costly for state and local governments because of the potential for damages associated with property, infrastructure, and impacts to health and air quality.
Public Confidence in Government	4.4	4.0	Public confidence will be dependent on how well the State manages response and recovery processes. Timely and accurate distribution of public information and notification during these events will also impact public trust.
Environment	4.0	2.4	Fire can act as a catalyst for promoting biological diversity and healthy ecosystems, reducing the buildup of organic debris, releasing nutrients into the soil, and triggering changes in vegetation community composition. However, in some circumstances, it can also cause severe negative environmental impacts such as soil erosion, cross loss, the spread of invasive and nuisance species, disease and insect infection, habitat destruction, soil sterilization, and damaged historic and cultural resources.

The monitoring, maintenance, and update plan for the 2023 SHMP are detailed in Chapter 25. The strategy to ensure the entire SHMP, including the HIRA and Consequence Analysis, remains current and calls for annual meetings of stakeholders and subject matter experts. During these annual meetings, participants will discuss advances in hazard knowledge, changes in state and federal legislation, and the performance of mitigation projects during hazard events.

The SHMP itself and the goals specified in Chapter 21 and mitigation actions in Chapter 24 of the 2023 SHMP are both developed in a manner to include the *EMAP Standards*, which require a formal planning process to develop a plan to implement mitigation projects and set priorities. The overall SHMP planning process is documented in Section 1.3. The goals are developed in a manner to allow for the development of short- and long-term objectives and mitigation strategies to align with the goal. This method is detailed in Chapter 21.

The process for prioritizing mitigation actions for inclusion in the 2023 SHMP is documented in Section 24.3.

The State's capabilities include an active NFIP program and widespread community participation in the CRS program to aid in tracking repetitive loss and identifying opportunities for further minimization of the risk. The state's capabilities and efforts aimed at reducing vulnerability and building resilience are described throughout the SHMP and, more specifically, in Chapter 23.

CONSEQUENCE ANALYSIS SCENARIOS

Avalanche

January: An avalanche on Interstate 90 between Mullan and Lookout Pass in Shoshone County occurred yesterday at approximately 4:00 in the afternoon. A school bus loaded with children was traveling back home from Lookout Pass Ski Resort and was trapped by the avalanche. Search and rescue efforts were successful, and all occupants of the bus were safely rescued. Both east and westbound lanes of Interstate 90 have been closed since the avalanche and it is unknown how soon the road will be reopened.

Civil Disturbance

In support of a group of armed militants who seized the headquarters of a National Wildlife Refuge in Oregon, a group of similar anti-government militants affiliated with a sovereign citizen movement have occupied the Deer Flat National Wildlife Refuge Visitor Center located at 13751 Upper Embankment Road in Nampa, Idaho. The Deer Flat Refuge has two units, one in Oregon and the other in Idaho. It is believed that there are at least 10 armed militants in the visitor center and at least one federal employee of the Visitor Center has been taken hostage.

Cyber Threats

October: Over the past several weeks, hackers have conducted cyber-attacks that affect several parts of the nation's financial infrastructure. Specifically, credit-card processing facilities are hacked and numbers are released to the Internet, causing 20 million cards to be cancelled; automated teller machines (ATMs) fail nearly simultaneously across the nation. This week, the Idaho State Controller's Office website has been severely compromised, completely shutting down the system. Today the Idaho Department of Administration website has been hacked as well, causing this website to fail.

Drought

July: As a result of extremely low snowpack in the Tetons, low levels in the Eastern Snake River Plain Aquifer and record high temperatures, a record drought is occurring in the Magic Valley of Idaho (Blaine, Camas, Cassia, Gooding, Jerome, Lincoln, Minidoka and Twin Falls Counties). Lack of irrigation water has directly impacted farming operations in this agricultural center of the state, including commodities beans, sugar beets, corn and potatoes. Dairy production is also being impacted, especially in Jerome and Gooding Counties.

Earthquake

Fall: A 6.9 Mw event in Pocatello in the fall months, at 8:00 AM in the morning.

Flood

Spring: A flood scenario resulting from spring thaw and excess rain in Eastern Idaho that saturates the ground and causes the Snake River to flood and the Palisades Dam to fill quickly. The event occurs in the spring at 10:00 AM.

Hazardous Materials

August: At 7:00 a.m. on a beautiful August day, a westbound BNSF train derails on the Sandpoint Long Railroad Bridge. Five tank cars carrying crude oil derail. One of tank cars is reported to be discharging crude oil into Lake Pend Oreille that drains to the Pend Oreille River. Fires have been reported.

Landslide

February: This morning a landslide occurred on Highway 14, about 10 miles west of Elk City in Idaho County. About 14 tons of rock, trees and debris slid onto the highway causing a 40-foot-deep complete blockage of the roadway. The town of Elk City is completely cut off as there are no alternative routes that are open during the winter months.

Pandemic

November: A novel strain of influenza has impacted the northwest part of the United States, including the State of Idaho. Numerous hospitals in the state are reporting record numbers of admissions statewide and many are diverting patients to other hospitals. The elderly and young children appear to be at greatest risk and while not as severe as some “worst-case” predictions, the numbers of people showing serious symptoms due to infection has alarmed medical experts. Although not official, it appears that the virus affects about 20 to 25 percent (“attack rate”), and approximately 3 percent of ill persons die (case fatality rate).

Radiological

A truck versus train crash occurred at a crossing of the Union Pacific Railroad line and Swan Falls Road in Kuna, Idaho. An irrigation creek runs near the road. The truck was carrying radioactive sources from a construction site and was traveling with a radioactive placard and a manifest of sources being carried. It contains the following sources: Twelve Cs-137 gauges that were recovered from an industrial site being demolished and two industrial gamma radiography instruments, each containing approximately 10 TBq Co-60 (300 Ci). The truck is dragged over 100 m and the cargo area is completely destroyed by the collision. The sources are damaged, and contents are dispersed. This results in contamination over approximately 20 m × 10 m down the track. Some of that contamination extends to the stream.

Severe Storm

January: Between December 22 and January 19, over 45 inches of snow fell in Washington County and surrounding counties in Idaho. More than 100 building roofs have collapsed in the area, including a grocery store, a bowling alley and several onion storage facilities. One death has been reported when a woman was trapped when the roof of her house collapsed under the extreme weight of the snow.

Volcanic Eruption

May: In March, a series of earthquakes were recorded beneath Mount St Helens in the Washington Cascades. The USGS issued a hazard watch on March 27 and shortly thereafter the first eruption of steam from the summit sent a column of ash and steam 6000 feet into the air. Numerous volcanic tremors have been recorded since then and on the morning of May 18, a 5.1 magnitude earthquake was registered. Within seconds, the volcano erupted, and the north face of the mountain was blown apart. Within an hour, massive mudflows were moving through the river systems to the west and southeast of Mount St Helens. A Plinian eruption column filled with hot ash, gas, and rock rose over 20 km into the atmosphere. By mid-afternoon, eastern Washington and northern Idaho were plunged into darkness as the thick ash clouds rolled in overhead. Day turned to night as light sensitive streetlamps flickered to life and tiny ash particles began to blanket the towns like snow. Overall, the ash affected Washington, Idaho, Montana, Wyoming, Colorado, and the northern part of New Mexico and ranged from heavy ash fall to hazy skies. In Idaho, around two inches of ash fell on towns from Moscow to Coeur d’Alene, but ash fall extended from McCall to Canada. Unlike ash from fires, volcanic ash is composed of tiny shards of sharp glass and rock that forms a concrete-like material when wet and can significantly damage a person’s lungs

Wildfire

August: A 1910-type wildfire event in McCall occurring in August

Appendix C. Enhanced Plan Archive

C. ENHANCED PLAN ARCHIVE

This appendix serves as an archive for content in Chapter 5 of the 2018 SHMP that described the 2018 plan's compliance with FEMA requirements for enhanced state hazard mitigation plans. The State is not seeking enhanced SHMP status for the 2023 plan, and this content from the previous plan has not been updated. If the State chooses to seek enhanced plan status in the future, content in this appendix can be used in future update processes.

References to sections, chapters, or other appendices included in the text of this appendix refer to those items in the 2018 SHMP.

INTRODUCTION

Requirement 44 CFR §201.5(a), Enhanced State Mitigation Plans, outlines that a State with a FEMA-approved Enhanced State Mitigation Plan at the time of a disaster declaration is eligible to receive increased funds under the HMGP, based on twenty percent of the total estimated eligible Stafford Act disaster assistance. The Enhanced State Mitigation Plan must demonstrate that a State has developed a comprehensive mitigation program, that the State effectively uses available mitigation funding, and that it is capable of managing the increased funding. In order for the State to be eligible for the 20 percent HMGP funding, FEMA must have approved the plan within 5 years prior to the disaster declaration. The purpose of this chapter is to demonstrate that the 2018 Idaho State Hazard Mitigation Plan meets all the Enhanced State Mitigation Plan requirements set forth in 44 CFR 201.5 (See the State Hazard Mitigation Plan Review Crosswalk dated June 29, 2018, found in Appendix D).

REQUIRED STANDARD PLAN ELEMENTS

The 2018 Idaho State Hazard Mitigation Plan meets all the Standard State Mitigation Plan requirements as set forth in 44 CFR 201.4 and documented in the Standard State Hazard Mitigation Plan Review Crosswalk dated June 29, 2018 (found in Appendix D).

INTEGRATED PLANNING

Integrated planning is a critical component of enhanced mitigation and is key in ensuring the widest coordination of efforts and shared resources to effectively reach hazard mitigation goals. The National Response Framework defines coordinating structures as entities composed of representatives from multiple departments or agencies, public and/or private sector organizations, or a combination of these. Coordinating structures are able to facilitate the preparedness and delivery of capabilities, and they provide guidance, support, and integration to aid in the preparedness of the whole community and building resilience locally, regionally, and nationally. The coordinating structures for mitigation focus on enabling efforts that embed risk management, adaptation, and mitigation in all planning, decision making, and development (National Mitigation Framework, 2016).

The State of Idaho has a demonstrated history of commitment to and execution of integrated planning. The mitigation goals and objectives as a part of the mitigation strategy outlined in Chapter 1 advocate integration and comprehensive inclusion of a statewide strategy. The goal demonstrating this is to: **Enhance coordination between Federal, State, Tribal, regional, local agencies, and non-governmental organizations and consistency of hazard impact reduction policy.** The objectives which achieve this are **Improve State agency administrative and legislative coordination, cooperation, and capacity to identify and implement effective hazard mitigation strategies. (Goal 3); Motivate communities and citizens to take preparedness and mitigation actions. (Goals 1, 2);** and **Influence policy based on risk assessment and historical events. (Goals 1-5).**

The State of Idaho has undergone multiple large scale statewide reviews of agencies, programs, and policies to ensure a coordinated, integrated, and comprehensive planning approach. Three of the major contributing efforts are described below.

IOEM Strategic Plan

The IOEM Strategic Plan begins with Vision, Mission and Core Values. It contains a description and explanation of the process of the business of preventing, protecting against, mitigating the effects of, responding to and recovering from natural, technological and man-caused threats and hazards. Goals and Objectives lay out the broad areas that are most important to achieving the mission. The process adheres to an established cycle that facilitates informed planning, leading to the appropriate application of resources for training, equipping and organizing, which facilitates expert delivery of service to customers. IOEM core functions are clearly delineated in State Statute and Governor's Executive Order. The processes to support these core functions are influenced by many things including the THIRA process, National Incident Management System (NIMS), Presidential Policy Directive 8 (PPD-8), federal mission area framework documents and other federal guidance, as well as grant execution guidance. These guiding documents help IOEM to define how the agency will achieve Management goals, work on THIRA derived projects, and manage programs to support core functions. The ability to execute core functions while adhering to a wide range of guidance dictates that we must leverage the "whole community" of emergency management—private-sector, non-governmental and private citizens and cultivate these relationships. Through this, community resiliency is built – the only way to truly anticipate and prepare for uncertainty. Objective 2.11 specifies **Hazard Mitigation.** Consider steps to prevent or reduce disaster consequences, manage floodplains, develop and coordinate mitigation plan and program implementation, assist local governments in all-hazard mitigation, administer federal programs for disaster assistance, program administration and compliance for mitigation grants, maintenance of a state hazard mitigation officer, implement the SHMP and update or revise every 5 years *(Idaho Code 46-1006, 46-1020; Executive Order 2014-07 I B.3, III V.2.a,b; HMA Unified Grant Guidance).* Objective 4.1 details **Cohesive Partnerships**. Coordinate all hazards emergency management activities to form cohesive partnerships with public and private entities – the whole community. Objective 4.2 contains: **Engage Stakeholders**. Actively engage our state, local and Tribal stakeholders in emergency management programs and issues to bring cohesion to Idaho's disaster preparedness.

Emergency Management Accreditation Program (EMAP)

In 2017 Idaho became the first state in the Northwest to receive the prestigious Emergency Management Accreditation Program (EMAP) distinction. EMAP is a voluntary standards, assessment and accreditation process for disaster preparedness and response programs throughout the country. EMAP fosters excellence, uniformity and accountability in emergency management and homeland security programs. Idaho is the first state to receive the accreditation in FEMA Region 10, which also includes Alaska, Oregon and Washington.

The accreditation process evaluates emergency management programs on compliance with requirements in 16 areas, including planning, resource management, training and exercise, public information, and administration – the foundation of the nation's emergency preparedness system. Compliance with more than 60 standards must be met to achieve EMAP accreditation. Emergency management agencies must demonstrate proficiency through a rigorous process including documentation, self-assessment, and peer assessment verification. The accreditation demonstrates to all stakeholders that the State's emergency management programs are sustainable and in line with best practices nationwide. EMAP accreditation is valid for five years.

State Hazard Mitigation Planning Committees

As a part of the hazard mitigation process, IOEM sponsors planning committees and facilitates technical working groups with interested stakeholders as well as personnel from other state agencies dealing within the realm of mitigation. The State utilizes an All-Hazard Mitigation Planning (AHMP) Executive Committee as a governing device in order to organize key stakeholders and planners throughout multiple jurisdictions to facilitate the State's Hazard Mitigation Planning initiatives, including the SHMP Update for 2018. The AHMP Executive Committee provides support, advocacy, and enablement for the State Hazard Mitigation Planning Process. The main concern of the AHMP Committee is making strategic decisions concerning future realization of the State's All Hazard Mitigation Plan, to include the SHMP 2018 Update. The AHMP Executive Committee directs the strategic vision for mitigation planning, assigns technical working groups, conducts risk and consequence analysis for all hazards, and provides comprehensive statewide reviews for all programs dealing with hazard mitigation. The AHMP Executive Committee continues to develop technical working groups on an annual basis, and ensures members are updated with relevant subject matter and stakeholder experts to provide technical input into the planning process and subsequent documents. The Idaho Office of Emergency Management facilitates these working groups. The list of current Technical Working Groups is below.

- Wildfire & Drought Technical Working Group
- Flood & Severe Storms Technical Working Group (Includes Dam/Canal/Levee Failure)
- Seismic Events Technical Working Group (includes Avalanche, Earthquake, and Landslides)
- Human Caused Technical Working Group
    - <u>*A. Cyber Disruption Technical Working Group*</u>. This group was formed as a sub-group under the Human Caused TWG (formed spring 2018).
    - <u>*B. Civil Disturbance Technical Working Group*</u>. This group was formed as a sub-group under the Human Caused TWG (formed spring 2018).
    - <u>*C. Hazmat & Radiological Technical Working Group*</u>. This group was formed as a sub-group under the Human Caused TWG (formed spring 2018).
    - <u>*D. Pandemic Technical Working Group*</u>. This group was formed as a sub-group under the Human Caused TWG (formed spring 2018).

Technical working groups met once a month during the plan update timeline and meet twice annually on recurring basis. The AHMP Committee meets annually or more frequently as needed for additional planning guidance during a plan update.

To achieve the mitigation goals and objectives, there are multiple planning initiatives and coordinating structures within the state that serve this exact purpose. The state plans with and participates in several of the key coordinating structures highlighted below.

Emergency Management

The Idaho Public Information Emergency Response (PIER) Team

The Idaho Public Information Emergency Response (PIER) team was created through Idaho Executive Orders, the most recent being No. 2014-07. The PIER team was formed in 1997 and is comprised of Idaho State Agency Public Information or designated Communications professionals. The PIER Team is a public information resource of the State of Idaho. The PIER Team exists to provide the Right Information to the Right People at the Right Time during a major event or following a State Disaster Declaration. The PIER Team may be called upon or activated when the Idaho Emergency Operations Center (EOC) is activated. The group also may be available, when necessary, to provide assistance to local jurisdictions and state agencies to aid in collecting, verifying and disseminating important information to the public. PIER Team members respond to Idaho State Alert and Warning System activation requests, attend bi-monthly PIER Team meetings, participate when available in training and exercise opportunities, and provide situational awareness of PIER team activities to agency leadership when necessary. The Executive Order states that each state agency will participate in the state Public Information Emergency Response (PIER) program. Public Information Officers of each State agency are collaterally assigned to the State's PIER Team Program during emergencies and disasters. PIER Team members provide a level of public information expertise not otherwise available to state and local jurisdictions. Public Information Officers will train and exercise in coordination with IOEM. When emergencies and disasters occur, PIER Teams will be deployed, when necessary, to the EOC, Joint Information Centers, field support offices and/or local jurisdictions.

Integrated Mitigation Planning:

Most recently, the PIER Team resources were used in conjunction with public outreach for the State Hazard Mitigation Plan update through promulgating the surveys and plan input through the various State Agency social media platforms. The PIER Team serves as a valuable mitigation resource as it is a cross-section of state partners working together for effective communication to their respective agencies as well as the public.

Joint Planning and Management of Wildfire Hazard

There are several state laws, policies, and organizations, which shape the responses to wildland fires that occur in Idaho. The State Board of Land Commissioners, all the state-wide elected officials, makes the rules regarding state lands while staying within the bounds of legislated law. The Idaho Department of Lands (IDL) is an extension of the State Board of Land Commissioners (58-101, 58-119 Idaho Code) and, as such, is required to execute the functions of the State Board. Title 38 of the Idaho State Statutes is devoted to Forestry, Forest Products, and Stumpage Districts. Idaho code allows for agreement between the Idaho Department of Lands (IDL) and federal agencies for the joint exercise of powers pursuant to certain conditions (58-104 Idaho Code). Those conditions (expressed in 67-2328 Idaho Code) overlap with what the federal agencies expect as far as reaching an agreement.

The Idaho Department of Lands is an extension of the State Board of Land Commissioners and has extensive authority in its approach towards wildland fire. The department has created an extensive wildland fire attack organization throughout the state. It has the ability and authority to work with other wildfire fighting resources, in the event a fire exceeds the ability of the initial attack crew, including wildland fire resources under mutual agreements. The department cooperates with federal and local governments in developing plans for and directing actions relating to the prevention and suppression of wildland fire in the rural areas of the state. The IDL State Forester has the authority to cooperate with private and public landowners, political subdivisions, private associations, and other agencies to protect forest resources on a statewide basis. At the local level, IDL Area Supervisors and Fire Wardens are empowered to make agreements with federal, city, county and rural fire department resources regarding fire management.

Key Points of Idaho State Policy

- The Fire Warden of each IDL Fire Protection District takes action on all forest and range fires, regardless of land ownership, which jeopardize lands protected by the Department. In doing so, forest and range fires must meet the criteria as set forth in Title 38, Chapter 1, Idaho Code. (IDL, FMH-800: Fire Control Policy; page 2 part b).
- IDL cooperates with federal and local governments in developing plans for, and directing activities relating to, the prevention and control of wildland fires in the rural areas of the state. (IDL, Mobilization Guide; page 2 par. 2)
- The State Forester, under general supervision of the State Board of Land Commissioners, is responsible for the protection of State forest and rangeland and cooperates with landowners, political subdivisions, private associations, and other agencies in protecting other forest and rangeland resources. (IDL, Mobilization Guide; page 2, point A)
- Upon the request of the State Forester, the United States Forest Service and Bureau of Land Management provides assistance under terms of cooperative agreements. Area Supervisors and Fire Wardens of IDL are delegated the authority to make local agreements relating to fire control matters involving USFS and BLM and other federal firefighting resources not already covered by cooperative agreements. (IDL, Mobilization Guide; page 2, point E)
- Area Supervisors and Fire Wardens are delegated the authority to make local agreements relating to fire control matters involving city, county and rural fire department resources. Agreements affecting statewide operations are coordinated through the State Fire Coordinator. (IDL, Mobilization Guide; page 3, point F)
- IDL develops and maintains mutual aid and other cooperative agreements (in writing where possible) with local and adjacent fire suppression agencies and county emergency planning committees, such as Local Emergency Planning Committees. (IDL, Mobilization Guide; page 8, point D).

The Mobilization Guide and other IDL policies and responsibilities are based on state statutory provisions found in Title 38, Chapter 1, of the Idaho Code. A review of that portion of Idaho Code shows that all forest and range land within the State of Idaho is to be under the protection of either a State Forest Protection District or a Forest Protection Association. Idaho’s wildland fire policy has several references to the ability of the state to make agreements with federal and local government fire organizations. The statutory basis for these agreements makes them legally binding documents. The responsibility of suppressing wildland fire on state lands ultimately falls to the IDL. The federal lands that intermingle with Idaho’s state lands remain the responsibility of the federal government. However, with mutual aid agreements the IDL may support and work with the federal agencies, provided that the State’s resource needs are being met.

The approach towards wildland fire on private forestlands in the state of Idaho is also clear. Private owners are given two choices; they can belong either to a State Forest Protective District or to a Forest Protective

Association. This means that the lands are protected by the state or by a state-assisted association of trained firefighters. In the context of statutory language, “forest land” is defined as follows: any land which has upon it sufficient brush or flammable forest growth of any kind or size, living or dead, standing or down, including debris or growth following a fire or removal of forest products, to constitute a fire menace to life (including animal) or property (38-101 Idaho Code). Unfortunately, there is no mention of how a homeowner, whose property does not fit into that definition, will be treated.

Integrated Mitigation Planning:

Community Wildfire Protection Plans. Jurisdictions with community wildfire protection plans in place will be given priority for funding of hazardous fuels reduction projects under the Healthy Forests Restoration Act. Community Wildfire Protection Plans may address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection—or all of the above. All 47 counties in Idaho actively participate in a community wildfire protection plan.

County WUI/Wildfire Mitigation Plans. These plans fall under both the IDL and State Hazard Mitigation Program guidelines for wildfire mitigation. County All Hazard Mitigation Plans either have WUI Wildfire Mitigation Plans within the annexes, or address the wildfire hazard within the plan, meeting both FEMA and IDL requirements.

Fire Adapted Communities

Valley County Fire Working Group Cooperative is a collaborative organization chartered by the Valley County commissioners. Multi-agency subcommittees work on Wildland Urban Interface protection to address planning, legislation, education, workshops, and fuel reduction projects. Events include education at schools, kids fire day camp, slash pick up, community movies, and Wildfire Preparedness Day. Huge efforts are devoted to addressing and signage for rapid emergency response. The group’s goal to promote a cultural change of living with wildfire is becoming a reality.

Island Park Sustainable Fire Community developed a new multi-agency group to assist the City of Island Park with wildfire education, planning, and project coordination. Fremont County was awarded grant funds to develop the organization, educate the public, apply treatments, and implement a comprehensive strategy for a sustainable fire community. Federal, state, and local partners comprise subcommittees that are in the planning phase. The organization has extended into neighboring states. U.S. Forest Service representatives from West Yellowstone are assisting with planning efforts and the Missoula Montana Fire Lab provides risk analyses. The Island Park Sustainable Fire Community coordinates with multiple agencies, foundations, academia and the communities in the Teton Valley to focus on landscape-scale fire management and resiliency for the greater Yellowstone ecosystem. They have been designated a Fire Adapted Community. Partners perform fuel reduction projects, wildfire outreach events, stream modeling and restoration, wetland enhancement, and slash removal. The group provides assistance to develop fuels mitigation and evacuation plans; fire simulations demonstrating neighborhood risk; and free home evaluations to assess vegetation types and condition, topography impacts to fire behavior, and structures. Wildfire Awareness Days affords hands-on fire extinguisher training, bear safety, games, meeting with Smoky the Bear and local firefighters, free food, presentations from forest experts, and informational booths.

Ada Fire Adapted Communities has the primary goal to educate and prepare their community to live with wildfire. The area is one of the most fire prone in the western United States. The group includes residents, business owners, community leaders and federal and state agencies. Workshops, goat grazing, fuel reduction, fire rehabilitation, Ready Set Go bags and materials, and providing a roaming chipper are a sampling of the group's efforts. The organization supports 6 Firewise communities and assisted with integration of the County Wildfire Protection Plan into the Ada County All Hazards Mitigation Plan.

***Wildfire All Hazards Mitigation Planning*.** IDL participates and is an active member on the State Hazard Mitigation Planning Executive Committee, and IOEM participates on the Idaho Lands Resource Coordinating Council, in mutual support of each agency's planning entities. IDL approached IOEM and proposed AHMP/ community wildfire protection plan integration. A joint review of requirements for each of the plans revealed that over 90% of the requirements were the same. The Local Review Tool for mitigation plans was utilized as the base, and then IDL's requirements were added to section F. A memorandum of understanding was completed and signed by both agency directors. The IDL/IOEM wildfire mitigation planning partnership is critical to integrating efforts, resources, and policies.

Flood Control District Mitigation

Flood Control Districts provide control of rivers, streams, their tributaries, and related structures within the district boundaries in order to protect life and property from flooding. Funded by local taxes and with authority from Idaho Code § 42-3115, the flood control district board of directors accomplishes this goal through various projects, such as removing debris from waterways, repairing and stabilizing stream banks, and constructing and maintaining structural works. A flood control district also has the authority to declare a flooding emergency and help fight floods. Idaho Code Title 42 Chapter 31 further describes the purpose, establishment, and authority of flood control districts. There are 18 active flood control districts in the state.

Threat Hazard Identification and Risk Assessment (THIRA)

The Threat and Hazard Identification and Risk Assessment (THIRA) is a tool that allows the State to understand its threats and hazards and how the impacts may vary according to the time of occurrence, season, location, and other factors. This knowledge can then help the State to establish informed and defensible capability targets. The THIRA is part of the strategic planning process that the Idaho Office of Emergency Management (IOEM) completes each year and is updated and reviewed annually. At the most basic level the THIRA walks a jurisdiction through the process of:

- Identifying threats and hazards of concerns
- Giving the threats and hazards context
- Establishing capability targets
- Applying the results

The first step, identifying threats and hazards of concerns, is where the IOEM Plans section works closely with the Mitigation section, as well as local jurisdiction prioritization and subject matter experts. The goal is to come up with the top – most likely to happen, and highest impact – events to test the State's capabilities. The three required hazard elements are: a natural hazard, a technological hazard, and a human- caused hazard event. The second step, giving the threats and hazards context, is where IOEM takes the identified threats—for example, fires, dam failures, and a cyber-events—and gives them each a background story for probable occurrence. The conditions are outlined, including time and location, under which the threat or hazard might occur. The third step, establishing capability targets, uses the context descriptions to assess each threat and hazard in context and develop a specific capability target for each of the 32 core capabilities identified in the National Preparedness goal. The capability target defines what it would take for the community to successfully meet the challenge of the threat. As a part of this step, communities can also begin to identify preparedness and mitigation activities to reduce future resource requirements.

The final step, applying the results, is creating a list of resources needed to successfully manage the risk. Communities can also create resource requirements to support resource allocation decisions, operations planning, and mitigation activities. Communities should consider activities that will reduce their need for extra resources in the future.

IOEM collaborates with the THIRA and All Hazards Mitigation planning processes to look at the historical occurrence of disasters, the likelihood, and the impact. Local jurisdictions give their input, as well as subject matter experts from across various agencies, public and private. IOEM continues the collaborative and integrated planning through developing a gap analysis based on the results of the THIRA processes. The gap analysis takes a look at where the State as a whole would like to be, and where the State currently is, and then uses that information to drive multiple strategic planning, mitigation planning, and preparedness cycle efforts. The gap analysis is further collaborated for grant allocation as well as training and exercise to try and close some of the identified gaps. Idaho’s THIRA is UNCLASSIFIED FOR OFFICIAL USE ONLY (U/FOUO). It contains information that may be exempt from public release under the Freedom of Information Act (5 U.S.C. 552). It is to be controlled, stored, handled, transmitted, distributed, and disposed of in accordance with Idaho IOEM policy relating to FOUO information and is not to be released to the public or other personnel who do not have a valid “need-to-know” without prior approval of an authorized Idaho Office of Emergency Management Official. Below is the introduction of the State’s 2017 THIRA:

The Idaho 2017 Threat and Hazard Identification and Risk Assessment (THIRA) was developed to support preparedness cycle activities within the Idaho Office of Emergency Management (IOEM) and the State of Idaho. Idaho’s THIRA presents an analysis of the State’s capability to address the most-probable, worst-case threat/hazard scenarios across each of the five homeland security mission areas: prevention, protection, mitigation, response, and recovery. The framework created in this document should assist in future preparedness activities encompassing public and private sector stakeholders for a whole community approach to preparedness planning.

This document describes the four steps used to develop the State of Idaho THIRA. The following six scenarios were used to guide the THIRA process: Northern Idaho wildfires with wildland urban interface, Southern Idaho foreign animal disease outbreak, Eastern Idaho flooding with Palisades Dam release, Eastern Idaho 7.0 earthquake, terrorist threat to Lucky Peak Dam, and a Cybersecurity Attack on state information technology systems. These six scenarios were used to examine 32 core capabilities across five mission areas to identify estimated impacts and desired outcomes. That data, along with the all-hazard capability targets for each core capability developed from it, were reviewed and updated. The capability targets will be used to inform gap analysis, prioritization, and strategic planning efforts for grant funding and programs at the state and sub-grantee levels.

The State of Idaho has fully embraced the THIRA process and has developed a strategic implementation plan to ensure the THIRA is used to the fullest extent possible within the preparedness cycle. The Idaho THIRA will be used to inform the budget, prioritization, and focus of programs to ensure whole community perspective as we seek to increase capability and community resiliency throughout the state. Looking forward to 2018, a major revision to the Idaho THIRA is planned.

Economic and Land Use Development

Idaho Lands Resource Coordinating Council (ILRCC)

The ILRCC is responsible for implementing and updating Idaho's Forest Action Plan. The group represents federal, state, academic, business, and private individuals. It is a unique collaborative effort to strategically address several State & Forestry Programs, pre-approve project proposals, and incorporate the West-wide Implementation Strategy developed for the National Cohesive Strategy. Members participated in the fire technical advisory group for the update of this State of Idaho Hazard Mitigation Plan.

Silver Jackets Program through the Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) provides vital public engineering services in peace and war to strengthen the Nation's security, energize the economy, and reduce risks from disasters. USACE's Silver Jackets Teams bring together multiple state, federal, and sometimes tribal and local agencies to learn from one another and apply their knowledge to reduce the risk of flooding and other natural disasters in the United States and enhance response and recovery efforts when such events do occur (http://silverjackets.nfrmp.us/Home/About-The-Silver-Jackets-Program). The State of Idaho IOEM as well as other agencies are participating members of the Silver Jackets Team for the Walla Walla District encompassing that majority of the State of Idaho. Additional agencies typically represented at Silver Jackets meetings are: Idaho Department of Lands, Idaho Transportation Department, Idaho Geological Survey, Idaho Department of Water Resources, Idaho Department of Commerce, as well as the Federal Emergency Management Agency, U.S. Department of Agriculture – Natural Resources Conservation Service, U.S. Bureau of Reclamation, and the National Oceanic and Atmospheric Administration/National Weather Service.

Integrated Mitigation Planning: An initiative within the Silver Jackets Team is planning integration to look at upcoming seasonal hazards on a quarterly basis and facilitate the multi-agency proactive planning and mitigation measures for the upcoming quarter. This is to better forecast hazards, mitigation measures, and implement programs and mutual assistance ahead of the disaster. Each agency representative talks through their specific agency initiatives for the upcoming hazard season, and coordination is done at that time between agencies if needed.

Idaho Silver Jackets Interagency Project Example: Post-wildfire Flood Risk Mitigation Coordination, Blaine and Elmore Counties, Idaho – The Idaho Silver Jackets team worked with seven federal, six state, and several local agencies to assess and mitigate the increased flood risk associated with severe wildfires. Hydrologic peak flood flows in burned watersheds increased significantly above pre-burn conditions, and unstable burned soils substantially increased debris flow risks. USACE, U.S. Forest Service, Bureau of Land Management, USGS, NRCS and NWS shared data obtained through modeled analyses and site investigations to assess flood risk and debris flow hazards and to make mitigation recommendations. State agencies and FEMA assisted with compiling key information and conducting outreach with the local communities. Outcomes included installation of an early warning precipitation network, reseeding efforts in high-risk tributaries, and updated emergency action plans to respond to and prepare for the increased flood risk. USACE contributed to the coordinated effort using resources associated with its Emergency Preparedness, Response and Recovery Program.
(https://silverjackets.nfrmp.us/Resources/Silver-Jackets-Newsletter/The-Buzz-August-2014/USACE)

Additional projects the Silver Jackets Team through USACE has underway at the time of plan writing are:

- Blaine County, Big Wood River: Flood plain management study, eco-system restoration, stream bank protection, flood damage reduction.
- City of Salmon, Lemhi County, Salmon River: Stream bank protection, flood plain management study.
- Lemhi County, Salmon River: Eco-system restoration.
- Stanley, ID: Flood plain management study, Salmon River
- Shoshone-Bannock Tribe: Land management study, may expand to flood plain management.
- Nez Perce Tribe: Eco-system restoration, side drainages into the Clearwater River.

More funding opportunities through USACE are listed in Chapter 4.

Northwestern Regional Floodplain Management Association Idaho Chapter

The Northwestern Regional Floodplain Management Association Idaho Chapter was organized after consensus during the 2012 conference held in Boise. Annual conferences are held to educate floodplain administrators, building officials, planners, emergency managers, stormwater managers, surveyors, engineers, and public works personnel on changing landscapes with rivers and floodplains, policies, and technology. The group supports multi-disciplinary programs to promote floodplain and watershed management.

RiskMAP

Idaho currently fully embraces FEMA's ongoing RiskMAP program, which is an in depth, 5-year process to fully understand multi-hazard risk. The Risk Report provides non-regulatory information to help jurisdictions and stakeholders better understand their risk. This improved risk understanding can then aid in improved communication of those risks to local businesses and citizens, with the end goal of driving mitigation actions to reduce that risk. See Chapter 3.2. for a detailed overview of the RiskMAP process.

Idaho Flood Alert and Monitoring Network

The U.S. Geological Survey (USGS) manages a large network of stream gages throughout the region that are commonly used to monitor flooding on major rivers and streams. In Idaho, the number of stream gages has increased over the years to more than 240 in 2017, some with discharge records covering more than 100 years. From 2010 to 2017, 45 Idaho stream gages experienced "peaks of record", documenting the highest recorded flow in those gages' periods of record. Eight of the peaks of record occurred in 2017. With the objectives of managing the risk and impacts from flooding, multiple agencies have pursued a range of different projects: the U.S. Army Corps of Engineers (USACE) (dams and levee systems near population centers), the Bureau of Reclamation (BOR) (dams used for irrigation), and local and state agencies (flood inundation mapping, city zoning and planning). All of these projects attempt to mitigate the effects of flooding on populations in the Northwest by increasing the effectiveness and timeliness of response, reducing impact, and assisting communities in planning future developments. These projects have a common need: data, usually more than what existing data collection networks can provide. The more data available, the more effective and accurate these projects can be, directly resulting in a decrease in loss of property and life associated with flooding emergencies. A more robust data collection network is needed, one that provides the data when and where they are needed, a network that is mobile and that can be configured and focused to address the unique data needs required to address a variety of flooding situations and emergencies. This project will establish a Flood Alert and Monitoring Network in Idaho. The existing USGS stream gage network will be updated and supplemented with a Rapid Deployment Gage network at selected sites throughout Idaho. In addition, network linked cameras will be installed at select sites. Web resource tools will be developed to make all real-time data available to emergency management personnel. Management of this network would be accomplished by the Idaho Silver Jackets, a statewide organization involving many of the public, federal, state and local entities focused on mitigating the impact from flooding and other natural hazards.

Housing

National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a federal program enabling property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an insurance alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods. The NFIP data is also a useful tool to determine areas vulnerable to flood and severe storm hazards for each jurisdiction. For more information about NFIP in Idaho, see Chapter 3.2.

Community Rating System

The NFIP's Community Rating System (CRS) recognizes community efforts beyond the minimum federal standards by reducing premiums for the community's property owners. The CRS is similar to, but separate from, the private insurance industry's programs that grade communities on the effectiveness of their fire suppression and building code enforcement. For more information about CRS in Idaho, see Chapter 3.2.

Idaho Long Term Recovery Plan

Long Term Recovery (LTR) is the phase of recovery that may continue for months or years after a disaster and addresses complete redevelopment and revitalization of the impacted area, rebuilding or relocating damaged or destroyed social, economic, natural and built environments and a move to self-sufficiency, sustainability and resilience. The Idaho LTR Plan is created by the IOEM Plans Section and is intended to be used as a companion document to the Idaho Emergency Operations Plan for a seamless transition from response operations to recovery operations. The Idaho LTR is modeled after the National Disaster Recovery Framework and is organized into six Recovery Support Functions (RSF) including Economic Recovery, Health and Social Services, Housing, Community Planning, Natural and Cultural Resources, and Infrastructure Systems. The housing function assists jurisdictions in assessing initial impacts to housing, post-disaster need for housing, and identification of available temporary and long-term housing options. This planning is integrated into all facets of IOEM.

Health and Social Services

Idaho One Health Coalition

One Health recognizes that the health of people is connected to the health of animals and the environment. It is a collaborative, multisectoral, and trans-disciplinary approach—working at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment. One Health is not a new concept, but it has become more important in recent years. This is because many factors have changed interactions between people, animals, and our environment. These changes have led to the emergence and reemergence of many diseases. Successful public health interventions require the cooperation of human, animal, and environmental health communities. By promoting this collaboration, optimal health outcomes are achieved for both people and animals. In September of

2015, the Idaho One Health Consortium was established to examine One Health issues in the State. The consortium consists of various federal, state, and local agencies and organizations throughout Idaho and focuses on education, global issues affecting Idaho, and historic problematic areas within Idaho.

Idaho Inclusive Emergency Coalition

The Idaho State Independent Living Council's mission is to promote the independent living philosophy for all Idahoans with disabilities: choice, self-determination and access for all. The Council is actively engaged in activities that assist in providing Idahoans with disabilities a greater voice in obtaining services that are consumer-responsive, cost-effective and community-based. Disability inclusion is built into all aspects of emergency management to include access and functional needs (2017-19 as indicated in the approved State Plan for Independent Living). The State Plan for Independent Living includes strategic goals and actions to continue to build on established partnerships with state emergency management, increase involvement in state emergency management and provide disability related input, and promote independent living participation in local and state emergency planning, preparedness, and response activities. The Idaho Inclusive Emergency Coalition is a workgroup of stakeholders, individuals with disabilities and organizations who work in the emergency management field committed to providing tangible results to inclusive emergency practices in the State of Idaho. The coalition meets on a monthly basis.

Infrastructure

Idaho Annual Cybersecurity Interdependencies Summit

IOEM hosts an annual one-day summit that addresses growing challenges of cybersecurity and their impacts on overall economic and physical security. In the face of continuing risks, networking and action are needed to address critical regional infrastructure interdependencies. This event is part of a continuing series, building public-private partnerships and advancing Idaho's resilience to cyber threats. Critical infrastructure owners/operators; major employers; small business representatives; cybersecurity directors and managers, and affiliated IT support staff; security and law enforcement; business continuity professionals; executive leadership, HR, and legal; and all private and public sector cyber security stakeholders are invited and encouraged to attend.

National Dam Safety Program

Idaho's Dam Safety Program oversees the regulation and safety of dams and reservoirs throughout the State in order to protect the health, safety, and welfare of its citizens and their property. This program is required to ensure proper planning, design review, construction oversight, and inspection of regulated dams and reservoirs. The Department currently regulates nearly 600 water storage dams and more than 20 mine tailings impoundment structures located throughout the State. Dam Safety Program personnel regularly inspect existing projects according to the potential consequences that the dam's failure would present to downstream life and property. For more information about Idaho's Dam Safety Program, see Chapter 3.2.

IOEM Critical Infrastructure and Key Resources Program

IOEM's Critical Infrastructure and Key Resources (CI-KR) program partners with federal, state, local, tribal, non-governmental, and private entities in order to assess, catalogue, inspect, and protect key and critical infrastructure throughout the state. This program is in partnership with the National Infrastructure Protection Plan. Critical infrastructure is defined as the physical and cyber systems and assets so vital to the local, state, and federal government that their incapacity or destruction would have a debilitating impact on the physical or economic security or public health or safety of local government, the State of Idaho, or the United States.

Natural and Cultural Resources

State Historic Preservation Office Integrated Planning

Idaho's historic, archaeological, and cultural resources represent the physical and tangible manifestations of the State's history; they reflect who we were, where we came from, where we are now, and help shape our outlook for the future. By protecting, preserving, and understanding these important resources, we can understand the past, the present, and the future, not as separate events or periods, but as an ongoing narrative. The Idaho Historic Preservation Plan establishes the priorities and goals for the historic preservation community throughout the State of Idaho. This community includes individuals and organizations on all levels and of all types, not just the State Historic Preservation Office – it includes Tribes, nonprofit organizations, private firms, other government agencies, historic preservation commissions, owners of historic properties, and individuals. The purpose of the Idaho Historic Preservation Plan is to help ensure that all of these dedicated and passionate preservationists are better able to carry out the work necessary to try and bring the Plan's vision to reality. During the 2016-2022 planning cycle, the State Historic Preservation Office will be working with various federal, state, and municipal partners to define and develop appropriate, proactive disaster preparedness plans to help ensure the protection of historic and archaeological resources statewide.

In terms of enhanced state mitigation planning, integrated planning means embedding mitigation in other state planning, decision making, and development, as well as enabling other agency planning initiatives to inform the state's mitigation strategy. No single agency can be solely responsible for mitigation across all community sectors, but collaboration among stakeholders with the authority, interest, and expertise to implement mitigation measures enables the leveraging of resources to reduce risk and increase resilience.

STATE MITIGATION CAPABILITIES

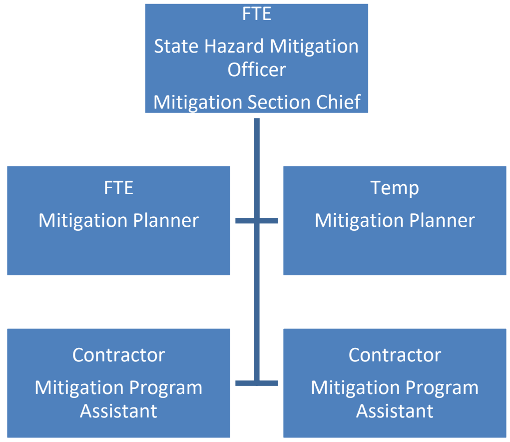
States with enhanced state mitigation plans are able to demonstrate successfully implemented programs or projects that reduce exposure to hazards or other mechanisms that show the state has exceeded the requirements of the standard plan. Where the state standard mitigation plan requires the evaluation of capabilities, enhanced states can demonstrate a comprehensive approach to reducing losses of life and property by lessening the impact of disasters through development, implementation, and coordination of a variety of capabilities.

Comprehensive Mitigation Program Commitment

The State of Idaho demonstrates a commitment to a comprehensive mitigation program. From staffing to inclusive planning and integration across all agencies within the state, mitigation is the key foundation to a resilient Idaho.

IOEM Staffing

The IOEM Mitigation section has grown considerably since the 2013 plan submission. The section added one full time program assistant and another mitigation planner. The current Mitigation Staffing is depicted below:



Targeted and Coordinated Risk Reduction

The State Hazard Mitigation Program targets risk reduction for each of the identified hazards in the state. As seen in the mitigation action items charts in Chapter 1 (Tables 1.D – 1.F), there are a wide array of mitigation action items covering both natural and man-made hazards. The Technical Working Groups (TWG) consisting of various agencies and sectors across the state generated the mitigation action items based on new initiatives from those agencies with their respective mitigation capabilities and resources. Additionally, at the end of each hazard sub-chapter (Chapter 3), a separate, specific mitigation rational and mitigation approach is covered to list those mitigation programs and initiatives that are currently in use. This was done through the comprehensive review and update process, through the use of TWG subject matter experts, and agency representatives, and was coordinated and integrated to increase statewide resilience from the adverse impacts of future hazard events.

Furthermore, funding, technical assistance, and codes and ordinances are other activities throughout the state that reduce risks. These can be found in Chapter 4.

Eligibility Criteria for Mitigation Action Items

Chapter 1 describes in detail the ranking and benefit cost analysis process the state utilizes to establish eligibility criteria, including the process used to prioritize between funding programs, jurisdictions, and proposals that address different or multiple hazards.

Ranking and Implementation Strategy for Mitigation Action Items

The state assesses the effectiveness of mitigation actions and uses the results to inform the mitigation strategy. Mitigation Action Items are implemented through state agencies utilizing the guidelines below:

- Identify parties, define responsibilities, and confirm partners.
- Identify resources to implement the actions. Resources include funding, technical assistance, and materials and prepare a preliminary cost estimate or budget, broken out by task, for each of the actions.
- Define the time frame for implementing the actions.

The Technical Working Group responsible for each action item for the 2018 Plan update completed the action item cross walk (Table 1.F located in Chapter 1) for identified lead and support agencies, possible funding sources, and evaluating criteria. The Executive Committee further refined the decision on responsible party or parties and funding resources. Each Technical Working Group under the direction of the AHMP Executive Committee will then continue to monitor progress and further develop the action items using the below implementation strategy tool. The strategy is detailed below in Table 5.A. The top 10 mitigation action items were further detailed as to the implementation ideas for each of them are detailed in Table 5.B below.

Table 5.A. Mitigation Action Item Implementation Strategy Tool

Responsible Parties		Resources and Materials		Timeframe
Identify Parties and define responsibilities	Confirm partners	Identify resources to implement the action	List materials needed	Define the timeframe for implementing the actions
Process		**Process**		**Process**
Define the roles of the lead and support agencies and/or organizations	Contact partners necessary for implementation	Prepare a budget and consult various resources to identify funding and technical assistance	Develop a list of all materials necessary for implementation	Discuss the timeframe for carrying out each action
Result		**Result**		**Result**
Identification of lead and support agencies and organizations, and a listing of their roles and responsibilities	Confirmed commitments from agencies and organizations that will perform specific tasks	Development of a budget, broken out by task, to implement the action and a listing of funding and technical assistance	A listing of necessary materials that are available and those that must be purchased to implement the action	An agreed upon timeframe for carrying out the actions

Source: FEMA State and Local Mitigation Planning How-To Guide: Developing the Mitigation Plan

Table 5.B. Top Ten 2018 Mitigation Action Item Implementation Strategy Ideas

Action Item	Implementation Ideas
Statewide hazard fuels reduction.	IDL is the lead agency. This is an existing annual program; however, there are not enough resources to cover all of the requirements. This is a possibility of expanding and increasing the resources for the program based on funding.
Conduct engineering study to identify and replace undersized and damaged culverts and bridges throughout the state.	ITD is the lead agency for this and has started the planning process already.
Create all hazards publications for public education.	IOEM would be the lead agency, through the mitigation section.
Update Idaho Multi-Hazard Risk Portfolio.	IOEM RiskMAP will take the lead, anticipated update to begin in 2019 pending budget allocation.
Flood Alert Monitor Network Stream Gage Sensor Project.	This Silver Jackets project has been proposed. USACE and IOEM have provided letters of support to the USGS.

Action Item	Implementation Ideas
Northern Idaho seismic assessment, outreach, and replacement to include: hazard analysis of rail shipping Crude Oil, Coal, and other Petroleum Products; property inventory and seismic inspection; update of building codes; earthquake awareness and education; development of multi-state groups, joint exercises between Washington/Idaho, and replacing/improving RR highway crossings, bridges, high risk areas.	This would be a multi-agency project and was proposed by IGS.
Shakecast computer modeling after an earthquake event to determine the highest **likelihood of infrastructure that is damaged from the epicenter.**	This is a new ITD project to span the course of the next five years.
Exercise Rapid Visual Assessment Teams.	IOEM would take the lead on this and expand the program from team training to utilizing the team as a part of the 2019 full-scale exercise.
Produce digital inundation maps with depth grids for HAZUS vulnerability and loss analysis for major dams within the state.	IOEM has digitized ten of these maps and through the GIS department will continue working on digitizing the remaining maps.
Idaho Earthquake Fact Sheet.	This project is almost complete. The work was provided by EERI and the Seismic TWG assisted and reviewed. Funding was provided through NEHRP.

Mitigation Program Goal Achievement

Idaho effectively utilizes existing state programs to achieve mitigation goals.

Continued Program Development

Many of the mitigation action items depicted in the 2010 as well as 2013 State Hazard Mitigation Plans were completed yet maintained by each agency responsible and any supporting agency partners as an ongoing mitigation program. Table 5.C below depicts these action items.

Table 5.C. Mitigation Action Item Enduring Programs, Policies, and Procedures

ID	Action	Responsible Agencies L—Lead S—Support	Completion of Action Item and Now Ongoing Mitigation Program	Responsible Agency for Program / Policy
2010-02	Recruit participation for hazard working groups from ISDO, Risk Management, and ITD	IOEM (L)	Completed. IOEM recruited participation from numerous agencies and was able to form 4 Technical Advisory Committees. Ongoing. Continue to improve and expand participation.	IOEM
2010-03	Create a working group to oversee data sharing, database construction, and maintenance (HAZUS input datasets)	Idaho Spatial Data Officer (L) IDWR, IOEM (S)	Complete and Ongoing. Continuing to work with IDWR towards improving the HAZUS database.	IOEM GIS / IDWR
2010-04	Develop and deliver 2 workshops every other year in different parts of the State for local officials on low impact development, No Adverse Impact, etc. and how to implement these activities	IDWR (L) Consultant (S)	Completed. Workshops held in various areas around state; continuing program.	IOEM

ID	Action	Responsible Agencies L—Lead S—Support	Completion of Action Item and Now Ongoing Mitigation Program	Responsible Agency for Program / Policy
2010-05	Develop and execute an expansion of the ICRMP project (currently piloting 10 DFIRM counties)	IDWR (L)	Complete and Ongoing. Continuing to work with IDWR towards improving the ICRMP database.	IOEM
2010-06	Expand statewide flood awareness week to include school activities, promote community activities, and look at all flooding sources.	Silver Jackets (L) Project WET (S)	Completed. Enduring Program.	Silver Jackets
2010-08	In order to improve analysis of flood, landslide, seismic and wildfire hazards, obtain new or compile existing LIDAR data for populated areas of Idaho	IOEM (L) IGS, USGS, FEMA, FS, IDWR, (S)	Complete and Ongoing. LiDAR data collections have occurred in numerous areas throughout the state. Continuing to work to improve datasets.	IOEM
2010-09	Produce liquefaction susceptibility maps for populated areas	IGS (L)	Complete and Ongoing. Studies, data and final reports completed for Teton and Pocatello areas. Studies are ongoing around the state.	IGS
2010-14	Develop and maintain statewide inventory of State and county facilities and infrastructure with an isolated server	IOEM (L), ICRMP	Complete and Ongoing. Collection of facility and infrastructure underway, continuing updates.	IOEM
2010-16	Conduct outreach activities to better inform local jurisdictions regarding protection of critical infrastructure	IOEM (L)	Complete and Ongoing. Now a program within IOEM, continuing improvements.	IOEM
2013-02	Establishment of Rangeland Fire Protection Associations	IDL (L) BLM, State Fire Marshal's Office, Governor's Office (S)	Complete and Ongoing. Now a program within IDL, continuing improvements.	IDL
2013-03	Guberif 5% Education Initiative	Idaho Firewise (L) IOEM, IDL (S)	Complete and Ongoing. Enduring initiative.	Idaho Firewise
2013-07	Annual ACT-20 and BCA training	IOEM (L)	Complete and Ongoing. Enduring initiative.	IOEM
2013-08	Develop a catalog of hazard threat planning scenarios	IOEM, IDWR, IGS, IDL	Complete and Ongoing. Enduring initiative.	IOEM
2013-09	Annual review of policies and Executive Orders to promote mitigation activities	IOEM (L)	Complete and Ongoing. Enduring initiative.	IOEM
2013-12	Create a repository and clearing house of risk assessment data in accordance with ID Code 67-5745C (3).	Dept. of Admin (L) Information Technology Resource Management Council, IOEM, IDWR (S)	Complete and Ongoing. Enduring initiative.	Dept. of Admin

Staffing and Training

In order to continue increasing and enhancing the mitigation program in the state, the IOEM Mitigation Section continually assessed the capability against the needs. The program self-identified the need for increased staff to continue to provide support and assistance in order to meet the growing mitigation needs in Idaho. One temporary mitigation planner and one contractor program assistant were added since the 2013 plan update.

The training of the mitigation section staff continues to develop to meet the evolving needs as well. The State Hazard Mitigation Officer maintains Floodplain Manager certification and the Mitigation Planner is taking training to certify as well. Hiring practices align with the IOEM State Strategic Plan to hire competent individuals, and training opportunities for growth, learning, and continued education are afforded to the mitigation staff in order to continue to meet the needs of the state. Mitigation staff also attend industry training, conferences, and workshops in order to maintain proficiency and be up to date on federal guidance and regulations.

Technical Assistance to Jurisdictions

The IOEM Mitigation Section continues to grow the technical assistance program to provide jurisdictions with training, information, and general overall technical assistance in their programs for an overall more robust State Hazard Mitigation Program. Several technical assistance areas were developed and provided over the course of the planning period since 2013.

Benefit Cost Analysis (BCA) Training. Mitigation Planners and Program Assistants provided both in person and in conference training on how to complete a BCA, which is a required element of a mitigation project submission. The staff also aided jurisdictions in reviewing and providing feedback on BCAs submitted.

Project Assistance. Mitigation staff fielded questions regarding projects to include qualification requirements and application development.

Grant Training and Assistance. Mitigation staff provided training and assistance as well as fielded questions regarding the application process and general grants information. In addition, the SHMO, in coordination with the Federal Hazard Mitigation Officer, may identify and encourage appropriate HMGP projects through the following processes:

Reviewing unfunded HMA grant applications from prior declared disasters, activities, or state priorities.

Reviewing existing HMA mitigation reports, RiskMAP products, and local hazard mitigation plans from declared jurisdictions.

Briefing Preliminary Damage Assessment survey teams on the HMGP and enlisting their help in identifying potential mitigation projects and issues.

Briefing the Public Assistance Project Worksheet Teams that will complete inspections of damaged facilities so that they may identify HMGP projects.

Activating the State Hazard Mitigation Team to evaluate the hazards, make recommendations, and identify potential HMGP projects as requested by the GAR.

Webinar Development and Presentation. Webinars for various training purposes were developed to enable cost effective training for jurisdictions while alleviating travel requirements for mitigation staff. These webinars included topics on BCA Tool use, Damage Frequency Assessments, Hazard Mitigation Assistance Programs (including the Pre-Disaster Mitigation Program and Flood Mitigation Assistance Grant Program), as well as project guidelines and requirements, scope of work, cost estimates, potential future losses, and mitigation alternatives.

Table 5.D below shows the type of technical assistance provided to each jurisdiction throughout the 2013-2018 mitigation planning cycle.

Table 5.D. State Technical Assistance to Jurisdictions

Jurisdiction	BCA Assistance and / or Training	Project Assistance	Grant Training	Hazard Mitigation Plan Assistance
Ada County	√	√	√	√
Adams County	√	√	√	√
Bannock County	√	√	√	√
Bear Lake County	√	√	√	√
Benewah County	√	√	√	√
Bingham County	√	√	√	√
Blaine County	√	√	√	√
Boise County	√	√	√	√
Bonner County	√	√	√	√
Bonneville County	√	√	√	√
Boundary County	√	√	√	√
Butte County	√	√	√	√
Camas County	√	√	√	√
Canyon County	√	√	√	√
Caribou County	√	√	√	√
Cassia County	√	√	√	√
Clark County	√	√	√	√
Coeur d'Alene Tribe	√	√	√	√
Clearwater County	√	√	√	√
Custer County	√	√	√	√
Elmore County	√	√	√	√
Franklin County	√	√	√	√
Fremont County	√	√	√	√
Gem County	√	√	√	√
Gooding County	√	√	√	√
Idaho County	√	√	√	√
Jefferson County	√	√	√	√
Jerome County	√	√	√	√
Kootenai County	√	√	√	√
Kootenai Tribe	√	√	√	√
Latah County	√	√	√	√
Lemhi County	√	√	√	√
Lewis County	√	√	√	√
Lincoln County	√	√	√	√
Madison County	√	√	√	√
Minidoka County	√	√	√	√
Nez Perce County	√	√	√	√
Nez Perce Tribe	√	√	√	√
Oneida County	√	√	√	√
Owyhee County	√	√	√	√
Payette County	√	√	√	√
Power County	√	√	√	√
Sho-Ban Tribe	√	√	√	√

Jurisdiction	BCA Assistance and / or Training	Project Assistance	Grant Training	Hazard Mitigation Plan Assistance
Shoshone County	√	√	√	√
Teton County	√	√	√	√
Twin Falls County	√	√	√	√
Valley County	√	√	√	√
Washington County	√	√	√	√

Source: IOEM Mitigation Section

Funding Utilization

The State of Idaho has fully made use of the funding available through the FEMA assistance programs (PA C-G, HMGP, PDM, and FMA). The 2018 FEMA Unified HMA grant cycle, normally initiated in June 2017, has yet to be announced at the writing of this plan. It appears that current funding appropriated for Pre-Disaster Mitigation (PDM) Grant Program has been significantly increased and it is likely that mitigation awards will grow in 2018. Flood Mitigation Assistance (FMA) grants merge the Repetitive Flood Claims (RFC) and Severe Repetitive Loss funding, and it appears that funding from these programs for Idaho may be nominal based on the low number of properties which qualify as repetitive loss or significant repetitive loss properties. However, the State does highly encourage those jurisdictions that have properties in this category to apply and will continue in its efforts to educate on the benefits of mitigating these types or properties. IOEM anticipates discussion regarding mitigation and response at both the State and Federal levels to be an ongoing topic. State and local jurisdictions bear the responsibility of mitigation plan revisions, regular plan maintenance, and implementation of prescribed mitigation actions.

Table 5.E below details the appropriation of FEMA hazard mitigation funds across the State. Mitigation funds are primarily going to the most significant hazards: flood and wildfire. Earthquake mitigation projects were also funded for soil liquefaction and NEHRP mapping, a school seismic assessment pilot project for seven school districts throughout the state and detailed results were provided per structure to the schools. Rapid visual assessments were also completed for thirteen county EOCs and their top three Critical Infrastructure and Key Resources (CIKR) facilities. This funding is consistent with the types of hazards declared in the past and those receiving the most attention in this Plan. Since 2013, ~85% of funding has gone towards mitigation projects and 15% towards mitigation planning.

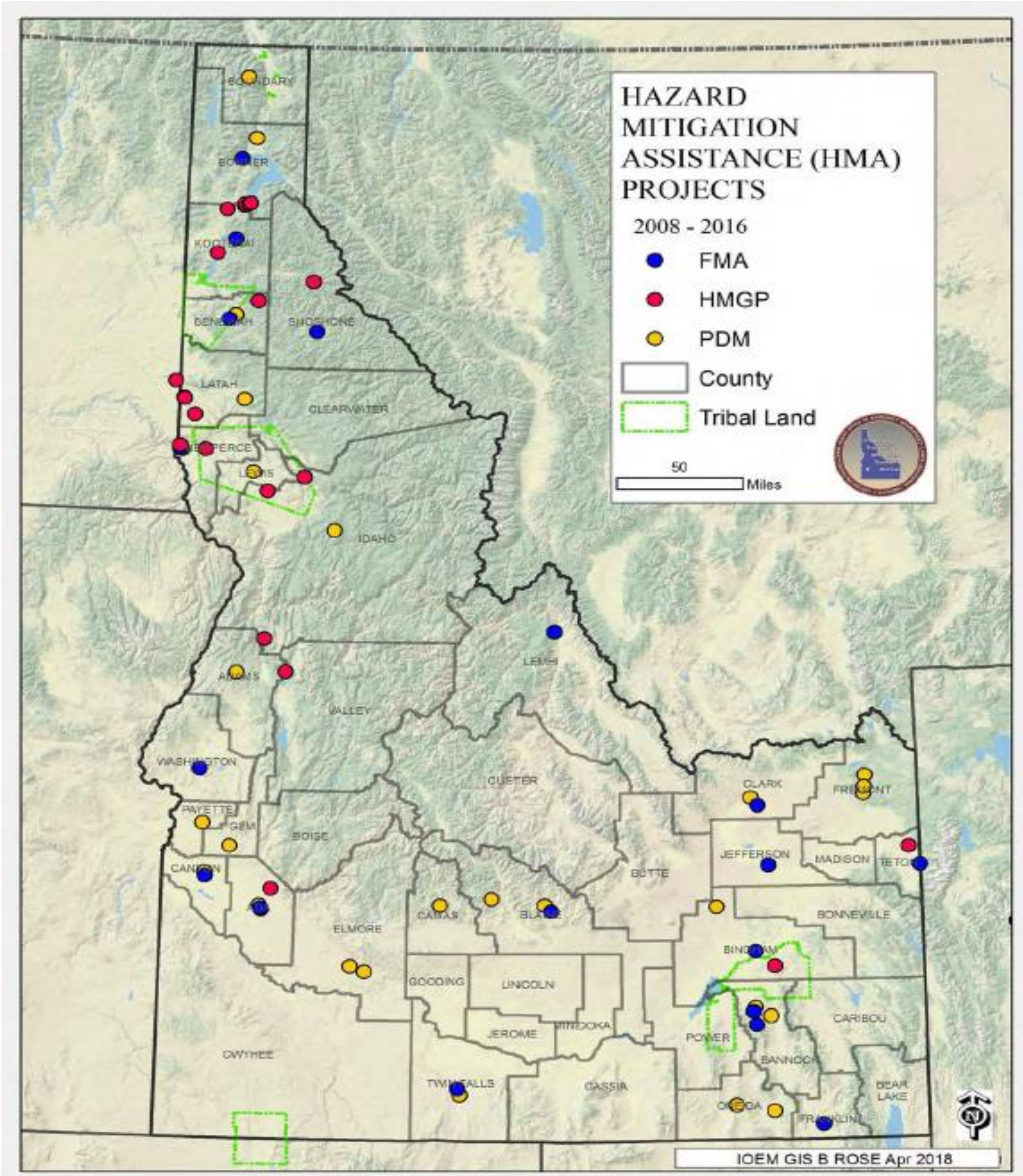
Typically, HMGP Applications are submitted for more funding than is available in the event that projects are withdrawn as was the case in the FMAG-HMGP Pilot. Both Nez Perce Tribe and Clearwater County chose to withdraw due to extended FEMA Environmental Planning and Historic Preservation review times and loss of project partnerships. Kootenai County also could not take full advantage of the FMAG-HMGP Pilot due to staff family emergency and staff changes. The FMAG-HMGP funding was limited to affected jurisdictions and funding could not be used outside of the fire boundaries. Consistent with the Public Assistance Program, the HMA mitigation management funds are used as frugally as possible and used only as needed for technical assistance and monitoring to ensure grant compliance. There are cost underruns from time to time due to project location requiring less travel or travel coordination with other programs resulting in savings.

Table 5.E. Summary of Mitigation Subawards							
Year	**Grant**	**Project**	**Jurisdiction**	**Total Award**	**Plan**	**Project**	**Hazard**
2013	PDM	Comprehensive update to the Blaine County All-Hazards Mitigation Plan	Blaine County	$25,185.00	$25,185.00		All-hazard
2013	PDM	Comprehensive update to the Fremont County All-Hazards Mitigation Plan	Fremont County	$20,555.00	$20,555.00		All-hazard
2013	PDM	Comprehensive update to the Idaho County All-Hazards Mitigation Plan	Idaho County	$29,872.50	$29,872.50		All-hazard
2013	PDM	Comprehensive update to the State of Idaho All-Hazards Mitigation Plan	State of Idaho Office of Emergency Management	$83,632.28	$83,632.28		All-hazard
2013	HMGP-1927	GUBERIF Booklets-Idaho Firewise Program	Idaho Firewise	$33,144.00		$33,144.00	Wildfire
2013	HMGP-1927	Dead Horse Creek bridge replacement	Valley County	$180,450.00		$180,450.00	Flood
2013	HMGP-1987	South Viola Bridge replacement	North Latah Highway District	$169,958.00		$169,958.00	Flood
2013	HMGP-1987	Danielson Road culvert replacement	South Latah Highway District	$44,004.00		$44,004.00	Flood
2013	HMGP-1987	Badger Creek Bridge replacement	Teton County	$119,865.00		$119,865.00	Flood
2013	HMGP-1987	Transfer switch project	Boise Warm Springs Water District	$6,107.00		$6,107.00	Flood
2013	EMPG	Soil classification and liquefaction mapping	IOEM—Valley County	$63,000.00		$63,000.00	Earthquake
2014	EMPG	Soil classification and liquefaction mapping	IOEM—Kootenai County	$63,000.00		$63,000.00	Earthquake
2014	PDM	Comprehensive update to the Ada County All-Hazards Mitigation Plan	Ada County	$52,500.00	$52,500.00		All-hazard
2014	PDM	Comprehensive 10-County update All-Hazards Mitigation Plans	University of Idaho	$249,867.00	$249,867.00		All-hazard
2014	PDM	Bonner County Pack River Acquisition	Bonner County	$508,935.00		$508,935.00	Flood
2015	PDM	Comprehensive 6-County update All-Hazards Mitigation Plans	University of Idaho	$230,001.01	$230,001.01		All-hazard
2015	HMGPFM AG5088	Bayview Water and Sewer District Generators project	Kootenai County	$15,524.00		$15,524.00	All-hazard
2016	HMGPFM AG5105	Comprehensive update to the Nez Perce Tribe All-Hazards Mitigation Plan	Nez Perce Tribe	$23,182.00	$23,182.00		All-hazard
2016	PDM	Comprehensive update to the Gem County All-Hazards Mitigation Plan	Gem County	$39,018.75	$39,018.75		All-hazard

Year	Grant	Project	Jurisdiction	Total Award	Plan	Project	Hazard
2016	PDM	Comprehensive update to the State of Idaho All-Hazards Mitigation Plan	State of Idaho Office of Emergency Management	$135,000.00	$135,000.00		All-hazard
2016	EMPG	Seismic assessment/study from temporary monitoring stations	IOEM – Boise State University	$30,000.00		$30,000.00	Earthquake
2017	HMGP-4246	Fire Station generator replacement project	Timberlake Fire Protection District	$32,625.00		$32,625.00	Wildfire
2017	HMGP-4246	Back-up generators, transfer switches and fencing	Coeur d'Alene Tribe	$110,464.00		$110,464.00	All-hazard
2017	HMGP-4252	City of Blackfoot Stormwater Project	City of Blackfoot	$1,637,995.00		$1,637,995.00	Flood
2017	HMGP-4252	Kootenai County 911 Center back-up generator project	Kootenai County	$57,062.00		$57,062.00	All-hazard
			SUMMARY	**$2,050,148.53**	**$613,072.53 (17%)**	**$3,072,133.00 (83%)**	

Map 5.F shows the locations of past and ongoing FEMA HMA projects across the State.

Source: IOEM



Map 5.F. Idaho Hazard Mitigation Assistance Projects

Mitigation Project Highlights

The following mitigation projects are among those funded and implemented since the 2013 plan update:

Blaine County Deer Creek Mitigation Success

On May 23, 2006, a large debris dam upstream of Deer Creek Bridge caused a redirection of river flow. The right upstream bank eroded to the point that the eastbound lane approach collapsed. Further erosion began to undermine the concrete bridge support structure and cost the county $74,498.95 in repairs. Historical damages occurred during 1969, 1974, 1982, 1997, and 2006. In 2013, Blaine County Road and Bridge finished armoring the west bank of the Big Wood River with angular riprap and log barbs to protect Deer Creek Road and bridge from erosion. The project was funded through a 2010 Pre-Disaster Mitigation grant with a total cost of $265,214.78 of which $183,961.50 was federal share. The estimated losses avoided to the bridge and road are $1,048,600. No issues were reported to this project, the road or bridge during the 2017 spring flooding.


Deer Creek Damage – Before Mitigation


Deer Creek – After Mitigation

Dead Horse Creek Bridge Enlargement near Donnelly in Valley County

Near the town of Donnelly, in Valley County, is the Dead Horse Creek Bridge. The bridge was enlarged to accommodate stream run-off and debris flows. Prior to this installation, the road and surrounding residences were threatened with flooding.

Bonner County PDM Grant for Floodplain Acquisition

In 2016, Bonner County, ID received a PDM grant to purchase a 20-acre home site within the floodway of the Pack River, demolish the home, remove fill and restore floodplain/wetland functions. The home and outbuildings were demolished, the foundations were removed, the septic tanks crushed and filled with sand, removal of the earthen fill from the access roads, final grading, and mulching of the site were accomplished in the late fall. Now floodwaters inundate the area where the home and roads once existed.

Kootenai County Back Up Generators

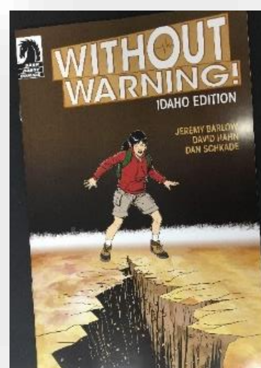
In 2017, Kootenai County back-up generators assist with disasters services.

City of Blackfoot Receives $1.6 Million Mitigation Grant to address historic flooding issues

For years, when heavy or even moderate rainfall happened in the City of Blackfoot, it was not unusual to have flooding in streets and homes. It was a problem that plagued the Bingham County Idaho town of roughly 13,000 people for years on end. Now, thanks to a federal Hazard Mitigation Grant, the city will address the stormwater drainage issue, saving thousands of dollars trying to respond to such events each year. The stormwater retrofit project will upsize approximately 2,200 feet of a storm drainage line from a 12-inch pipe to a 48-inch pipe. The total cost for the project is $2.6 million. The City of Blackfoot applied for and was awarded the funding under the Hazard Mitigation Grant Program for the federally declared disaster in 2016. The funding is normally 75% federal and 25% non-federal split; however, the City of Blackfoot is contributing a larger share in order to cover more areas for stormwater improvements. The 2016 Storm Water System Assessment identified areas in the city with inadequate capacity and bottlenecks. This project will increase the capacity of the stormwater drainage system in the north area of Parkway Drive and Jensen Grove Drive.

Reduced flows into the sanitary sewer collection system will alleviate flooding and overloading the Wastewater Treatment Plant. The project will protect an estimated 960 people, 214 properties, and 2.2 miles of roadway and storm drain lines.

Public Outreach Campaign for Southwest ID Earthquake Exercise



Mountain Home Stormwater Improvement

The City of Mountain Home received 2010 Pre-Disaster Mitigation funding to improve stormwater drainage along the E. 8th N. Street corridor to collect and convey stormwater. Two events overwhelmed the stormwater management system in 1986 http://www.youtube.com/wlago1, 2009, and 2012 that flooded homes and created road closures. The project added stormwater conveyance capacity and flood detention storage to the area. Costs totaled $592,802.66 with a federal share of $333,336.00. Estimated losses avoided are $788,428. No issues were reported during a heavy rainstorm event in the 2017 spring flooding.

Mountain Home damage Before Mitigation **Mountain Home Stormwater Corridor After Mitigation**

State Mitigation Commitment Through Additional Funding

Emergency Relief Fund

The IOEM Emergency Relief fund (ERF) was established during the 2017 legislative session through Senate Bill 1141. It provides $50 million in assistance to counties and local governments whose roadway infrastructure was devastated by extreme weather-related damage in 2017. The ERF is for permanent road and bridge repair, and many of these projects are post-disaster mitigation type projects. The Emergency Relief Fund Panel is statutorily defined with the following members:

- Idaho Office of Emergency Management
- Association of Counties
- Idaho Transportation Department
- Local Highway Technical Assistance Council
- Governor's Office
- Association of Cities
- Association of Highway Districts

Legislative Funding for Flood Control District Mitigation Projects

The Idaho Legislature appropriated $1 million in funding in 2018 following extensive damage from 2017 flooding to repair flood-damaged stream channels and reduce the risks of flooding. House Bill 712 passed both the House and Senate with unanimous support. The Idaho Water Resources Board is accepting applications for grants, which require a 50-percent match, and must be accompanied by evidence of flood damage or conditions that indicate a risk of future flood damage. Flood control districts, counties, cities, drainage districts, canal companies and other public entities are eligible to apply. Grants cap out at $200,000, and priority will be given to applicants that offer a higher cost-sharing percentage.

HMA GRANTS MANAGEMENT PERFORMANCE

Approval of an enhanced state mitigation plan results in eligibility for increased HMGP funding. Therefore, the mitigation planning regulation requires states to demonstrate existing capabilities to effectively manage the HMGP as well as other mitigation grant programs (44 CFR §§201.5(a), 201.5(b) (3), and 201.5(b) (2) (iii)).

Hazard Mitigation Assistance Grants Program Administration

The *Hazard Mitigation Assistance Grant Programs Administrative Plan* establishes the guidance, rules, and procedures used by IOEM to administer the Hazard Mitigation Assistance Grant programs funded by FEMA:

Hazard Mitigation Grant Program (HMGP), authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act, as amended (the Stafford Act), Title 42, U.S. Code (U.S.C.) 5170c, and 44 CFR Section 206 Subpart N. CDFA 97.039

Pre-Disaster Mitigation (PDM) program, authorized by Section 203 of the Stafford Act, 42 U.S.C. 5133, and 44 CFR Section 201. CDFA 97.047

Flood Mitigation Assistance (FMA) program to include Repetitive Flood Claims (RFC) and Severe Repetitive Loss programs, authorized by Section 1366 of the National Flood Insurance Act of 1968, as amended (NFIA), 42 U.S.C. 4104c, and 44 CFR Subpart 78 (for programs which opened before December 3, 2007) and Subpart 79 (for programs which open on or after December 3, 2007). CDFA 97.029.

The intent of the mitigation grant programs is to protect lives and to reduce the risk of future damage, hardship, loss, or suffering as a result of major disasters by providing financial support to implement cost-effective hazard mitigation measures to eligible sub-applicants around the state. In addition, the purpose of the flood-related mitigation programs is to reduce or eliminate claims under the National Flood Insurance Program. Mitigation measures should be identified as part of the mitigation planning process of state and local governments, required as a condition of receiving federal disaster assistance. The Hazard Mitigation Assistance (HMA) Grant Programs Administrative Plan provides the procedures and processes for administration of grant programs through IOEM. Figure 5.G and below depicts the flowchart for the State HMA Grant Program.

Source: IOEM Hazard Mitigation Assistance Grant Programs Administrative Plan

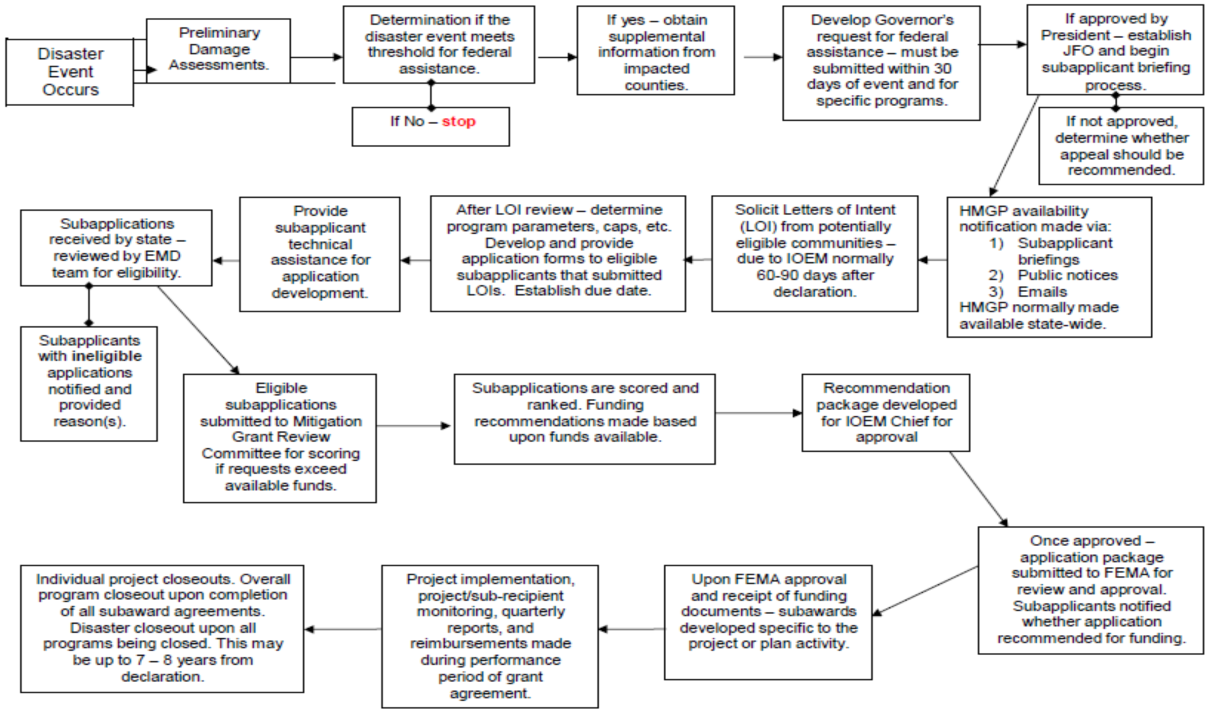


Figure 5.G. State HMA Grants Flowchart

IOEM manages the HMA Grants Program for the State of Idaho, in a collaborative effort between the Mitigation Section and the Finance and Grants Management Office. IOEM follows the FEMA HMA Guidelines. This is depicted in figure 5.H below from the 2015 FEMA Guide.

Source: 2015 FEMA HMA Guide

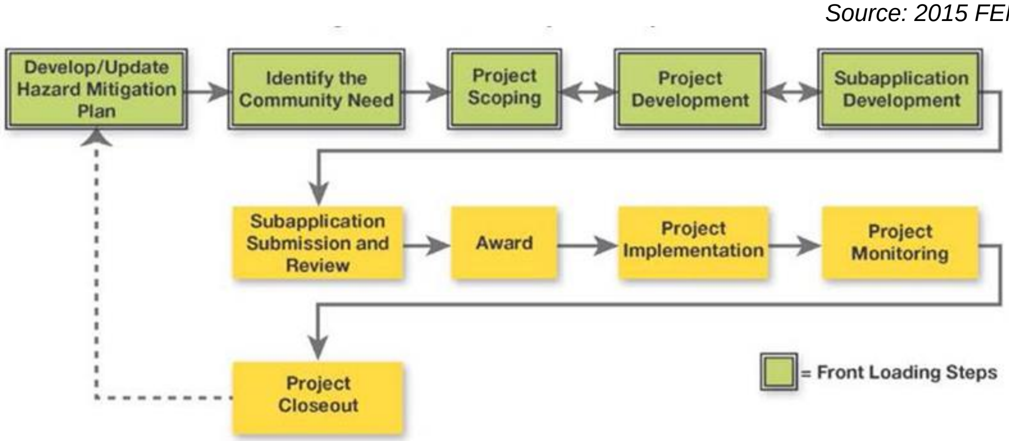


Figure 5.H. State Project Flowchart

Capability for Meeting Timeframes

Maintaining the capability to meet application timeframes and submitting complete project applications is a requirement for an enhanced state plan as spelled out in 44 CFR §201.5(b)(2)(iii)(A)46.

Application Timeframes

In order to meet application deadlines, sub-applicants are encouraged to begin ongoing project identification through the local hazard mitigation planning process.

HMGP. IOEM may solicit Letters of Intent from sub-applicants as described above. Upon receipt and processing of the sub-applicant's Letters of Intent, IOEM may send HMGP applications and post application forms on the IOEM website. IOEM will establish a date for completed applications to be returned, typically between 90 and 120 days from the date applications are mailed to potential sub-applicants. This date will allow enough time for sub-applicants to ensure compliance of environmental requirements and coordination with regulatory agencies, development of alternatives, and the public involvement process. There may be two application periods for HMGP. The first application period will be a right of first refusal by those counties affected by the Presidential Declaration for 180 days from the date of declaration. In the event that the program is under-subscribed during the first application period, the State may implement a second application period for HMGP. The second application period will open to all other eligible jurisdictions at a date established by the SHMO and GAR and will remain open for a period of 90 days. The processing of HMGP applications will occur in the order they are received at IOEM for up to 270 days from the date of declaration. IOEM must have the state's complete application packet submitted to FEMA through the National Emergency Management Information System (NEMIS) within 12 months of the disaster declaration.

All applications and amendments are submitted by the end of each program's respective application period and all applications are entered into FEMA's electronic data system NEMIS.

PDM/FMA. IOEM may solicit Letters of Intent from sub-applicants as described above. FEMA determines the opening date for the application period annually. Letters of Intent must be submitted approximately two months from the opening date. Upon receipt and processing of the sub-applicant's Letters of Intent, IOEM may send a letter acknowledging receipt of the Letter of Intent with instructions on how to apply and post instructions on the IOEM website. IOEM will establish a date for completed applications to be submitted, typically 45 to 60 days from the date of announcement. This date may allow enough time for sub-applicants to ensure compliance with environmental requirements and coordination with regulatory agencies, development of alternatives, and the public involvement process. Online submission of subgrants applications is encouraged through FEMA's e-Grants at https://portal.fema.gov. Paper applications may also be submitted to IOEM. IOEM maintains an inventory of previously identified mitigation projects. If the subscriptions for a current grant cycle are less than anticipated, IOEM will review the projects inventory and seek affirmation from the applicable jurisdiction for reconsideration.

Complete Project Application Submission

As required by 44 CFR Parts 206.434 and 206.435, IOEM will review all applications submitted by eligible jurisdictions for completeness, to ensure they meet state and federal eligibility criteria, and to confirm the entity is not banned on the Excluded Parties List System. The review will establish whether or not a proposed activity aligns with the pertinent local and state mitigation plans and will identify potential issues regarding project eligibility or feasibility. Additionally, IOEM staff will review the benefit-cost analysis submitted with the application or conduct its own based upon information provided by the sub-applicant for the project. The benefit-cost analysis ensures that only cost-effective projects are reviewed and submitted to FEMA for funding. All sub-applicants will be notified whether their application passes this initial review threshold, and eligibility and completeness checklists are prepared for all applications.

IOEM will provide technical assistance to sub-applicants with their applications. There is no appeal of the decision by IOEM of an application based on an unsatisfactory BCA ratio. Sub-applicants or IOEM Mitigation staff will coordinate with appropriate local, state (SHPO) and federal agencies to gather and share information required for the historic and environmental review process. The contracted or FEMA Environmental Officer will conduct historic, environmental and floodplain reviews submitted applications to ensure compliance with all appropriate Federal Regulations. IOEM Mitigation Staff are responsible for ensuring that all necessary information is made available to the Environmental Officer to complete the required assessments.

IOEM may establish a Mitigation Grant Review Committee, to review, evaluate, and prioritize the applications. The Mitigation Grant Review Committee normally will consist of at least five members, to include at a minimum, the following:

- Two individuals from IOEM normally the SHMO and the Senior Mitigation Planner
- One designee from a state agency that deals with issues related to the particular type or nature of the disaster (example: Idaho Department of Water Resources representative for floods, Idaho Department of Lands representative for wildfire, Idaho Geologic Survey representative for geologic hazards, Division of Building Safety representative for structural mitigation).
- Two individuals representing local government either located outside of the declared disaster area or from a community not applying for HMGP funds.

IOEM will seek local committee members that have experience in public works, engineering, land use planning, disaster grant administration, or other related experience. The committee also may consult experts from state, local, and federal agencies. IOEM may seek the assistance of the Idaho Association of Counties and the Association of Idaho Cities to provide names of potential local committee members.

Committee members will serve without compensation but will be reimbursed for authorized expenses incurred in the performance of their duties, in accordance with Idaho State Travel Regulations, as now existing or hereafter amended. The committee will review and prioritize those grant applications that pass initial eligibility screening. The committee will use the HMA Application Score Sheet Criteria and make recommendations based on published criteria.

Ranking eligible projects and developing a recommendation for funding will include consideration of the following:

- Combined ordinal application score(s) as determined by the Mitigation Grant Review Committee using the evaluation system mentioned above.
- Available funding.
- Goals and objectives in the effective SHMP
- Geographical mix, dependent upon number and quality of the sub-applications.
- Previous mitigation program participation and results.

- Current mitigation program participation. At its discretion, IOEM may limit sub-applicants to three substantive projects at any one time, depending upon the demonstrated capability of the sub-applicant to administer previous and existing projects.

Following any appeal period, a decision package will be submitted to the IOEM Chief containing those projects recommended for submission to FEMA for final approval and funding. These projects may be ones proposed by IOEM or that have been reviewed and ranked by the Mitigation Grant Review Committee. IOEM will notify sub-applicants if their application is being forwarded to FEMA. If the situation warrants, a percentage of the Hazard Mitigation Grant Program funds may be set aside to accomplish projects as outlined in the SHMP. These projects may be exempt from the Committee ranking process.

Following the initial review of a sub-application's eligibility under these criteria, FEMA will notify IOEM which subgrant applications have been selected for further review, determined to be eligible but not funded, or determined ineligible. Notification that an application has been selected for further review does not guarantee that it will receive funding. FEMA will only reconsider a subgrant application if a significant technical or procedural error has been made by FEMA. PDM and FMA subgrant applications may be resubmitted with new information under the subsequent grant cycle. The State coordinates with sub-applicants on any additional requests for information from FEMA. All applications are determined to be complete by FEMA within 90 days of submittal or selected for further review. However, disaster deployment and FEMA staff changes may interfere with the timeline. Required environmental and historic preservation reviews and consultations will not be included in the 90-day review timeframe calculation.

Capability to Prepare and Submit Environmental Reviews and Benefit-Cost Analysis

As required by [44 CFR §201.5(b) (2) (iii) (B) 47], the state is maintaining the capability to prepare and submit accurate environmental reviews and benefit-cost analyses. IOEM will package subgrant applications into a grant application that is submitted to FEMA for review. FEMA will review all applications for eligibility and ensure that all required information has been provided. In order to satisfy FEMA's criteria for cost effectiveness, a benefit cost analysis (BCA) that includes annual maintenance costs must demonstrate that the benefits of a project are equal to or exceed the proposed mitigation activity's costs. Activities with a benefit cost ratio of less than 1.0 will be determined to be cost ineffective and will be deemed ineligible for HMA funding. IOEM will review all applications for engineering feasibility and benefit-cost analysis to determine whether a project conforms to acceptable engineering practices, codes, and standards, is effective at mitigating the risks of a hazard, and demonstrates reasonableness of costs. In addition, sub-applicants are required to comply with all Federal environmental and historic preservation policies and laws.

All applications and amendments are determined to be complete by FEMA within 90 days of submittal or selection for further review, including all data requested by FEMA to support Cost Effectiveness determinations and environmental/historic preservation compliance reviews.

Quarterly Progress Reports

As required by 44 CFR §201.5(b)(2)(iii)(C)48, the state is maintaining the capability to submit complete and accurate quarterly progress and financial reports on time. All progress reports are completed and submitted on time. Information in reports accurately describes grant activities, including data related to the completion of individual property acquisitions. All federal financial reports (FFR), Standard Form (SF) SF-425 are submitted on time. Information in reports accurately records expenditures, as described in the HMA Guidance. The State has adopted and consistently complies with the Financial Management Standard requirements described in 2 CFR §§200.300 to 200.309.

The Governor’s Authorized Representative (GAR) oversees HMGP mitigation expenditures. The Grant Management Office (GMO) maintains reports and documentation supporting financial expenditures submitted by sub-recipients. The Idaho Military Division maintains recipient financial documentation. The SHMO reviews and approves each subaward and Articles of Agreement for each project as prepared by GMO. The GMO tracks the sub-recipient’s match in the ID Grants Management System. The GMO will book sub-recipient match upon receiving the sub-recipient’s soft match form and approval of the SHMO. The sub-recipient is responsible for maintaining all backup documentation and may be required to produce documentation during monitoring visits by the recipient. Each sub-recipient is required to submit a quarterly financial/programmatic report, FFR/SF-PPR, and other supporting documentation accurately describing grant activities, including data related to the completion of individual property acquisitions. The GMO will submit quarterly progress and financial reports to FEMA Region X for all grant programs upon SHMO review and approval. These reports will reflect a compilation of quarterly performance progress reports submitted by sub-recipients. Federal Financial Reports (FFR) will be submitted using FEMA form SF-425 (FFR) for PDM and FMA awards. The HMGP quarterly reports will be entered or imported directly into NEMIS in the Quarterly Reports module or sent to FEMA on the Excel spreadsheet distributed by FEMA if NEMIS access is not available.

The sub-recipient will submit quarterly finance/performance progress reports (FFR/SF-PPR) no later than the 15th day following the end of the quarter to GMO for financial review. GMO will forward reports to the SHMO for review and approval. The report will include:

- A Federal Financial Report (FFR) showing cash dispersed, federal funds expended and obligated, and match funds expended and obligated.
- A Performance Progress Report (SF-PPR) detailing progress and status of the subaward, as well as the total amount of funds expended to date and the total amount estimated for completion
- A narrative of extraordinary conditions affecting scope of work and schedule.

The SHMO and/or GMO staff will conduct periodic site/project inspections for monitoring programmatic and financial compliance and progress. The number of site inspections will vary with project size, complexity, and reporting history. The SHMO will compare the approved project SOW and milestones to actual progress and resolve any problems and remedial actions they require of sub-applicant.

Project Completion Within Performance Period

As required by 44 CFR §201.5(b) (2) (iii) (D) 49, the state is maintaining the capability to complete HMA projects within established performance periods, including financial reconciliation.

IOEM serves as the Recipient for project financial management in accordance with 44 CFR Part 13. Sub-recipients are accountable to the recipient for awarded funds. Sub-recipients are the legal entities to which the state awards money for projects; they can be a state agency, local government, special purpose district, eligible private nonprofit organization (HMGP only), or Indian Tribe. Sub-recipients are responsible to the recipient for expenditures, work performed, and reporting requirements. Allowable costs associated with administering the program are authorized in accordance with 44 CFR Parts 206.439 and 207.

In accordance with 2 CFR 200, the recipient and sub-recipients procuring goods or services through mitigation grants must comply with all applicable Federal, State and Local Standards. Sub-recipients are required to maintain appropriate documentation to demonstrate their compliance with all applicable standards. Political subdivisions of Idaho acting as sub-recipients must abide by their procurement regulations that comply with Title 67, Chapter 28, Idaho Code, *Purchasing by Political Subdivisions*.

Idaho State Government Agencies acting as sub-recipients must abide by their procurement regulations that comply with provisions of Title 67, Chapter 57, Idaho Code and Division of Purchasing Administrative rules IDAPA 38.05.01.

Sub-recipients request a progress payment on eligible work that has been completed. Eligible grant costs are reimbursed on an actual cost basis up to the subaward amount. Requests for reimbursement are made using the Reimbursement Request form included in a sub-recipient's award package. The SHMO evaluates requests for progress payments. Progress payments must be consistent with work completed.

Requests for payments will be processed in a timely manner. The goal of IOEM is to process payment requests to the State Resource Office (SRO) within 7 days of receipt. Delays can occur if the sub-applicant's request for payment package is incomplete or contains inaccuracies. IOEM staff notifies sub-recipients as soon as discrepancies are determined. The payment request will be annotated as to the reason for the delay. Upon receipt of the necessary documents, IOEM staff will complete its portion of the payment process. Funds will be disbursed to the recipient within 3 days of drawing down the funds from FEMA via SmartLink or PARS, depending on the grant.

After project work has been completed, IOEM will perform a final inspection and compile a final project inspection report. A joint State/FEMA inspection may be conducted if necessary and appropriate. FEMA will notify IOEM and coordinate any additional inspections by FEMA staff prior to the inspection. Each sub-recipient will be required to submit a final financial report, SF-PPR, and other necessary closeout documentation at the completion of the final inspection or final approval of a planning subgrant. Final payments including the 10% holdback will be made upon GMO's financial reconciliation and SHMO approval. When the work identified in the subaward is complete, the SHMO will facilitate subaward closeout with GMO and will provide a final closeout package to FEMA. Once all subawards of a particular grant are closed, the GMO will facilitate the overall grant closeout package to FEMA. The State has adopted and consistently complies with the Financial Management Standard requirements described in 2 CFR § 200.300 to 200.309.

All grant close-out activities for financial reconciliation ensure all expenditures have been documented and are consistent with SF-424A or SF-424C and are completed within 90 days from the end of the performance period including:

- Final FFR SF-425 and Performance Reports were submitted within 90 days from the end of the performance period.
- Statement submitted that approved Scope of Work and all environmental and historic preservation requirements have been satisfied.
- Request to de-obligate funds is completed, if applicable due to cost underruns.
- Other documentation as required in the HMA Guidance.
- No late drawdowns are requested or performed after the liquidation period has ended.

The final financial reconciliation report must verify that all funds were expended on eligible, allocable costs associated with the funded project and show obligated grant funds vs. actual expenditures in the following areas: total projected costs, federal share, state share, and local share.

State of Idaho Hazard Mitigation Plan

Appendix D. Hazard Event History Supplement

D. HAZARD EVENT HISTORY SUPPLEMENT

This appendix contains excerpts of previous events as described in the 2018 SHMP. This information is compiled into one appendix for ease of reference; and is reproduced as documented in the 2018 plan. Table numbering compares to the numbering used in that plan.

WILDFIRE

Table 3.1.M. Wildfires in Idaho, 2002 – 2016

Year	Total # of Wildfires	Total Acres Burned
2016	630	361,649
2015	1,324	804,094
2014	1,180	189,430
2013	1,471	722,204
2012	1,149	1,667,654
2011	1,094	384,103
2010	977	613,868
2009	1,142	22,681
2008	997	116,796
2007	1,473	1,980,552
2006	1,831	933,548
2005	1,154	442,391
2004	1,098	13,981
2003	1,834	313,546
2002	1,486	84,964
Average:	1,256	576,764

Table 3.1.N. Wildfire Events in Idaho, 1910 – 2017

Date	Event Type	Counties Affected	Description
August 1910	1910 Fire		Excerpt from an article written by Jim Kershner from the August 15, 2010, edition of the Spokesman-Review. Some came to call it The Big Blowup. Others called it the Big Burn. By any name, it was easily the biggest forest fire in the Inland Northwest's history – actually the biggest forest fire in U.S. history. A century ago, 3 million acres of North Idaho, Montana and Washington forest were turned to charcoal in two wind-whipped days. The towns of Taft, Haugan, DeBorgia in Montana, and Grand Forks and Falcon in Idaho, were destroyed. One-third of Wallace was obliterated. At least 85 people died. A forest the size of Connecticut was exploding in a fearsome whoosh – generating, with fire and oxygen, its own tornadoes and cyclones. One survivor called it "the sound of a thousand trains rushing over a thousand steel trestles." Another said it could be compared only to the "roar of Niagara Falls." The noise was a deafening combination of 60 mph gales, colossal fire-driven updrafts, and the clamor of hundreds of trees cracking, snapping and slamming against earth. One witness said it sounded like being in the midst of "heavy cannonading." 1910 began with a disastrously snowy winter and then turned into an ominously dry spring and summer. The first wildfires in the Northern Rockies flared up in the unheard-of month of April. The drought persisted into summer and by late June and early July crews already were patrolling the forest "reserves," as the national forests were then called, putting out dozens of spot fires. By late July and early August thousands of fires were smoldering deep in the mountains of Idaho, Montana and Washington. The smokiest areas of all were in the vast St. Joe River drainage and the more thickly settled Coeur d'Alene River drainage of North Idaho. The fires had three main sources. Lightning strikes (including hundreds on July 26 alone); people, mainly farmers, prospectors and loggers who were clearing land and burning slash; and railroads, including one of the most audacious and expensive rail lines ever built, the Chicago, Milwaukee, St. Paul and Pacific line (called The Milwaukee Road) completed a year earlier over the Bitterroots. "Locomotives threw sparks like a Roman candle chugging down the tracks," wrote Pyne. The forest rangers at Wallace acquired a small fleet of velocipedes, or "speeders," which were like bicycles that could be used on railway tracks. The rangers scooted along behind the trains and put out the fires alongside the tracks. By mid-August, thousands of firefighters — including thousands of Army troops — were out in the mountains. Most were already exhausted from cutting fire lines (essentially, trenches) for miles through wilderness. The rangers were only too aware that hundreds of small fires were still alive, creeping along through brush and smoldering in the duff. The rangers' biggest fear was that a big wind would whip all of these fires into flame simultaneously. On Aug. 20, 1910, that's exactly what happened. Fire crews deep in the forests noticed with apprehension that the wind was freshening from the southwest. By mid-day it was a full-blown gale on the mountain ridges — the dreaded "Palouser," named for the Palouse country to the southwest. The crews knew the winds boded ill, but it wasn't until that afternoon that they looked up to see a truly horrifying sight: Huge black clouds, like giant inky thunderheads, blotting out the sun. These were clouds of smoke, ash and cinders, carried high aloft by giant, roaring updrafts. It meant that those hundreds of small fires across the Clearwater, St. Joe, Coeur d'Alene and Bitterroot regions had flared, marched and in many cases, joined up together and created a massive chain reaction of fuel, flame and oxygen. It was a true firestorm, massive enough to create its own roaring vortexes. Witnesses estimated clouds of smoke and ash 2,000 feet in the air. — and be within the old burn zone every mile of the way. And this was by no means the only burn zone in the Northern Rockies – just the biggest.

Date	Event Type	Counties Affected	Description
1960	Wildfire (DR-105)	Boise	Large fires burned in Hells Canyon and Idaho City areas
1967	Wildfire (DR-231)	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, and Shoshone	10 counties in Panhandle affected; 50,000 acres burned in nine hours
July and August 1985	Wildfire	N/A	Two statewide declarations for wildfire events in July and August
1986	Wildfire	N/A	Statewide declaration
June and August 1987	Wildfire	Ada, Adams and Bannock	Three counties declared individually: Ada (June), Adams (August), and Bannock (August); Statewide declaration in August
1989	Wildfire	N/A	The worst fires since 1910 burn thousands of acres in south-central Idaho, partially destroying the town of Lowman and leading to State-wide declaration
1992	Wildfire	N/A	One life lost in the worst fire season in Idaho history to date; one of two Statewide declarations was for an unusual spring event (April)
1994	Wildfire	N/A	One life lost and one home lost; summer wildfires burn over 750,000 acres, resulting in a Statewide declaration
1999	Mule Butte Fire	Blaine	Mule Butte and BLM Aberdeen District – 138,915 acres in size
2000	Multiple Wildfire Events (DR-1341)	Ada, Bannock, Bingham, Blaine, Clearwater, Custer, Elmore, Idaho, Jerome, Lemhi, Lewis, Lincoln, Power, and Valley	During the fires of 2000, smoke from the fires became a constant companion to residents throughout the State, affecting the health, recreation, and daily life of many communities. Several times, the Idaho Department of Environmental Quality issued air quality advisories to several communities in Idaho because of "very unhealthy" or "hazardous" air quality concerns. The town of Salmon requested and received air purifiers for their residents. The recorded losses include 700 cattle on one ranch in Dietrich, Idaho. Within the State of Idaho, 109 structures were destroyed: 38 residences (homes, cabins, or trailers), 70 outbuildings, and one commercial building/business. A total of 9,568 structures were threatened: 6,061 primary residences, 1,635 outbuildings, and 1,872 commercial buildings/businesses. The town of Atlanta imported potable water because the town's water system was damaged. Emergency closures of Federal and State lands affected approximately 3 million acres. Over 2,000 miles of trails, over 80 miles of river, and almost all public airstrips were closed. Restrictions were placed on campfires, smoking, and the use of chainsaws and other equipment. These closures and restrictions had an enormous impact. Many businesses that depend on the region's tourism in the summer and fall seasons suffered economically. During the 26 days that the Salmon River in the Frank Church River of No Return Wilderness was closed to recreation, 4,000 outfitter floaters, 2,300 private floaters, and 140 commercial jet boaters who were scheduled to float the river were unable to take their trips. These lost trips resulted in a loss of personal income and employment for surrounding communities. The closures also affected the plans of about 600 hunters, who had booked guided hunts in the wilderness area, in addition to the large number of resident hunters depending upon big game for their winter food supply.

Date	Event Type	Counties Affected	Description
2000	Clear Creek Fire	Custer	Salmon-Challis National Forest – 216,961 acres in size
2000	Diamond Fire	Valley	Payette National Forest – 149,772 acres in size
2000	SCF Wilderness Fire	Custer	Salmon-Challis National Forest – 182,600 acres in size
2003	Cramer Complex Fire	Lemhi	Cramer Complex Fire, 13,845 acres, two lives lost
2005	Wildfire	Bonneville, Twin Falls	Wildland fire totals: 1,154 fires, 442,391 acres. Clover Complex, Twin Falls BLM District, 192,846 acres; East Idaho Complex, Idaho Falls BLM District, 192,450
2006	Wildfire		Wildland fire totals: 1,831 fires, 933,548 acres
2006	Crystal Fire	Bonneville	BLM Idaho Falls District – 220,042 acres in size
2007	Wildfire	N/A	Wildland fire totals: 1,473 fires, 1,980,552 acres. Cascade Fire complex, East Zone Complex, Castle Rock Complex
2007	East Zone Complex Fire (FM-2725)	Valley	Payette National Forest – 300,022 acres in size
2007	Murphy Complex Fire	Owyhee and Twin Falls	BLM Twin Falls District—652,016 acres in size
2007	Rowland Fire	N/A	Idaho – 180,000 acres in size
2007	Cascade Complex Fire (FM-2726)	Boise	Boise National Forest – 302,376 acres in size
2007	Elk Mountain Fire	Twin Falls	BLM Twin Falls District – 160,000 acres in size
2007	Shower Bath Fire	Custer	Salmon-Challis National Forest – 122,600 acres in size
2007	Rattlesnake Fire	N/A	Idaho – 102,000 acres in size
2008	Wildfire	N/A	Wildland fire total: 997 fires, 116,796 acres
2009	Wildfire	N/A	Wildland fire total: 1,142 fires, 22,681 acres
2010	Wildfire	N/A	Wildland fire total through Sept 18: 908 fires, 608,821 acres, Hurd.
2010	Jefferson Fire	N/A	DOE National Laboratory – 109,727 acres in size
2010	Long Butte Fire	Twin Falls	BLM Twin Falls District—306,113 acres in size

Date	Event Type	Counties Affected	Description
July 7-19, 2012	Kinyon Road Fire	Twin Falls	210,874 acres burned with costs of approximately $1.63 million; fire was caused by lightning
July 9-20, 2012	Jacks Fire	N/A	50,816 acres burned with costs of approximately $300,000; fire was caused by lightning
July 20 – November 5, 2012	Powell SBW Complex Fire	Idaho	67,711 acres burned with costs of approximately $4.8 million; fire was caused by lightning
July 27 – October 18, 2012	Halstead Fire	Custer	181,948 acres burned with costs of approximately $26.4 million; fire was caused by lightning
August 3 – October 18, 2012	Trinity Ridge Fire	Elmore	Trinity Ridge Fire, Fire Management Assistance Declaration, 146,832 acres burned; human caused; approximately $41.23 million in costs
August 5-13, 2012	Flat Top 2 Fire	Lincoln	140,954 acres burned with costs of approximately $600,000; fire was caused by lightning
August 8-23, 2012	Minidoka Complex Fire	Cassia	97,616 acres burned with costs of approximately $5.8 million; fire was caused by lightning
September 6 – November 6, 2012	Sheep Fire	Idaho	48,626 acres burned with costs of approximately $18 million; fire was human-caused
2012	Karney Fire (FM-5019)	Boise	Karney Fire, Fire Management Assistance Declaration, 440 acres, arson
2012	Multiple Wildfire Events	Boise, Idaho, Lemhi	According to the University of Idaho, 2012 was the "worst wildfire year in Idaho in well over a decade" with 1.7 million acres of mostly rural forests burned. Sixty-six homes were lost in a Pocatello wildland fire. The Idaho Bureau of Homeland Security reported 13 structures were lost in the Trinity Ridge Fire, and areas near Atlanta, Pine, and Featherville were evacuated. Homes and businesses were threatened, and evacuations were issued for communities affected by the Halstead Fire in Custer County, the Karney Fire in Boise County, the McGuire Fire in Idaho County, and the Mustang Complex Fire in Lemhi County. The Governor requested and received two Fire Assistance Management Grants from FEMA to offset structure protection costs. In total, there were 1,149 wildfires in Idaho in 2012, which consumed 1,667,654 acres.
August 9-19, 2013	Pony Complex Fire	Elmore	149,384 acres burned with costs of approximately $4 million; fire was caused by lightning
August 9-31, 2013	Elk Complex Fire	Elmore	131,258 acres burned with costs of approximately $10.72 million; fire was caused by lightning
August 7 – September 2, 2013	Beaver Creek Fire (FM-5045)	Camas	The Beaver Creek wildfire began with a lightning strike on August 9th northwest of Hailey. Some evacuations of Deer Creek west of the Big Wood River were ordered on the 15th. The East Fork of the Wood River between Ketchum and Sun Valley was evacuated on the 16th. Up to 2,500 people were displaced. Highway 75 was intermittently closed. Rapid growth occurred from August 15th through August 21st as it grew from 44 thousand acres to 108 thousand acres helped by gusty winds and low humidity. As many as 1,721 personnel were assigned to fight the fire. The fire burned approximately 111,490 acres and destroyed one home, a bunkhouse and six other structures. Costs from the fire were approximately $26.5 million.
August 2-22, 2014	Big Cougar Fire	Nez Perce	65,227 acres burned with costs of approximately $4.5 million; fire was caused by lightning

Date	Event Type	Counties Affected	Description
August 10-23, 2015	Soda Fire	Ada	285,361 acres burned with costs of approximately $6.25 million
August 10 – September 8, 2015	Clearwater / Municipal / Motorway / North Complex (FM-5099)	Clearwater, Idaho and Lewis	The Clearwater-Municipal Complex consists of a group of fires in Clearwater, Idaho and Lewis Counties in northern Idaho. The fires, started by lightning, have been burning since August 10th. On August 28th, the Clearwater-Municipal Complex was formed by merging the Clearwater Complex with the Municipal Complex. On August 14, 2015, FEMA issued a Fire Management Assistance (FM) declaration for the State of Idaho. In total, 82,243 acres burned with costs of approximately $41.5 million.
August 12 – November 5, 2015	Tepee Springs Fire (FM-5110)	Idaho	The Tepee Springs Fire began on August 12th after lightning struck. The fire was fully contained by November 5th. On August 29, 2015, FEMA issued a Fire Management Assistance (FM) declaration for the State of Idaho. In total, 95,709 acres burned with costs of approximately $31.54 million
July 18 – October 27, 2016	Pioneer Fire	Boise	The Pioneer Fire was the largest fire on Forest Service lands in 2016. It burned a total of over 188,404 acres. More than 1,800 firefighters (local, state, federal and tribal) worked together to battle this fire. The cost of resources was estimated at $95.7 million.
August 21-31, 2016	Henry's Creek Fire (FM-5151)	Bonneville	The fire started on August 21st and was human-caused. The Henry's Creek Fire reached 100% containment at 10:00 p.m. on September 1, 2016. On August 25, 2016, FEMA issued a Fire Management Assistance (FM) declaration for the State of Idaho. In total, the fire burned 52,972 acres and cost approximately $4.32 million.
August 2016	Rough Fire	Boise	This fire was caused by a lightning strike and impacted an area of 3,598 acres.
July 4, 2017	North Fork Hughes Fire	Bonner	As of September 18, 2017, the North Fork Hughes Fire is approximately 5,000 acres. It was started by lightning. The fire is located just north of Hughes Meadows across the Washington State line and may be visible from the Priest Lake area. The fire is backing to the south near Hughes Meadows and backing towards the Sullivan Creek Road. Firefighters will continue to monitor and patrol the fire.
July 10, 2017	Hidden Fire	Boise	Lightning started the Hidden Fire on July 10th near Hidden Lake northeast of the Elk Summit Guard Station and in the Selway Bitterroot Wilderness. The fire burned an area of 12,261 acres.
July 14, 2017	Mink Peak Fire	Idaho	Located near Mink Peak in the Selway-Bitterroot Wilderness, the Mink Peak fire was lightning caused on July 14, 2017. It burned 817 acres.
July 14, 2017	Lone Pine Fire	Idaho	The Lone Pine fire started July 14 below Lone Pine Point, a very remote area in the Selway Bitterroot Wilderness. On or about August 30, the Lone Pine fire merged with both the Mink Peak fire and the Tony fire. It has burned an area of 15,237 acres. The fire is being managed for long-term resource benefit, using a point protection strategy.
July 14, 2017	Moose Creek 1 Fire	Idaho	The lightning-caused Moose Creek 1 fire started in the Selway Bitterroot Wilderness, immediately southeast of the historic Moose Creek Ranger Station. Originally three fires (Moose Creek 1, Moose Creek 2, and Moose Creek 3), they were merged together on July 20 as the Moose Creek 1 fire. The fire has also consumed the former Freeman fire. Structure protection measures are in place for various identified values at risk. As of September 15, 2017, the fire has burned 17,395 acres.
July 15 – August 3, 2017	Missouri Fire	Valley	This lightning-caused fire started on the Missouri Ridge on July 15 and was contained on August 3rd. It burned 1,277 acres.
July 24, 2017	Ibex Fire	Custer	The Ibex Fire began on July 24th, located 10 miles west of Challis. It was started by lightning. As of October 17th, the fire is being actively monitored and allowed to play its natural role while directing the fire away from identified values.
July 28, 2017	Goat Fire	Idaho	The Goat Fire was started by a lightning strike and is located in the Middle Fork of the Salmon River drainage. The fire burned 818 acres.

Date	Event Type	Counties Affected	Description
July 28, 2017	Highline Fire	Idaho	The majority of the Highline Fire is burning within fire scars from 2000. As of September 19th, it has burned an area of 84,619 acres.
August 1, 2017	Hanover Fire	Idaho	The Hanover Fire was caused by a lightning strike on August 1, 2017. Located south of Grangeville and northeast of Riggins. It burned an area of 26,500 acres.
August 1, 2017	Tappan Fire	Valley	The Tappan Fire was human-caused and located east of the Middle Fork of the Salmon River. It burned an area of 1,650 acres. As of September 21st, the fire is in monitor status under the direction of the North Zone Duty Officer.
August 2-6, 2017	Lava Flow Fire	Bingham	The Lava Flow fire was reported on August 2nd, approximately seven miles south of Atomic City. The fire started by lightning and burned in grass through the lava fields. The fire was contained on August 6th.
August 2, 2017	Buck Lake Fire	Idaho	The lightning-caused Buck Lake fire was detected August 2, 2017, in the Buck Lake Creek drainage in the Selway-Bitterroot Wilderness at 5 to 10 acres. Showing only minimal to moderate activity, the fire is now estimated at 4,655 acres as of September 14, 2017. This incident is being managed for long-term resource benefits and is being patrolled and monitored as it continues to perform its natural role across the landscape.
August 4-11, 2017	Powerline Fire	Bannock	The Powerline Fire was reported on August 4th, seven miles southeast of American Falls in the Arbon Valley area. The fire was human caused. The fire was contained on August 11th. It burned approximately 55,529 acres.
August 2017	Buck Fire	Shoshone	The Buck Fire is located on the St. Joe Ranger District, approximately 16 miles southeast of Avery. It burned steep terrain and heavy fuels along Buck Creek, south of FSR201. It burned an area of 2,386 acres.
August 2017	Patrol Ridge Fire	Idaho	Lightning caused the fire, burning 4.5 miles east of Windy Saddle in the Red River Ranger District. The fire moved north in the Moose Creek Ranger District in the Selway-Bitterroot Wilderness. The fire burned 1,175 acres.
August 13, 2017	Chute Creek Fire	Idaho	The lightning-caused Chute Creek fire was detected August 13 in the Selway-Bitterroot Wilderness 8 miles southeast of Elk Summit Guard Station and 2.5 miles west of Blodgett Lake. It burned an area of 5,107 acres.
August 14, 2017	Rattlesnake Point Fire	Idaho	The fire started on August 14 and was started by a lightning strike. It burned 4,843 acres.
August 23 – October 12, 2017	Bearskin Fire	Valley	The fire began on August 23rd as a result of a lightning strike. It is located 21 miles northeast of Lowman in Valley County. It was contained on October 2nd and controlled on October 11th. It burned an area of 30,251 acres. Most work on the Bearskin Fire was completed. Fire is now in monitor status.
August 27, 2017	Honeymoon Fire	Custer	The fire started on August 27th as a result of a lightning strike. As of October 17th, the fire has burned 1,860 acres and is being actively monitored and allowed to play its natural role with the wilderness while directing the fire away from identified values.
September 2-13, 2017	Strychnine Fire	Latah	The Strychnine Fire was located five miles northeast of Harvard. It burned an area of 1,010 acres.
September 3-11, 2017	Pronghorn Fire	Idaho	Lightning caused the fire, burning on the Red River Ranger District, 3.5 miles north-northeast of Red River Hot Springs on Mattesonag Ridge. The fire burned 78 acres.
September 8, 2017	Big Elk Fire	Idaho	The Big Elk fire started by lightning on September 8, 2017, just northeast of the Elk City township in the Big Elk Creek area on the Red River Ranger District of the Nez Perce-Clearwater National Forests. The fire quickly grew to 75 acres and fire crews immediately responded with all available resources including engines, smokejumpers, bulldozers, and a hotshot crew. It burned a total area of 80 acres.
September 24, 2017	West Bliss Fire	Gooding	198 acres burned

Date	Event Type	Counties Affected	Description
September 2017	Coolwater Complex Fires	Idaho	As of September 18, 2017, Andy's Hump Fire has burned on ridge tops and is now slowly backing down the upper slopes of the ridges, as well as progressing further along the ridges. There are continuous heavy fuels from the fire perimeter to values at risk in Lowell and the Selway River corridor downhill of the fire. The fuels are timber litter with a heavy down/dead component. There are patches and stringers of deciduous brush on the ridge and upper slopes that are slowing the fires spread. Glover Fire has had a few hot spots in it but has shown no movement recently. Old Man Fire has burned on a steep south slope with brush and timber stringers. The brush has been carrying fire as well as the timber fuels. The fire has been slowly side-sloping and then making an uphill run as it gets below unburned fuels. It has not burned across the ridge top on the north side but has the potential to do so and spread to a Management Action Point. Old Man Creek has held the fire to the south but could spot to the other side, which would continue fire progression toward Hwy 12. On September 9th, all three fires were combined into the Coolwater Complex, burning an area of 3,264 acres.

Note: For events from 2013 to 2017, this table includes only wildfire events that burned over 100 acres.
FEMA Federal Emergency Management Agency
FM Fire Management Assistance Declaration (FEMA)
Hwy Highway
NCEI National Centers for Environmental Information
NOAA National Oceanic and Atmospheric Administration
N/A Not Available

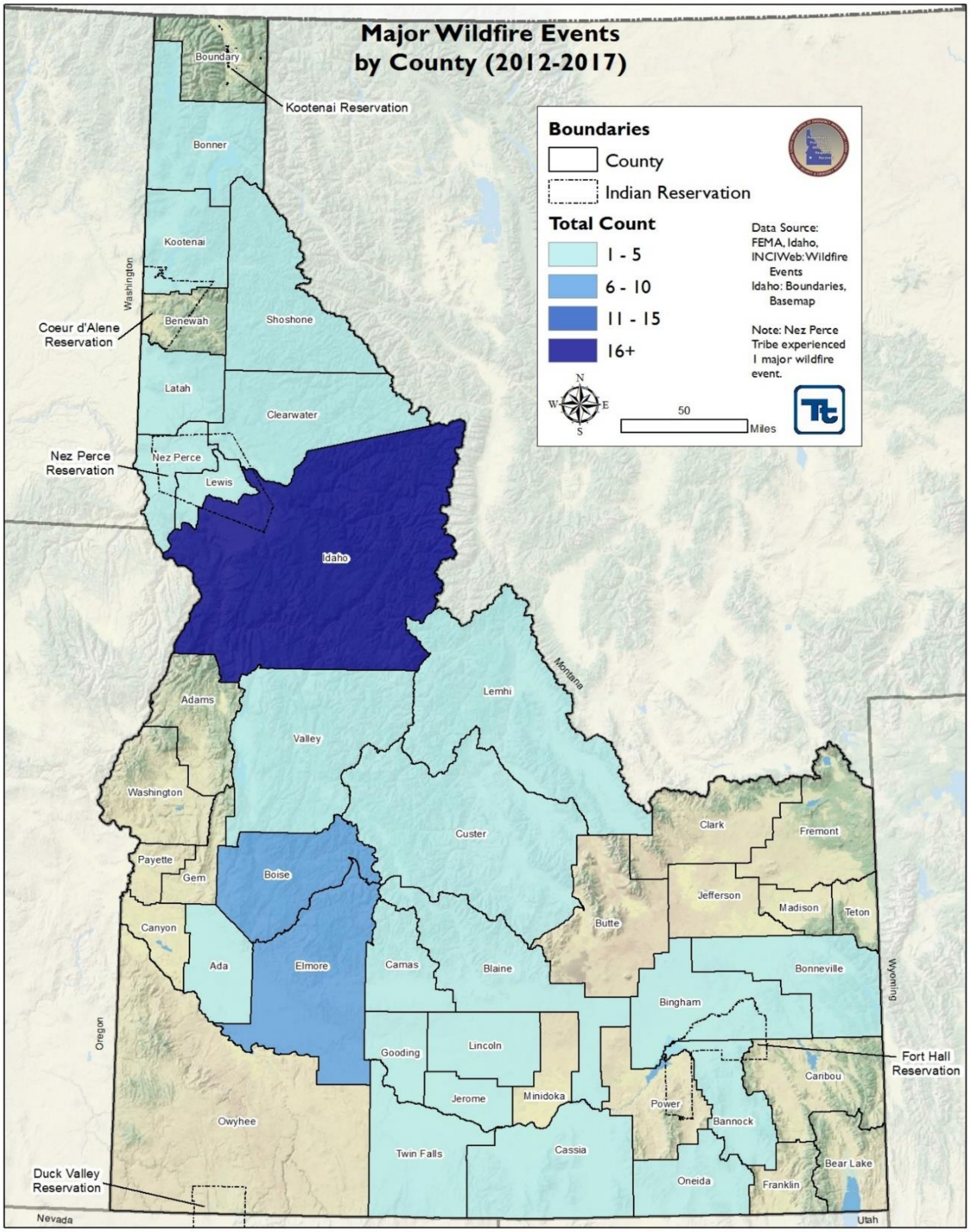


Figure 3.1.O. Major Wildfire Events in Idaho

Table 3.1.P. Wildfire-Related State and Federal Declarations (1954 to 2017)

Year	Date	State	Federal	Counties Affected
1960	July 22, 1960		DR-105	
1967	August 30, 1967		DR-231	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, and Shoshone
1977	August 20, 1977 (Wilson's Creek Fire)		FM-2029	
1979	August 8, 1979 (20-Mile Fire)		FM-2038	
2000	September 1, 2000		DR-1341	Ada, Bannock, Bingham, Blaine, Clearwater, Custer, Elmore, Fort Hall Indian Tribal Nation Land, Idaho, Jerome, Lemhi, Lewis, Lincoln, Power, Valley
2007	August 29, 2007 (Castle Rock Fire)		FM-2724	Blaine
	August 30, 2007 (Cascade Fire Complex)		FM-2726	Valley
	August 30, 2007 (East Zone Fire Complex)		FM-2725	Idaho, Valley
2010	August 26, 2010 (Hurd Fire)		DR-2853	Valley
2012	July 27, 2012 (Idaho Summer Wildfires)	ID-03-2012		Elmore
	August 3, 2012 (Trinity Ridge Fire)		FM-5006	Lemhi
	September 18, 2012 (Karney Fire)		FM-5019	
2013	August 12, 2013 (Elk Fire)	ID-01-2013	FM-5043	Blaine, Boise, Camas, Custer, Elmore, and Oneida
	August 15, 2013 (Beaver Creek Fire)	ID-01-2013	FM-5045	Blaine, Boise, Camas, Custer, Elmore, and Oneida
2015	July 5, 2015 (Cape Horn Fire)	ID-01-2015	FM-5088	Bonner, Kootenai
	August 10, 2015 (Clearwater Lawyer Branch Fire Complex)	ID-02-2015	FM-5099	Lewis, Clearwater, Owyhee
	August 14, 2015 (Municipal Fire)		FM-5105	Lewis
	August 29, 2015 (Tepee Springs Fire)		FM-5110	Clearwater, Nez Perce Tribal Nation
2016	August 21, 2016 (Henry's Creek Fire)	ID-02-2016	FM-5151	Bonneville

Source: Idaho SHMP 2013; FEMA 2017; State of Idaho 2017
Note: The date identified in the above table is the date of the disaster declaration

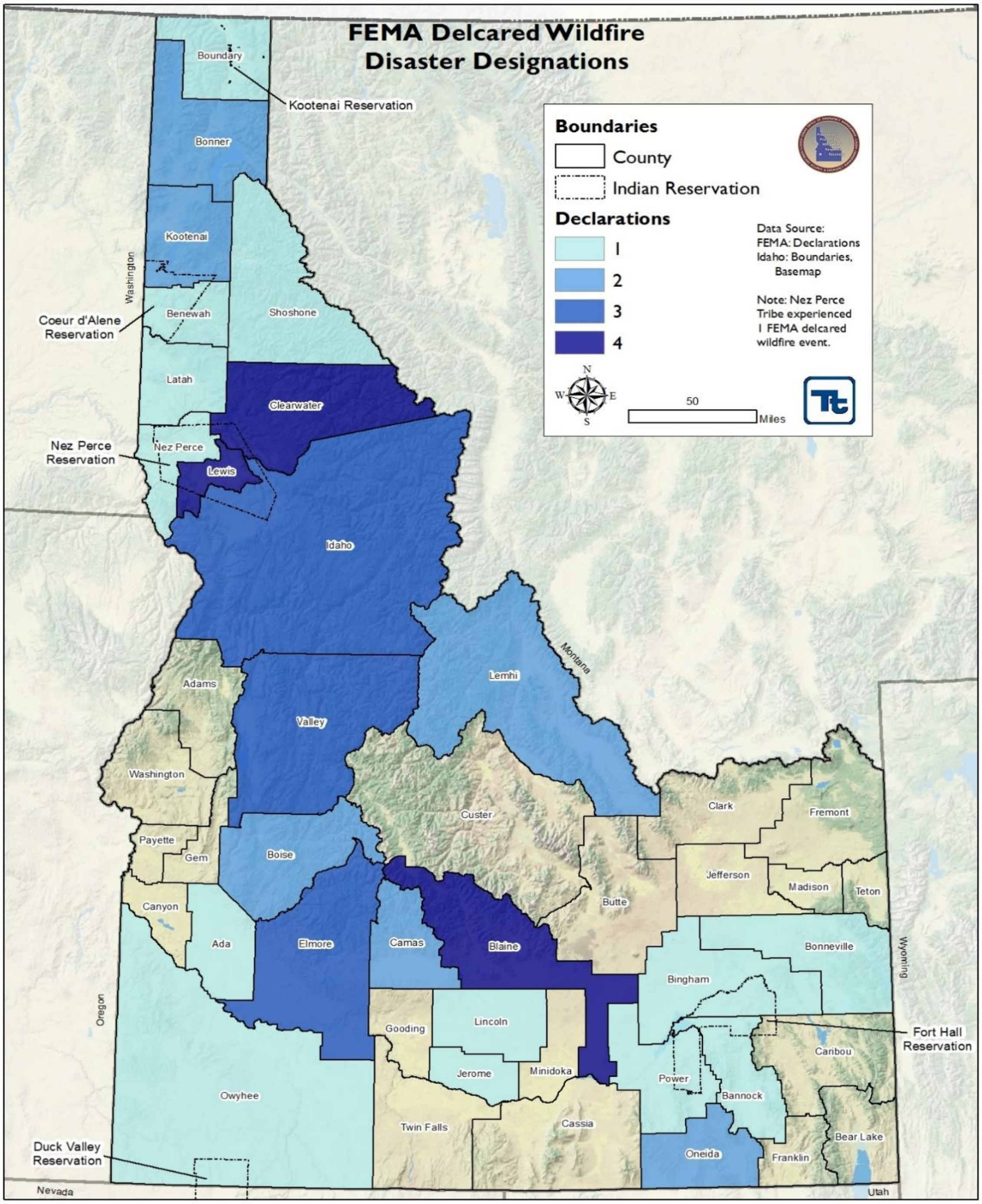


Figure 3.1.Q. FEMA Disaster Declarations in Idaho

FLOOD

Table 0-1.2. M. Flood Events in Idaho, 1894 – 2017

Date	Event Type	Counties Affected	Description
1894	Flooding	Statewide	No reference and/or no damage reported.
1927	Flooding	Upper Snake River Basin	No reference and/or no damage reported.
1933	Panhandle Floods	Kootenai and Benewah	In 1933, warm rain on low-elevation snow led to flooding in the Panhandle region, especially on the Coeur d'Alene River at Coeur d'Alene and the St. Joe River at St. Maries. Railroad tracks were covered with 6 feet of water, livestock drowned, all the families had to leave their homes, and in many cases, their houses were washed down the river. Levees were destroyed, and the entire St. Joe valley became one vast lake. Despite USACE levee construction in 1942, additional flooding in this area occurred in 1946, 1948, 1976, and 1996.
1943	Flooding	Boise and Payette River Basins	No reference and/or no damage reported.
1948	Flooding	Northern and Western Idaho	No reference and/or no damage reported.
1955	Flooding	Southwest Idaho	No reference and/or no damage reported.
April 21, 1956	Flooding (DR-55)	N/A	No reference and/or no damage reported.
May 27, 1957	Flooding (DR-76)	N/A	No reference and/or no damage reported.
August 20, 1959	Flash Flood	Ada	The largest precipitation-related flash flood in recent history occurred August 20, 1959, inundating about 50 blocks in Boise and several hundred acres of farmland with water, rocks, and mud.
1959	Boise Floods	Ada	Wildfires in 1959 lead to dramatic flooding and mudslides around the Boise area. The USDA produced a film showing the resulting mitigation efforts, which has recently been posted online (http://www.youtube.com/watch?v=D2JKOgsrU2M).
June 26, 1961	Flooding (DR-116)	N/A	No reference and/or no damage reported.
February 14, 1962	Flooding (DR-120)	Southern and Eastern Idaho	No reference and/or no damage reported.
February 14, 1963	Flooding (DR-143)	Portneuf and Clearwater Basins	No reference and/or no damage reported.
December 31, 1964	Heavy Rains and Flooding (DR-186)	Statewide and Low Elevations	At the end of December 1964, warm rains on snow caused the Payette, Clearwater, and Big and Little Wood Rivers to flood. The Payette River rose to record levels and flooded irrigation ditches and farmland; estimated damage was $21 million, and two deaths were reported.
March 2, 1972	Severe Storms, Extensive Flooding (DR-324)	Latah	No reference and/or no damage reported.
January 25, 1974	Severe Storms and Flooding (DR-415)	Adams, Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Shoshone, and Washington	Significant flooding struck the St. Joe River Valley again in January 1974. Damages were estimated at $4—$5.5 million to public facilities (including roads and utilities) and $1.5 million to private property.

Date	Event Type	Counties Affected	Description
1976	Teton Dam Failure		Teton Dam Failure
January 1984	Ice Jams and Flooding	Lemhi	Lemhi Ice Jam Floods – 1984. In January 1984, extensive ice jam formation in the Lemhi River, just above the confluence with the Salmon River, led to flooding in and around the town of Salmon. Weather leading to this ice jam flood was typical, with nighttime temperatures averaging –20°F and daytime temperatures near 0°F. Although initial ice jam build-up began on December 22 in the Salmon River, aggressive ice control and flood fighting had allowed local crews to contain the floodwaters prior to January 19th. Flood damage occurred on January 19, 21, 23, and 28. After the floodwaters receded, ice up to 3 feet thick remained in many homes and ice nearly 5 feet thick remained around homes and along streets. Ice jams are frequent in the area, but the flooding was labeled as a base flood event.
February 16, 1984	Ice Jams and Flooding (DR-697)	Lemhi	On February 16, 1984, President Reagan declared the Lemhi County ice jam, ice, and flooding damages a disaster (under the designation of DR-697). The entire county was included in the declaration. Disaster costs included approximately: $433,000 of public assistance – flood fighting, cleanup, and repair work (including extensive levee reconstruction by the USACE); $613,000 of private assistance – SBA home and business loans, insurance claims, and grants. USACE completed Oakley Dam Advance Measures, which were a combination of emergency repairs to outlet controls, and mitigate measures (emergency bypass canal, flashboards) by USACE. Nearly repeated again in 2017. Most of the damage was concentrated in Salmon and in adjacent developed agricultural fields. Only minor injuries were reported, but 325 people were displaced and 81 residences were damaged. Much credit was given to local search and rescue teams for preventing serious injury and loss of life. Businesses, roads, sewers, and levees were also damaged.
May 1991	Flash Flood	Bonner	Warm rain on snow lead to a significant flash flood event near Sandpoint in May 1991. The torrents blew out large sections of the road leading to Schweitzer Basin ski area stranding dozens of people, contaminated the city's primary water supply, and heavily damaged the water treatment facility. The cost to clean out and repair the water treatment facility ran to several hundred thousand dollars. A State Disaster declaration provided some assistance but without a federal declaration the costs to the local community were very high.
June 25, 1992	Severe Thunderstorm, Flooding	Ada	Between 4 pm and 5 pm, a severe thunderstorm moving from the southeast towards the northwest struck Boise, Idaho. More than one inch of rain fell in less than one hour over the Boise urban area and produced flash flooding. Unofficial storm totals were measured at 1.6 inches in southeast Boise. Many streets in the downtown area were flooded with water one to two feet deep. The storm and flash flood occurred during the Boise River Festival and impacted thousands of people who had gathered in downtown Boise for a parade and other festival activities.
August 22, 1995	Flash Flood	Ada	On August 22, 1995, approximately two inches of rain fell on recently burned mountainous terrain near the North Fork of the Boise River, 45 miles to the northeast of Boise. These heavy rains caused a wall of water, rocks, and mud to flow down several creeks into the North Fork of the Boise River and over roads and campgrounds covering several vehicles.

Date	Event Type	Counties Affected	Description
February 11, 1996	Panhandle Floods (DR-1102)	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Shoshone	A combination of existing snow, 10 inches of new snow, and single-digit temperatures in the last week of January 1996 caused ice to form on many rivers. The subsequent warming pattern during the first week of February resulted in flooding in the northern Panhandle counties beginning on February 6. On February 11, 1996, the President declared a major disaster in the State of Idaho (designated DR-1102). Ten counties and the Nez Perce Tribal Nation Land were declared eligible for assistance. Relief totaled $22,635,325 in public assistance, $71,639 in individual assistance, $301,081 from the Natural Resource Conservation Service (NRCS), and $5,022,353 in hazard mitigation grants. In Clearwater County, 167 homes were damaged or destroyed, 40 commercial buildings were damaged, two churches were damaged, and one was destroyed. In the Coeur d'Alene Basin (Kootenai and Shoshone Counties), it was reported that residents were stranded by the floodwaters and had to be contacted by boat, all-terrain vehicles, or helicopters. St. Maries, the Benewah County seat, saw heavy damage despite an extensive levee system; over 100 homes and 19 commercial buildings were flooded. At one mill, 1 million board feet of lumber and a drying kiln were lost. Latah County damage included an estimated $1.6 million in damages to the University of Idaho. Nez Perce County had damage near the community of Peck, where 11 homes were destroyed, six had major damage, and two had minor damage. Extensive damage was also reported on the Nez Perce Tribal Nation Land at Lapwai. Districts 1 and 2 of the Idaho Transportation Department were hit hard by the disaster. In District 1, major damage occurred on U.S. Highway 97 at Carlin Bay; U.S. 2 was closed at Dover, where water covered one-quarter mile of highway. Idaho Highways 200 and 3 were also damaged. Interstate 90 was closed temporarily at Pinehurst and Cataldo. Idaho Highway 6 was closed at Harvard Hill, where approximately 2 miles of road were damaged. 1948 Flood Sandpoint, ID: Source: Ross Hall—www.ccrh.org In District 2, U.S. 95 had 10 miles of damage; it was closed south of Lewiston, where the road washed out in many locations. The stretch of road north of Lewiston at the Palouse Bridge was also closed. Damage occurred on U.S. 12 east, between Cottonwood Creek and Orofino; Idaho 3 was closed from east of Arrow Junction to Juliaetta, with a washout area that was 400 feet long and 12 feet deep. Areas of Idaho Highways 11 and 162 were closed due to rock and mudslides. State Highways 6, 7, 9, and 64 were also damaged, and portions were closed for a period of time.
July 30, 1996	Flash Flood	Cassia	On July 30, 1996, after two hours of heavy rain on the slopes of Black Pine Peak in southeast Cassia County, a flash flood swept across the east bound lanes of Interstate 84, forcing a vehicle off the highway into deep water in a roadside ditch. The vehicle rolled and was carried more than 1,000 feet, and the driver was killed.

Date	Event Type	Counties Affected	Description
December 1996 – January 1997	Northern and Central Floods (DR-1154)	Adams, Benewah, Boise, Bonner, Boundary, Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington	During late December 1996, above-normal snowfall occurred in Northern and Central Idaho. This event was quickly followed by a warm, moist current of air from the subtropics that dumped warm rain or melting snow. The melting snow and heavy rains overwhelmed rivers and their tributaries, leading to severe flooding and widespread landslides mainly in the West- Central region of the State. On December 31, 1996, and January 1, 1997, warm heavy rain fell on extensive low elevation snow in Valley, Boise, Gem, Washington, and Adams Counties. The combination of rapid melting snow and the rain caused numerous mudslides and creeks to exceed their banks. Many roads, bridges, and railroads were washed out along with several homes. The community of South Banks was destroyed as mudslides carrying boulders the size of dump trucks and large trees bulldozed homes down to the canyon below. On January 4, 1997, the President declared a Federal disaster (designated as DR-1154) in the State of Idaho due to severe winter storms, flooding, mud, and landslides related to the above-normal snowfall and spring runoff. Eighteen counties were declared eligible for Federal assistance. Relief totaled $19,404,105 in public assistance, $39,988 in individual assistance, $125,937 from the NRCS, $576,314 from the USACE, and $5,593,892 in hazard mitigation grants. Flood damage was widespread. Railroad tracks and trestles were washed out in dozens of locations. Substantial gravel and silt deposits left by flood waters accumulated on agricultural lands; cattle were stranded, and farm equipment was submerged and damaged. Pesticide containers and fuel tanks were disturbed by the sudden flooding on the Payette and Weiser Rivers. In the City of Payette, approximately 120 homes and 30 businesses were flooded; most problems from a levee break resulted in floodwaters two to three feet above the base flood elevation. In Gem County, 14 levees were damaged, including all three levees in Emmett, which showed large cracks and sections slumped into the river. On the Weiser River, irrigation canals carried floodwaters to portions of the floodplain that would not have normally been flooded by the river itself; some homes and businesses in Weiser were damaged or destroyed from floodwaters conveyed by these irrigation systems. U.S. 55 was restricted for one week and U.S. 95 experienced eleven washouts that stranded residents for days. McCall was isolated, suffering severe economic hardship due to disruption of its winter recreation activities. Five fatalities occurred as citizens self-evacuated by private aircraft during extreme weather.

Date	Event Type	Counties Affected	Description
March 1997	Northern and Southeastern Floods (DR-1777)	Benewah, Bingham, Bonner, Bonneville, Boundary, Butte, Custer, Fremont, Jefferson, Kootenai, Madison, Shoshone	In early March 1997, Northern Idaho received 12 to 18 inches of snow on top of an existing snowpack that exceeded 150 to170 percent of average. A rainstorm followed which resulted in a rapid snow melt. Precipitation for the month of March in this area was 187 percent of normal. The resulting flooding and mudslides lasted for an extended period and damaged many public facilities, including severe impacts to county road systems due to washouts. Additionally, hazardous material contaminants were identified in the Kellogg area. The President issued a Federal Disaster declaration (DR-1177) on June 13, 1997, for Benewah, Bonner, Boundary, Kootenai, and Shoshone Counties. The Snake River Basin also received a significant amount of snowfall during the winter of 1996-97, with the snowpack exceeding 250 percent of normal in some higher elevations. By May, the substantial snowpack in the higher elevations along the continental divide started to produce above normal runoff. In order to accommodate the rapid accumulation, the Bureau of Reclamation began increasing its releases from Palisades Reservoir. By June 11, the flows coming out of the reservoir coupled with the high tributary discharges produced the highest flows on the Snake River since 1918. At its peak, the Snake River flooded as far as a mile from its banks, and many places were inundated by five feet of water. On June 16, flood fights were conducted on the Snake River at Roberts where voluntary evacuations were in effect. River levels were close to overtopping existing flood control levees and flooding of agricultural lands began far from the main channel as irrigation canals overflowed their banks. Numerous closures of county roads and State highways from water and damage to bridges, especially in Jefferson County, had an impact on transportation as well as on response activities. On June 17, flood fighting efforts continued in several small towns, including Menan, Firth, Blackfoot, and Labelle. On June 18, Interstate 15 was closed for nearly 20 miles between Shelley and Blackfoot. On July 7, 1997, six counties in Southeastern Idaho (Bingham, Bonneville, Custer, Fremont, Jefferson, and Madison) were added to the five northern counties already declared under DR-1177. On July 25, Butte County was also declared. Relief totaled $11,365,667 in public assistance, $8,054 in individual assistance, $251,054 from the NRCS, and $1,691,458 in hazard mitigation grants. The State estimated that approximately 500 people were displaced from their homes in Jefferson and Bingham Counties. Agricultural officials estimated that more than 50,000 acres of farm, pasture, and cropland had been flooded; 30,000 in Bingham County alone.
April 14, 2002	Flash Flood	Valley and Boise	On April 14, 2002, flash flooding damaged roads and bridges in Valley and Boise Counties. A debris flow during this event crossed the Banks to Lowman Road near Stair Case rapids. Valley County experienced over 1 million dollars in damage to roads and bridges in the Donnelley area due to small stream flooding.
2003-2005	Flash Floods	Elmore	The road to Atlanta along the Middle Fork of the Boise River was washed out 3 times from 2003 through 2005 due to flash floods and debris flows originating on water repellent soils in the 2003 Hot Creek Fire Burn scar. Vegetation has returned to the burn area and the soil is not as water repellent as it was right after the fire.

Date	Event Type	Counties Affected	Description
June 29, 2004	Severe Thunderstorm, Flash Flood	Ada	On June 29, 2004, between 3:30 pm and 4:30 pm, a severe thunderstorm moving from the southeast towards the northwest struck Boise Idaho. Rainfall accumulations of 1.27 inches in one hour were measured in the north end of Boise that caused flash flooding to develop rapidly. Many streets in the downtown area and in the north end experienced flooding. Minor flood damage occurred to some north end businesses and residential areas. The State Capitol building also sustained some water damage when water entered portions of the basement.
May 6-20, 2005	Flooding (DR-1592)	Nez Perce	A number of storms hit Nez Perce County and a portion of the Nez Perce Tribal Nation Land from May 6th – 20th. On July 6, the President issued a Federal Disaster Declaration (DR-1592). Approximately $1.7 million in damages to infrastructure was assessed and a few individual homes were affected.
April 2006	Flooding	Camas, Lincoln and Gooding	In April 2006, a State disaster was declared and was extended several times to February 2007. The event was caused by above average spring precipitation, heavy runoff, and rapid snowmelt resulting in flooding in Camas, Lincoln, and Gooding Counties. The State's costs were as follows; Gooding County—no State monies were paid, Camas County—$454,171.14, and Lincoln County—$21,757.51.
December 30 – January 4, 2006	Winter Flooding (DR-1630)	Owyhee	From December 30th, 2005, through January 4th, 2006 a severe winter storm and flooding impacted Owyhee County. Presidential Disaster Declaration (DR-1630) was issued on February 28th.
May 15 – June 9, 2008	Panhandle Flooding (DR-1781)	Kootenai, Shoshone	Extensive flooding impacted portions of Kootenai and Shoshone counties from May 15th through June 9th. Over $1 million dollars of bridge and road damage occurred. The President signed the Disaster Declaration (DR-1781) on July 31.
June 2-10, 2010	Northern State Flooding (DR-1927)	Adams, Gem, Idaho, Lewis, Payette, Valley, Washington	Severe storms and associated flooding impacted a large portion of the State between June 2nd and 10th. On July 27th, the President signed off on a Disaster Declaration (DR-1927). Counties impacted included: Adams, Gem, Idaho, Lewis, Payette, Valley, and Washington. Preliminary damage estimates included over $5 million to roads and bridges.
March 31 – April 11, 2011	Northern Idaho Flooding (DR-1987)	Clearwater, Idaho, Nez Perce	Flooding, landslides, and mudslides impacted a large portion of the State between March 31st and April 11th. On May 20th, the President signed off on a Disaster Declaration (DR-1987). Counties impacted included: Bonner, Clearwater, Idaho, Nez Perce, and Shoshone in addition to the Nez Perce Tribal Nation. Preliminary damage estimates to infrastructure totaled $4.6 million.
May 10 – July 19, 2011	Eastern Idaho Flooding	Jefferson, Madison, and Bingham Counties	Late spring temperatures, combined with rain, delayed snowmelt until late April. High flows persisted on the Snake River above American Falls from 10 May to 19 July, with a peak flow of 31,400 cfs recorded at Blackfoot on May 28.

Date	Event Type	Counties Affected	Description
February 5-27, 2017	Severe Winter Storms and Flooding (DR-4310)	Statewide	Extreme snowfall amounts in December and January led to extensive flooding issues in February. The hardest hit counties included Cassia, Minidoka, Jefferson, Lincoln and Bingham Counties but all counties in the state experienced at least minor flooding. Flooding began February 4th and continued to affect low lying areas until the end of the month and continued into March. Overall, the State of Idaho had approximately $9.06 million in property damage from this event. In Ada County, neighborhood roads and yards along Cole Road were inundated due to Five Mile Creek flooding. In Bannock County, field flooding occurred throughout the County. A house on Andrew Street in Pocatello also flooded on February 8th. Wallin Road was closed on February 10th in Chubbuck due to water on the road. The area of Marsh Creek also flooded. The Portneuf River in Pocatello reached flood stage on the 11th with flooding in Sacajawea Park. In Benewah County, an ice jam on the St. Joe River flooded portions of St. Joe River Road and making it impassable. Minor field flooding was reported downstream as the ice jam broke up and released the dammed water. Other counties reported sheet flooding, fields flooding, flooded roadways that become impassable, damaged roads, basement flooding, and ice jams. Custer County declared a county disaster due to damages from the flooding and snow melt. On February 10th, an ice jam developed on the St. Joe River between St. Maries and Calder. Water backed up behind the ice jam causing minor flooding upstream in the Town of Calder. St. Joe River Road also flooded in places which led to closing of the road. An ice jam also occurred on Weiser River, just south of Weiser and caused flooding on U.S. Highway 95. Jefferson County was declared a disaster area by the State due to the magnitude of damage. Roadway flooding occurred near Roberts on February 11th and 12th, but extreme flooding commenced after the 19th. Numerous roads were closed throughout the county due to flooding. Water on some roads reached levels that caused cars to float. Road crews described some roads similar to waterfalls. Lincoln County was also declared a disaster area by the State due to significant damage to homes and roadways. Many roads were closed by the 11th with water over roadways from east of Shoshone to the Minidoka County line. The Town of Kimana had significant flooding as well. On March 30, 2017, Governor Otter requested a major disaster declaration due to the severe winter storms and flooding experienced during the period of February 5-27, 2017. The Governor requested a declaration of Public Assistance for 11 counties and hazard mitigation statewide. On April 21, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho. The declaration made Public Assistance available and eligible local governments and certain private non-profit organizations. The primary impact from this disaster was damage to roads and bridges. The State requested over $8.7 million in public assistance.

Date	Event Type	Counties Affected	Description
March 6-28, 2017	Severe Storms, Flooding, Landslides and Mudslides (DR-4313)	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Shoshone, and Valley	The month of March was a very wet month over the Idaho Panhandle region. A series of storms brought periodic heavy rain to the region. The rain, in combination with warmer temperatures and rapid snowmelt, widespread flooding occurred. Rainfall totals ranged from 4.58 inches in Bonners Ferry to 7.19 inches at the University of Idaho at Moscow. This led to numerous debris flows in steep terrain and widespread flooding in fields and low-lying areas. Numerous roads were flooded or cut by debris flows throughout the Idaho Panhandle during the second half of March. The St. Joe River, the Coeur D'Alene River and Palouse River as well as numerous smaller streams and lakes rose above flood stage during this event. The St. Joe River at Calder crested at 13.1 feet on March 16th and 13.5 feet on March 19th. The Weiser River reached minor flood stage. The Palouse River reached major flood stage which led to extensive flooding of fields, parks and roads. The St. Joe River reached flood stages, flooding fields, roads, outbuildings, and yards of residences and businesses. Emergency repairs were needed to stabilize a threatened levee in the town of St. Maries. Flooding along the Payette and Snake Rivers impacted the surrounding fields and roadways. Lake Coeur D'Alene and the Spokane River draining Lake Coeur d'Alene also crested above flood stage damaging numerous docks, parks and homes along the shoreline and river. The Lake Coeur D'Alene gauge at Coeur D'Alene recorded a rise above the lake Flood Stage of 2133.0 feet on March 18th. The lake crested at 2134.9 feet on March 21st. The affected counties reported mudslides, extensive field and roadway flooding, sheet flooding, damage to infrastructure, stranded residents, and damage to homes and businesses. In Bonner County, a train carrying 50 to 60 empty coal cars derailed near Kootenai after the trackers were undermined by flooding. A landslide knocked a home off its foundation and carried it down a hill near Sagle. Idaho declared a state of emergency for seven counties in north Idaho to assist recovery crews in obtaining resources to repair damage to area roads and other infrastructure. These counties were also included in a FEMA major disaster declaration. On May 1, 2017, Governor Otter requested a major disaster declaration due to the severe storms, flooding, landslides, and mudslides that occurred during the period of March 6-28, 2017. The Governor requested a declaration of Public Assistance for eight counties and hazard mitigation statewide. On May 18, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho. The declaration made Public Assistance available and eligible local governments and certain private non-profit organizations. The primary impact from this disaster was damage to roads and bridges. The State requested over $9.6 million in public assistance. Overall, the State of Idaho had approximately $10.5 million in damages from this series of flooding events.

Date	Event Type	Counties Affected	Description
April 2017	Flooding (DR-4342)	Ada, Blaine, Bannock, Canyon, and Lincoln	The month of April brought heavy rain, snowmelt and flooding to Idaho. The St. Joe River began to flood in March and remained above minor flood stage at St. Maries through early April. The Big Wood River flooded in east-central Gooding County along Highway 46. The Boise River flooded throughout April as a result of flood control efforts by USACE (planned releases from Lucky Peak Reservoir). The Snake River flooded in southern Washington County. In Blaine and Lincoln Counties, releases from Magic Reservoir closed West Magic Road in Magic City (Blaine County). In Lincoln County, there was field flooding from Big Wood River which also washed out a bridge on personal property. Madison County declared a flood emergency. The County experienced riverbank erosion due to high runoff. In Bannock County, the Portneuf River continued to flood through much of April with the gauge in Pocatello above flood stage much of the month and occasionally to moderate flooding stage. Sacajawea Park was under water for much of the month. Some flooding continued also in the Inkom area from the river with the area between BlackRock and Inkom off Portneuf road, and the subdivision off of Leo Lane. On October 7, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho.
May 6 – June 16, 2017	Flooding, Landslides, and Mudslides (DR-4333)	Ada, Bannock, Blaine, Camas, Canyon, Custer, Elmore, and Gooding	As in March and April, winter storm melt from record winter snowfall led to flooding in southeast Idaho, especially in the central mountains and along the Big Wood River. Field flooding caused agricultural damage and many roads and facilities were damaged from the floods as well. In Ada and Canyon Counties, the Boise River remained in flood stage during the entire month of May due to the planned release from Lucky Peak dam. In Madison County, minor flooding continued through the month, damaging roads and agricultural crops and a levee. In Bannock County, the Portneuf River remained above flood stage for most of the month with much of the flooding occurring in the Inkom area. The Sacajawea Park in Pocatello remained flooded as well for much of the month. Fields in Inkom encountered agricultural damage with many roads and bridges in that area damaged. In Custer County, the Salmon River at Salmon reached moderate flood stage and caused flooding from the headwaters of the river through Challis into Custer County. Trail Creek, Valley Creek, Garden Creek and Antelope Creek all overflowed banks with flood warnings throughout the month continuing. Backcountry roads and campgrounds experienced major damage. The flooded fields led to significant agriculture damage. In Blaine County, the Big Wood River reached moderate and major flood stage at Hailey. The entire Big Wood River Valley experienced major flooding with as many as 5,000 evacuations from Bellevue to Hailey to Ketchum and Sun Valley. Many people were without power in the valley. Damage in the county included farms, homes, businesses, roadways, bridges, infrastructure, preserves, and levees. On July 19, 2017, Governor Otter requested a major disaster declaration due to flooding, landslides, and mudslides that occurred during the period of May 6-June 16, 2017. The Governor requested a declaration of Public Assistance for five counties and hazard mitigation statewide. On August 27, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho. The declaration made Public Assistance available and eligible local governments and certain private non-profit organizations. The primary impact from this disaster was damage to roads and bridges. The State requested over $3.8 million in public assistance. Overall, the State had approximately $10.3 million in damages from this event.

Source: Idaho State Hazard Mitigation Plan 2013; FEMA 2017; NOAA NCEI 2017

Note: Major events include those identified in the NOAA-NCEI storm events database where there were losses and/or fatalities associated with the event.

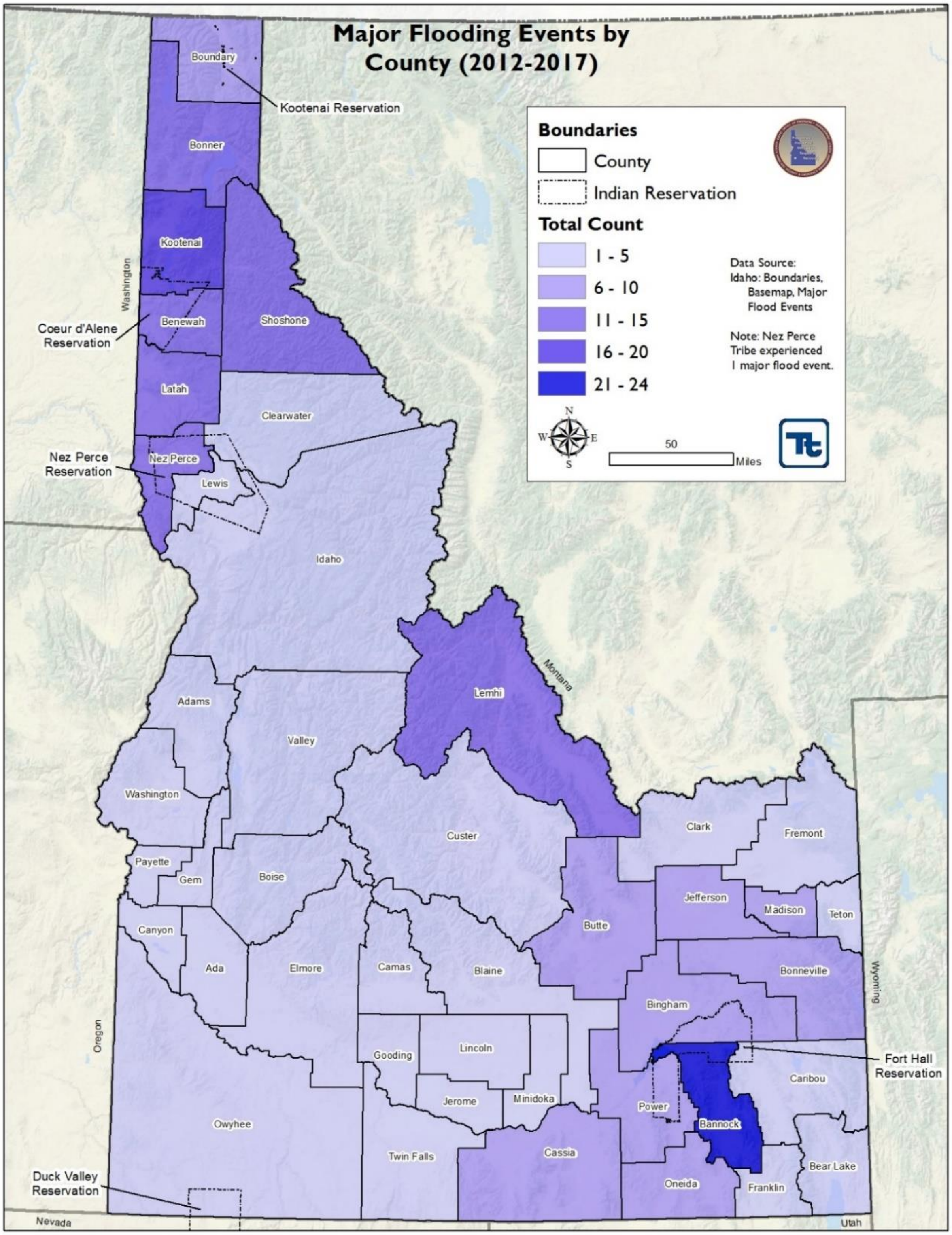


Figure 3.2.N. Major Flooding Events by County, 2012-2017

Table 3.2.O. Number of Ice Jams between 1909 and 2017, by County

County	Total Number of Ice Jams	County	Total Number of Ice Jams
Ada	9	Gem	0
Adams	11	Gooding	3
Bannock	15	Idaho	3
Bear Lake	0	Jefferson	1
Benewah	12	Jerome	0
Bingham	10	Kootenai	3
Blaine	20	Latah	1
Boise	18	Lemhi	54
Bonner	0	Lewis	5
Bonneville	4	Lincoln	4
Boundary	6	Madison	1
Butte	18	Minidoka	0
Camas	1	Nez Perce	3
Canyon	1	Oneida	0
Caribou	1	Owyhee	3
Cassia	4	Payette	1
Clark	11	Power	0
Clearwater	4	Shoshone	15
Custer	10	Teton	2
Elmore	2	Twin Falls	0
Franklin	0	Valley	4
Fremont	8	Washington	37

Source: CREEL 2017

Table 3.2.P. Ice Jams Events in Idaho between 1970 and 2017

Event Date	River/Location	Counties Affected	Description/Losses
January 1984	Lemhi River (DR-697)	Lemhi	In January 1984, extensive ice jam formation in the Lemhi River, just above the confluence with the Salmon River, led to flooding in and around the town of Salmon. Weather leading to this ice jam flood was typical, with nighttime temperatures averaging –20°F and daytime temperatures near 0°F. Although initial ice jam build-up began on December 22 in the Salmon River, aggressive ice control and flood fighting had allowed local crews to contain the floodwaters prior to January 19th. Flood damage occurred on January 19, 21, 23, and 28. After the floodwaters receded, ice up to 3 feet thick remained in many homes and ice nearly 5 feet thick remained around homes and along streets. Ice jams are frequent in the area, but the flooding was labeled as a base flood event. On February 16, 1984, President Reagan declared the Lemhi County ice jam, ice, and flooding damages a disaster (under the designation of DR-697). The entire county was included in the declaration. Disaster costs included approximately: $433,000 of public assistance – flood fighting, cleanup, and repair work (including extensive levee reconstruction by the USACE); $613,000 of private assistance – SBA home and business loans, insurance claims, and grants. Most of the damage was concentrated in Salmon and in adjacent developed agricultural fields. Only minor injuries were reported, but 325 people were displaced and 81 residences were damaged. Much credit was given to local search and rescue teams for preventing serious injury and loss of life. Businesses, roads, sewers, and levees were also damaged. Woody debris commonly piles up in many drainage areas, especially those that have been logged. Lightning Creek (Pend Oreille), Lawyer Creek, and Little Wood River (Ketchum and Hailey) have all experienced flooding from debris jams. Flooding from such events tends to be localized but may cause significant damages.
January 20, 2012	Weiser River	Valley	No reference and/or no damage reported.
January 14, 2013	Salmon River	Lemhi	There was an estimated one-mile-long ice jam moving through the stretch of the Salmon River that runs through the City of Salmon in Lemhi County. Quickly rising water levels were observed as a result of this ice jam. The Main Street Bridge in the City of Salmon (Highway 93), as well as homes and structures near the banks of the river, experienced minor flooding.
January 21, 2013	Snake River	Washington	Unusual cold weather in January led to freezing-up of the Snake River near Weiser (Washington County).
December 9, 2013	Salmon River	Lemhi	In north central Idaho, ice jams continued to grow on the Salmon River between North Fork and Salmon. The jam was approximately 15 miles long.
December 11, 2013	Snake and Weiser Rivers	Washington	Ice jams were reported at the confluence of the Snake and Weiser Rivers in Weiser (Washington County).
November 16, 2014	Henry's Fork	Fremont	Fremont County Emergency Management reported minor flooding along the Henry's Fork River at St. Anthony due to an ice jam near the South Bridge Street bridge. On November 17th, the jam opened up a channel and the river gauge fell below flood stage.
December 8, 2016	Henry's Fork	Fremont	No reference and/or no damage reported.

Event Date	River/Location	Counties Affected	Description/Losses
December 16, 2016	Salmon River	Lemhi	An ice jam was spotted on the Salmon River in northern Lemhi County, causing minor flooding along the river in the vicinity of 4th of July Creek. Water spread out from the river due to the ice jam and impacting surrounding residents.
December 30, 2016	Big Wood River	Blaine	Ice jams were occurring on Big Wood River above Ketchum, causing isolated flooding.
January 4, 2017	Lemhi River	Lemhi	An ice jam on the Lemhi River in Lemhi County led to the NWS issuing a flood advisory for the area. OEM and law enforcement reported water backing onto a property along the river.
January 7, 2017	Snake River	Washington	15 mile long freeze up ice jam beginning near Farewell Bend State Rec Area, extended upstream to Payette
February 10, 2017	Mores Creek, Saint Joe River, and Weiser River	Ada, Shoshone, and Washington	An ice jam blocked the Weiser River from flowing normally into the Snake River. This led to the NWS issuing a flood warning for the Weiser River near Weiser. Water flowed around the normal channel. The east part of the City of Weiser in Washington County experienced some flooding. Peak stage reached 12 feet. Along Mores Creek in Boise (Ada County), an ice jam released, and ice and debris flowed downstream, causing elevated stages underneath a concrete bridge that leads to the Wilderness Ranch water treatment facility near Idaho 21.
March 6, 2017	Antelope Creek	Custer	No reference and/or no damage reported.

Sources: Idaho State Hazard Mitigation Plan 2013; CRREL 2017

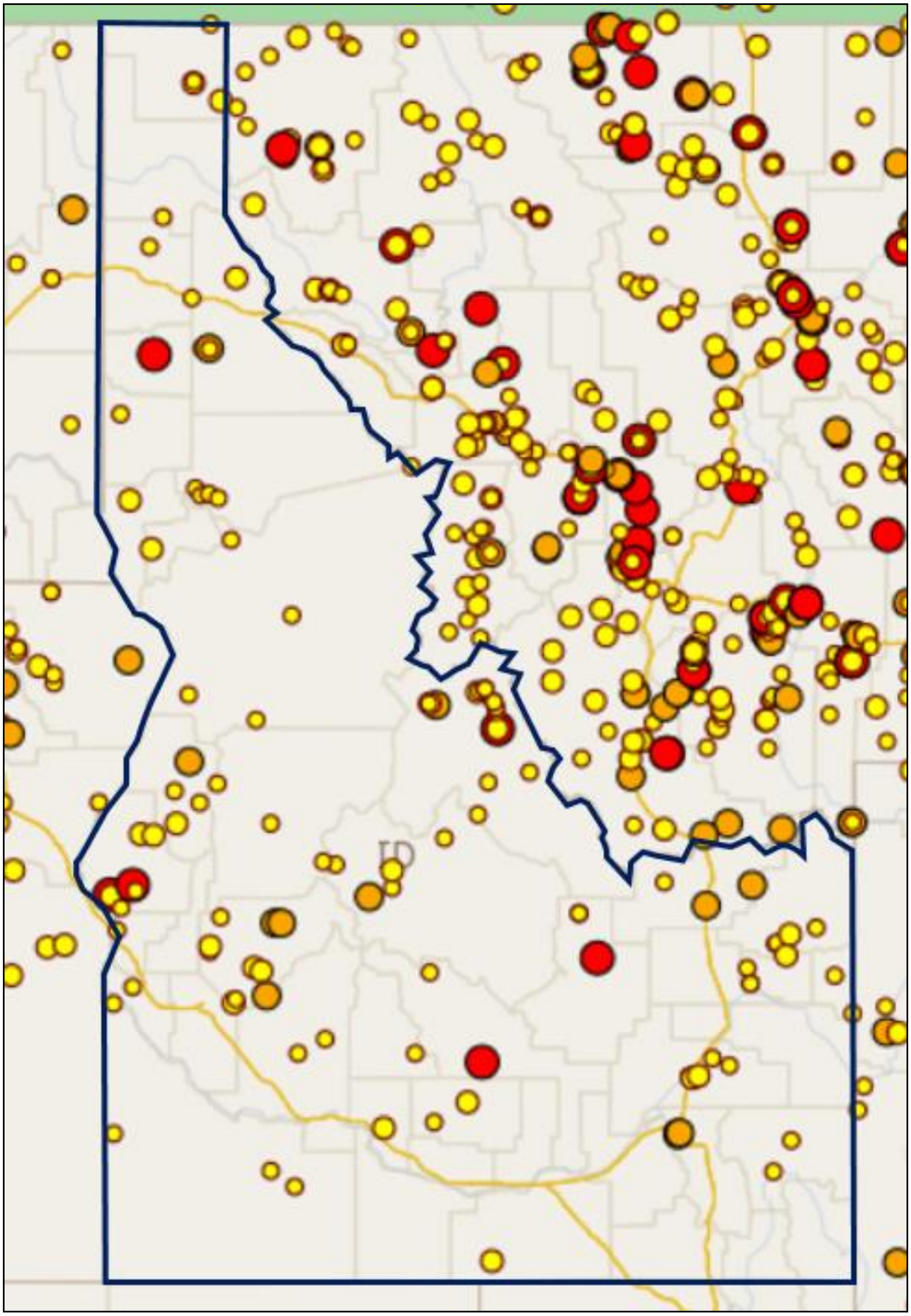


Figure 3.2.Q. Ice Jams in Idaho

Table 3.2.S. Dam, Levee, and Canal Failure Events in Idaho, 2012 to 2017

Dates of Event	Event Type	Counties Affected	Losses / Impacts
1917, 1955, and 1959	New York Canal	Ada	Built from 1906-1908 and enlarged in 1912, the canal runs through Boise, ID west for 40 miles to Lake Lowell. The structure's capacity is 2,800 cfs.
1973	Ridenbaugh Canal Failure	Ada	No reference and/or no damage reported.
June 5, 1976	Teton Dam Failure	Bingham, Bonneville, Fremont, Madison, and Jefferson	On June 5, 1976, Teton Dam failure resulted in eleven deaths and an estimated $2 billion in damages. Approximately 80 billion gallons of water were released flooding Wilford, Sugar City, Rexburg, Roberts, Idaho Falls, and Blackfoot. On June 6, President Gerald Ford declared Bingham, Bonneville, Fremont, Madison, and Jefferson Counties a federal disaster area.
1984	Oakley Dam Failure	Cassia	Oakley Dam nearly overtopped—constructed canal to mitigate flooding
1984	Twin Falls County Dam Failure	Twin Falls	Salmon Falls Creek release caused flooding
1991	Kirby Dam Failure	Elmore	On May 26, 1991, Kirby Dam collapsed, cutting off electrical power and blocking the primary access bridge to Atlanta. Contaminated sediments (containing arsenic, mercury, and cadmium) were released into the Middle Fork of the Boise River.
2005	Gem County Canal Failure	Gem	Occurred in Emmett, breach necessitated assistance from Gem County Road and Bridge Dept.
2006	Mora Canal Failure	Mora	Constructed from 1909-1911 in Kuna, ID with a 1,300 cfs capacity, the canal breached due to unknown causes.
2009	Logan Northern Canal Failure (Utah)	N/A	Southeast neighboring community Logan, Utah suffered a 2009 failure of the Logan Northern Canal resulting in 3 deaths and extensive residential damages. Just three years prior a Utah State University thesis warned the community of this danger as did multiple landslide studies.
2010	Canyon County Canal Failure	Canyon	Occurred in Wilder, Washed out road
2010	Brown's Pond Dam Failure (DR-1927)	Valley	Browns Pond Dam overtop and breach during rain on snow event—federal declaration
2011	Canyon County Canal Failure	Canyon	Occurred in Caldwell, washed out roads and flooded several homes
2011	Kootenai County Levee Failure	Kootenai	Hayden Lake imminent threat from wave erosion on dike
2011	Jerome County Canal Failure	Jerome	Occurred in Jerome, Flooded homes, basements, and streets and damaged a section of main railroad tracks.
2011	Elmore County Canal Failure	Elmore	Occurred in Glenns Ferry, Flooded homes, basements, and streets, damaged a section of main railroad tracks

Dates of Event	Event Type	Counties Affected	Losses / Impacts
April 22-30, 2012	Flood / Levee Failure	Benewah	Mountain snowmelt along with periods of moderate rainfall led to high flows on the Coeur d'Alene and St. Joe Rivers. Temperatures in the valleys across northern Idaho climbed into the 70s and lower 80s from April 23rd through the 26th. This warm spell was then followed by a cooler, but wet pattern through the end of April. The combination of snowmelt and rainfall resulted in main stem river flooding in the Coeur d'Alene and St. Joe River basins. High levels on Lake Coeur d'Alene resulted in a slow recession of the St. Joe River at St. Maries, which continued to have flooding problems into the month of May. In Benewah County, flood waters from the St. Joe River at St. Maries covered Lagoon Road and inundated some residential properties. Additionally, some damage was observed on the levees. A rotational failure on the riverward side and slippage in a part of the one of the levees occurred with approximately $20,000 in property damage.
July 1-11, 2012	Flood, Planned Dam Release	Boundary	Due to a very wet June and early July, large quantities of water were released out of Libby Dam to accommodate the rising water levels in Lake Koocanusa. Planned dam releases up until this event kept the River at Bonners Ferry just below flood stage. However, added releases from the dam pushed the river above its flood stage, which resulted in widespread flooding along the River at Bonners Ferry and downstream to the Canadian border. In Boundary County, the high flows out of Libby Dam in northwest Montana resulted in widespread flooding along the Kootenai River in and around the city of Bonners Ferry and downstream to the Canadian border. Damage occurred along the dikes in Bonners Ferry. Volunteers shored up 500 feet of levee behind the Kootenai River Inn to prevent water from spilling in. Water filled sub-surface storage areas of the General Feed and Grain located near the river in Bonners Ferry. Sloughing of dikes downstream of Bonners Ferry was observed as well. An extensive amount of water seeped into farmlands throughout the Kootenai River valley. Over 5,000 acres of farmland was damaged resulting in $4 million in crop damage.
2012	Ada County Canal Failure	Ada	Residences in Eagle and Star were threatened by a breach in a poorly maintained section of ditch parallel to the Boise River during the summer of 2012.
August 9, 2013	Heavy Rain, Flash Flood	Lemhi	Slow moving thunderstorms produced heavy rain and flash flooding over the old 2012 Mustang burn scar in Lemhi County. Up to one foot of debris was deposited on roads in several places in the County. Increased flow, up to two feet in Colson Creek, broke up a temporary earthen dam that emptied the pond. Approximately $1,000 in property damage from this event.
February 12-14, 2014	Heavy Rain, Snowmelt, Flood	Kootenai	Areas across the Idaho Panhandle experienced moderate to heavy rainfall. In combination with snowmelt and frozen ground, this led to heavy runoff that led to several drive washouts for residents on hilly terrain across Kootenai County. The LA tour Creek washed away a small levee and a parcel of land on South Latour Creek Road. Approximately $160,000 in property damage from this event.
August 13, 2014	Heavy Rain, Flash Flood	Lemhi	Thunderstorms brought heavy rainfall that triggered debris flows across the Mustang burn scar, west of Shoup. The debris flows occurred at Boulder Creek, Owl Creek, Colson Creek and at an unnamed gulch. The unnamed gulch produced a large debris flow with rock onto the main Salmon River Road. A man-made dam located near the delta of Colson Creek was damaged.

Sources: NOAA NCEI 2017; FEMA 2017; Idaho State Hazard Mitigation Plan 2013

Table 3.2.T. Flood-Related State and Federal Declarations (1954 to 2017)

Year	Date	State	Federal	Counties Affected
1956	April 21, 1956		DR-55	
1957	May 27, 1957		DR-76	
1961	June 26, 1961		DR-116	
1962	February 14, 1962		DR-120	
1963	February 14, 1963		DR-143	
1964	December 31, 1964		DR-186	Ada, Bannock, Benewah, Blaine, Boise, Bonneville, Butte, Camas, Caribou, Cassia, Clearwater, Elmore, Gem, Gooding, Idaho, Jerome, Kootenai, Latah, Lewis, Lincoln, Minidoka, Nez Perce, Owyhee, Payette, Power, Shoshone, and Washington
1972	March 2, 1972		DR-324	Latah
1974	January 25, 1974		DR-415	Adams, Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Shoshone, and Washington
1979	January	X		Bingham, Washington
	February	X		Canyon, Washington
	February	X		Nez Perce
1980	March	X		Power, Oneida
1982	February	X		Bonner, Washington
	April	X		Blaine
1983	June	X		Jefferson
1984	February 16, 1984		DR-697	Lemhi
	May	X		Cassia
	May	X		Bannock, Twin Falls
	June	X		Jefferson
	June	X		Owyhee
	December	X		Lemhi, Butte
1985	January	X		Cassia
1986	January	X		Canyon, Payette, Washington
	February	X		Owyhee
	February	X		Boise
	June	X		Boise, Custer
1990	September	X		Elmore
1991	April	X		Bonner
1994	December	X		North Idaho
1996	February 11, 1996	X	DR-1102	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Payette, Shoshone
	May	X		Payette
	June	X		Boundary, Kootenai, Latah, Shoshone

Year	Date	State	Federal	Counties Affected
1997	November 1996—January 1997	X	DR-1154	Adams, Benewah, Boise, Bonner, Boundary, Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington
	March—June 1997	X	DR-1177	Benewah, Bingham, Bonner, Bonneville, Boundary, Butte, Custer, Fremont, Jefferson, Kootenai, Madison, Shoshone
2005	July 6, 2005		DR-1592	Nez Perce
2006	February 27, 2006		DR-1630	Owyhee
	February—April	X		Camas, Lincoln, Gooding
2008	May—July 2008	X	DR-1781	Kootenai, Shoshone
2010	June—July 2010	X	DR-1927	Adams, Gem, Idaho, Lewis, Payette, Valley, Washington
2011	March 31, 2011	X	DR-1987	Bonner, Clearwater, Idaho, Nez Perce, Nez Perce Tribal Nation, Shoshone
	January—February	X		Shoshone
2012	July 5, 2012	ID-02-2012		Boundary
2017	February 5, 2017	ID-02-2017	DR-4310	Bingham, Cassia, Elmore, Franklin, Gooding, Jefferson, Jerome, Lincoln, Minidoka, Twin Falls, and Washington
	March 6, 2017	ID-03-2017	DR-4313	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Shoshone, and Valley
	March 29, 2017	ID-04-2017	DR-4342	Ada, Canyon, and Gooding
	May 6, 2017	ID-05-2017	DR-4333	Ada, Blaine, Camas, Canyon, Custer, Elmore, and Gooding

Source: Idaho State Hazard Mitigation Plan 2013; FEMA 2017
Note: The date listed is the date the event was included in the declaration.

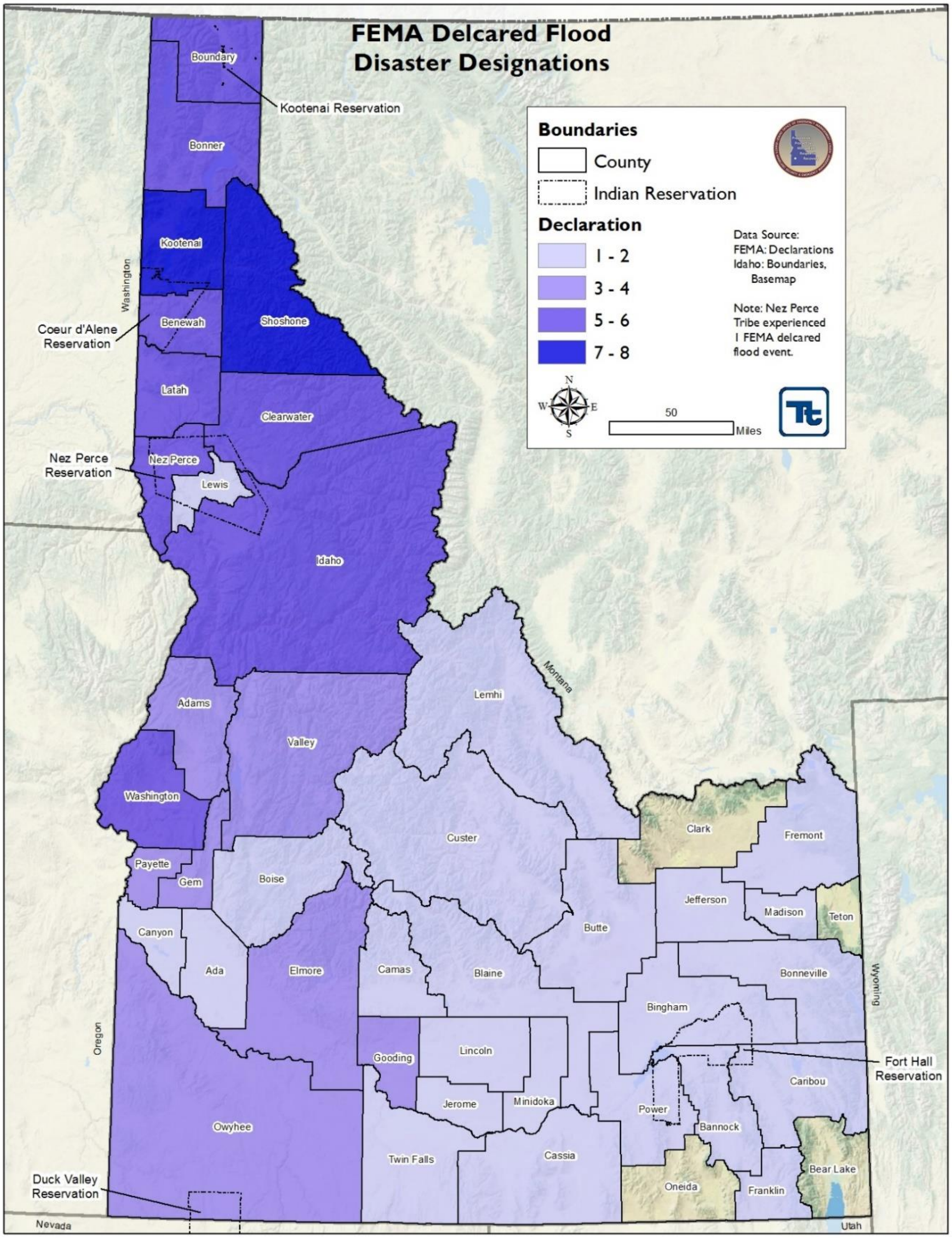


Figure 3.2.U. FEMA Flood Declarations in Idaho

SEVERE WEATHER

Table 3.3.M. Winter Storm Events in Idaho, 1933 – 2017

Date	Event Type	Counties Affected	Description
March 3, 1972	Severe Storms, Snowmelt and Flooding	Latah	Federal disaster declared for severe storms and associated snowmelt and flooding conditions in Idaho.
January 1974	Severe Storms and Flooding	Adams, Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Shoshone, and Washington	Federal disaster declared for severe storms and associated extensive flooding in Idaho.
1989	Blizzard	Clark	Severe winds and blizzard conditions kept ranchers from reaching livestock.
January 1996	Winter Weather (DR-1102)	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Payette, Shoshone	The third week of January brought large amounts of low-elevation snow, especially in the Panhandle region, where stations measured an additional 10 inches of snow. By the end of January, sites in the north had as much as 2½ feet of snow on the ground. During the last week of January, temperatures dropped below 0, and highs remained in the single digits, causing ice to form on many rivers. Subsequent warming led to extensive flooding throughout the region. On February 11, 1996, the President declared a major disaster in the State of Idaho (designated DR-1102). Ten counties and the Nez Perce Tribal Nation Land were declared eligible for assistance. As of February 1, 2001, this assistance included $22,635,325 in public assistance, $71,639 in individual assistance, $301,081 from the NRCS, and $5,022,353 in hazard mitigation grants. Although much of this damage derived from flooding, the preceding storm clearly contributed to the disaster.
November 1996 – January 1997	Winter Storms (DR-1154)	Kootenai, Clearwater, and Idaho	In the last months of 1996, significant early season storms caused extensive damage and subsequently led to severe landslides and flooding throughout Northern Idaho. By many measures, this was a significant series of storms. Mountain snowpacks were holding more than 150 percent of their normal water content. Snowfall in areas of the Panhandle counties sometimes exceeded the design loads of buildings. During November 16-21, 2 to 3 feet of snow were dumped in the Bonners Ferry area, collapsing roofs of businesses, schools, and homes. On November 19, freezing rain produced 1 inch of ice in Kootenai, Clearwater, and Idaho Counties. Strong winds and ice toppled numerous trees and power lines. Power outages lasted for weeks. Additional above-normal snowfall fell in late December throughout Northern and Central Idaho. Subsequent warm rains produced heavy runoff that overwhelmed rivers and led to flooding and widespread landslides. On January 4, 1997, the President declared a major disaster (DR-1154) in 18 counties, making them eligible for Federal assistance. As of February 1, 2001, assistance included $19,404,105 in public assistance, $39,988 in individual assistance, $125,937 from the NRCS, $576,314 from the U.S. Army Corps of Engineers, and $5,593,892 in hazard mitigation grants.

Date	Event Type	Counties Affected	Description
December 30, 2005 – January 4, 2006	Winter Storm	Owyhee	A Federal disaster was declared for a storm that hit Owyhee County between December 30, 2005, and January 4, 2006.
2008	Heavy Snow	Bonner, Boundary, Kootenai, Latah, and Shoshone	A State disaster was declared for a storm that brought heavy snow to Bonner, Boundary, Kootenai, Latah, and Shoshone counties
2009	Severe Winter Weather	Benewah	A State disaster was declared for a storm that brought severe winter weather to Northern Idaho, specifically for Benewah County.
2012	Severe Winter weather	Northern Idaho—Bonner, Idaho, Latah, and Shoshone	A State disaster was declared for a storm that brought severe winter weather to Bonner, Idaho, Latah, and Shoshone counties.
January 23-24, 2013	Icing Conditions	Treasure Valley area	Icing conditions, the worst in 30 years according to Boise NWS forecasters, were reported in Idaho's Treasure Valley on Wednesday (1/23/13) and Thursday (1/24/13) due to a prolonged cold snap. Roadway icing forced closure of 83 miles of Interstate 84 between Boise and Bliss where dozens of long-haul trucks were observed sliding off the highway. I-84 was reported reopened Thursday afternoon after de-icing operations. Burst frozen piping affected over a thousand customers in Boise and surrounding communities and prompted fire department responses to fire sprinkler water flow alarms.
December 16-27, 2015	Severe Winter Storms (DR-4252)	Benewah, Bonner, and Kootenai	On January 21, 2016, Governor Otter requested a major disaster declaration due to severe winter storms during the period of December 16-27, 2015. The Governor requested a declaration for Public Assistance for three counties and hazard mitigation statewide. On February 1, 2016, President Obama declared a major disaster exists in Idaho, which made Public Assistance available to the State and eligible local governments and certain private non-profit groups. The primary impact to the State was damage to public utilities. The State requested over $5.2 million in public assistance.

Date	Event Type	Counties Affected	Description
February 5, 2017	Severe Winter Storms and Flooding (DR-4310)	Bingham, Cassia, Elmore, Franklin, Gooding, Jefferson, Jerome, Lincoln, Minidoka, Twin Falls, and Washington	Extreme snowfall amounts in December and January led to extensive flooding issues in February. The hardest hit counties included Cassia, Minidoka, Jefferson, Lincoln and Bingham Counties but all counties in the state experienced at least minor flooding. Flooding began February 4th and continued to affect low lying areas until the end of the month and continued into March. Overall, the State of Idaho had approximately $9.06 million in property damage from this event. In Ada County, neighborhood roads and yards along Cole Road were inundated due to Five Mile Creek flooding. In Bannock County, field flooding occurred throughout the County. A house on Andrew Street in Pocatello also flooded on February 8th. Wallin Road was closed on February 10th in Chubbuck due to water on the road. The area of Marsh Creek also flooded. The Portneuf River in Pocatello reached flood stage on the 11th with flooding in Sacajawea Park. In Benewah County, an ice jam on the St. Joe River flooded portions of St. Joe River Road and making it impassable. Minor field flooding was reported downstream as the ice jam broke up and released the dammed water. Other counties reported sheet flooding, fields flooding, flooded roadways that become impassable, damaged roads, basement flooding, and ice jams. Custer County declared a county disaster due to damages from the flooding and snow melt. On February 10th, an ice jam developed on the St. Joe River between St. Maries and Calder. Water backed up behind the ice jam causing minor flooding upstream in the Town of Calder. St. Joe River Road also flooded in places which led to closing of the road. An ice jam also occurred on Weiser River, just south of Weiser and caused flooding on U.S. Highway 95. Jefferson County was declared a disaster area by the State due to the magnitude of damage. Roadway flooding occurred near Roberts on February 11th and 12th, but extreme flooding commenced after the 19th. Numerous roads were closed throughout the county due to flooding. Water on some roads reached levels that caused cars to float. Road crews described some roads similar to waterfalls. Lincoln County was also declared a disaster area by the State due to significant damage to homes and roadways. Many roads were closed by the 11th with water over roadways from east of Shoshone to the Minidoka County line. The Town of Kimana had significant flooding as well. On March 30, 2017, Governor Otter requested a major disaster declaration due to the severe winter storms and flooding experienced during the period of February 5-27, 2017. The Governor requested a declaration of Public Assistance for 11 counties and hazard mitigation statewide. On April 21, 2017, President Trump declared that a major disaster declaration exists in the State of Idaho. The declaration made Public Assistance available and eligible local governments and certain private non-profit organizations. The primary impact from this disaster was damage to roads and bridges. The State requested over $8.7 million in public assistance.

Sources: NOAA NCEI 2017; FEMA 2017; Idaho State Hazard Mitigation Plan 2013

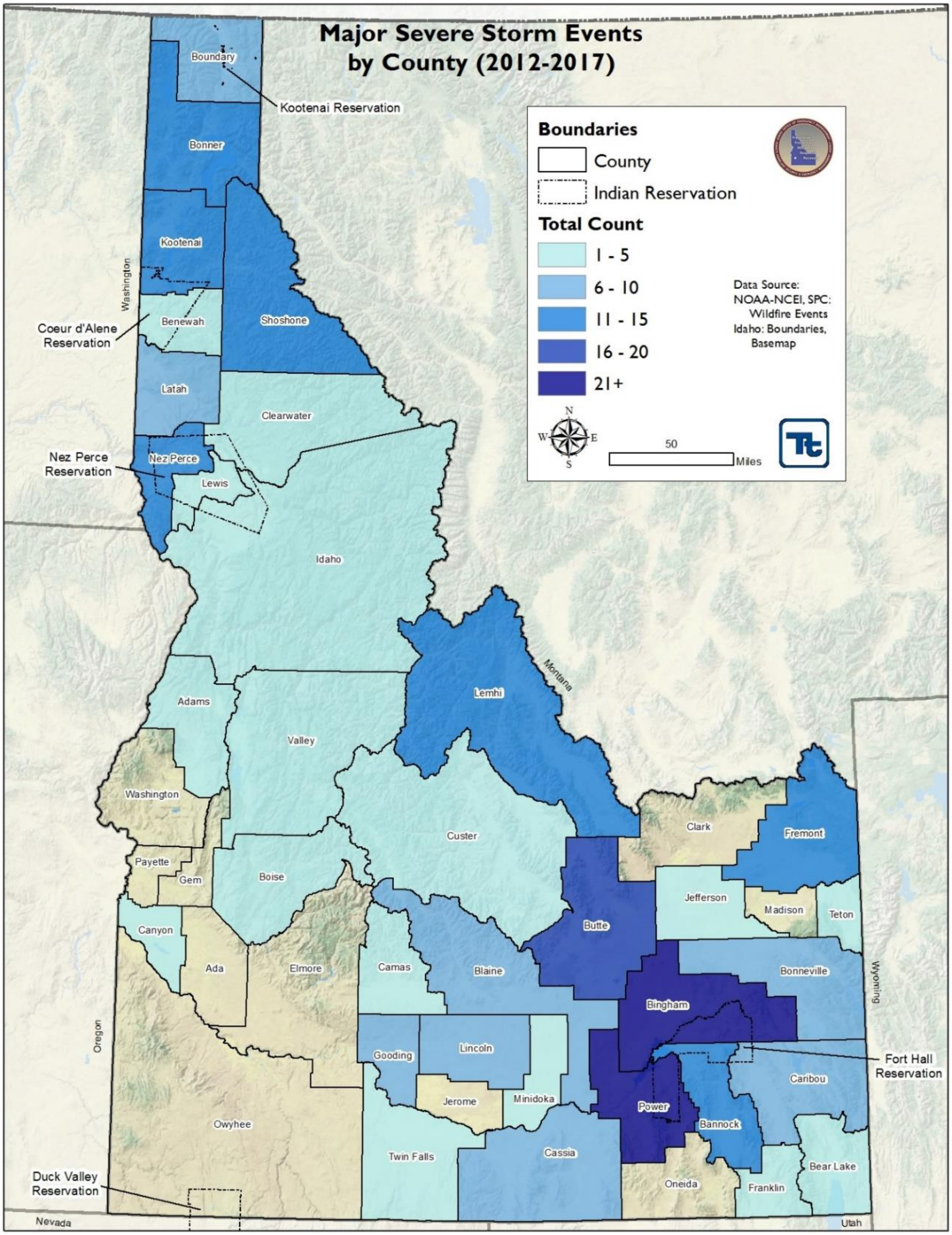


Figure 3.3.N. Major Severe Storm Events in Idaho

Table 3.3.O. Lightning Damage or Loss Events in the State of Idaho, 1993 to 2017

Dates of Event	Event Type	Counties Affected	Losses / Impacts
May 20, 1993	Lightning	Ada	$5,000 in property damage
August 7, 1993	Lightning	Canyon	$5,000 in property damage
August 11, 1993	Lightning	Cassia	$50,000 in property damage
August 15, 1993	Lightning	Ada	$50,000 in property damage
September 5, 1993	Lightning	Bannock	$50,000 in property damage
February 17, 1994	Lightning	Owyhee	$5,000 in property damage
May 4, 1994	Lightning	Minidoka	$5,000 in property damage
May 27, 1994	Lightning	Canyon	$50,000 in property damage
October 5, 1994	Lightning	Power	$50,000 in property damage
November 1, 1994	Lightning	Bonner	$50,000 in property damage
June 10, 1995	Lightning	Payette	$50,000 in property damage
June 18, 1995	Lightning	Castleford	one injury
July 6, 1995	Lightning	Idaho Falls	$500,000 in property damage
July 22, 1995	Lightning	Idaho Falls	$5,000 in property damage
July 22, 1995	Lightning	Bonneville	$5,000 in property damage
July 28, 1995	Lightning	Kuna	$50,000 in property damage; two fatalities
July 28, 1995	Lightning	Glenns Ferry	$50,000 in property damage
July 29, 1995	Lightning	McCall	$5,000 in property damage; one fatality and 12 injuries
August 4, 1995	Lightning	Pocatello	$50,000 in property damage
August 6, 1995	Lightning	Trinity Lakes	$50,000 in property damage
August 17, 1995	Lightning	Ammon	$500,000 in property damage
August 21, 1995	Lightning	Jerome	$50,000 in property damage
August 21, 1995	Lightning	Nr Se Dietrich	$5,000 in property damage
September 3, 1995	Lightning	Boise	$50,000 in property damage
September 4, 1995	Lightning	Fairfield	$50,000 in property damage
September 7, 1995	Lightning	Post Falls	$50,000 in property damage
November 16, 1995	Lightning	CJ Strike Reservoir	$5,000 in property damage
December 16, 1995	Lightning	CJ Strike Reservoir	$5,000 in property damage
May 14, 1996	Lightning	Caldwell	$15,000 in property damage
July 17, 1996	Lightning	Burley	one fatality and one injury
June 17, 1997	Lightning	Pocatello	$1 million in property damage
June 30, 1997	Lightning	Melba	one fatality
September 11, 1997	Lightning	Blackfoot	$1,000 in property damage
April 23, 1998	Lightning	Marysville	$1,000 in property damage
June 25, 1998	Lightning	Leadore	two injuries
July 3, 1998	Lightning	Cascade	two injuries
September 7, 1998	Lightning	Boise	$10,000 in property damage
September 30, 1998	Lightning	Inkom	three injuries
May 29, 1999	Lightning	Pocatello	$10,000 in property damage
July 18, 1999	Lightning	Driggs	$21,000 in property damage
August 18, 2000	Lightning	Rexburg	$20,000 in property damage
September 17, 2000	Lightning	Chesterfield	$150,000 in property damage
July 7, 2002	Lightning	Caldwell	one fatality and two injuries

Dates of Event	Event Type	Counties Affected	Losses / Impacts
August 30, 2002	Lightning	Oldtown	two injuries
August 22, 2003	Lightning	Whitney	one injury
August 22, 2003	Lightning	Moreland	$1,000 in property damage
June 28, 2004	Lightning	Idaho Falls	$5,000 in property damage
May 29, 2005	Lightning	Burley	$10,000 in property damage
May 19, 2006	Lightning	Hayden	$10,000 in property damage
July 5, 2006	Lightning	Coeur D'Alene	$15,000 in property damage
June 4, 2007	Lightning	Coeur D'Alene	$30,000 in property damage
August 18, 2008	Lightning	Pinehurst	$2,000 in property damage
June 5, 2009	Lightning	Idaho Falls	$13,000 in property damage
June 29, 2010	Lightning	Bingham	$4,000 in property damage
August 10, 2010	Lightning	Lemhi	one fatality in Salmon
June 12, 2013	Lightning	Bingham	In Blackfoot, lightning damaged a home on South Adams Avenue, damaging utility lines and appliances in the home. A telephone pole was knocked down near the courthouse. A trailer at the Sage Hill Travel Center was struck by lightning and destroyed. Overall, property damage was estimated at $20,000.
August 10, 2013	Lightning	Kootenai	A bolt of lightning started a fire in a home on Good Hope Road in Althol, destroying the house. Overall, property damage was estimated at $200,000.
October 13, 2013	Lightning	Teton	Lightning struck a tree that was connected to a barbed wire fence on a ranch in Tetonia. The current from the fence killed 15 cattle that were adjacent to the fence. Overall, property damage was estimated between $15,000 and $20,000.
June 28, 2016	Lightning	Kootenai	A thunderstorm near Coeur D'Alene produced a lightning bolt that struck a home and set it on fire. Damage to the home was estimated at $50,000.

Sources: Idaho State Hazard Mitigation Plan 2013; NOAA-NCEI 2017

Table3.3. P. Thunderstorm – Hail Events in Idaho Between 1996 and 2017

Event Date	Event Type	Counties Affected	Description/Losses
June 1996	Hail	Bonneville	Golf-ball-sized hail was reported in Bonneville County
August 1997	Hail	Bannock	Storm caused a $1 million of property damage in Bannock County
July 1998	Hail	Latah	Storm caused $5 million in crop damage in Latah County
August 1, 2013	Hail	Lemhi	A large, long-lived supercell developed across south-central Idaho and moved north and east across northeastern Lemhi County. A spotter in Salmon reported quarter size hail. Insurance companies reported at least 200 damage claims to cars and homes in Salmon and Carmen. Hail fell for at least 15 minutes damaging roofs, siding, stucco, and windows. Overall, the County had approximately $490,000 in property damage.
July 23, 2014	Hail	Kootenai, Benewah, Latah, and Shoshone	One inch hail was observed at Conkling Park on Lake Coeur d'Alene. Strong winds in northern Kootenai County resulted in a corridor of tree damage from Coeur d'Alene to Althol. The strongest winds near Althol downed trees in an RV park. One person suffered minor injuries. Hail sizes ranged from 1 inch to 1.25 inch in diameter. Overall, the impacted counties experienced approximately $210,000 in property damage.

Event Date	Event Type	Counties Affected	Description/Losses
August 14, 2014	Hail	Clearwater and Lewis	Major property and crop damage was reported by a farmer in Clearwater County due to large hail and wind. Hail was approximately 1.25 inches in diameter. Property damage included five rental homes, siding from three homes, several windows, and 12 garage doors that either were dented or destroyed. The farmer lost about 75% of their spring wheat crop. Overall, there was $104,000 in property damage and $175,000 in crop damage.
May 18, 2015	Hail	Bingham	Small hail accumulated on Interstate 15 in Fort Hall (Bingham County) and many cars slid off the road into ditches and the median. There was one reported injury due to a vehicle collision. There was approximately $15,000 in property damage from this event.
August 7, 2016	Hail	Gem and Lemhi	A spotter in Elk Bend reported golf ball sized hail that smashed approximately 6 car windows. Hail ranged in size from 0.75-inch diameter to 1.75 inch diameter. There was approximately $10,000 in property damage.

Sources: Idaho State Hazard Mitigation Plan 2013; NOAA-NCEI 2017; National Weather Service Storm Prediction Center 2017

Table 3.3.Q. Straight-Line Wind Events in Idaho, 1936 to 2017

Dates of Event	Event Type	Counties Affected	Losses / Impacts
July 23, 2014	Thunderstorm Wind	Bonner	Damaging winds led to widespread tree damage across central Bonner County. Wind gusts of 75 mph were measured in the County. Multiple trees were knocked down across the City of Sandpoint. Many roads were closed due to downed trees and power lines. Power outages were reported across the impacted areas. The winds created three-to-six-foot waves in sections of Lake Pend Oreille. The County had approximately $2 million in damages from this event.
August 2, 2014	Thunderstorm Wind	Bonner	Widespread wind damage was observed across the Cities of Priest Lake, Sandpoint, Ponderay, Kootenai, Oden, and Lake Pend Oreille, all in Bonner County. Hundreds of trees were snapped or downed by strong winds. Some trees landed on homes while others downed utility and power lines. At one point, the entire City of Sandpoint was without power. The County had approximately $2 million from this event.
November 17, 2015	Severe Storm and Straight-Line Wind (DR-4246)	Coeur d'Alene Tribal Nation Land, Benewah, Bonner, Boundary, and Kootenai	High winds as a result of a cold front brought substantial damage across northern Idaho. This led to widespread power outages and the most damaged seen by Avista utilities in its 126-year history. An estimated 180,000 customers were without power at the peak of the windstorm. There was one direct fatality from the storm. Wind gusts ranged from 59 mph to 116 mph. A state disaster declaration was issued for Benewah, Bonner, Boundary and Kootenai Counties. On December 16, 2015, Governor Otter requested a major disaster declaration due to severe storm and straight-line winds in Idaho. The Governor requested a declaration for Public Assistance for four counties and one tribe, and hazard mitigation statewide. On December 23, 2015, President Obama declared that a major disaster declaration exists in the State. The declaration made Public Assistance available to state and eligible local governments and certain private non-profit groups. The primary impact from this event was damage to utilities. The State requested over $2.4 million in public assistance. Overall, damages associated with this event was estimated at $2.6 million.

Dates of Event	Event Type	Counties Affected	Losses / Impacts
December 20, 2016	High Wind	Lemhi	Very strong winds caused a sale barn from the County Fairgrounds to collapse. Wind gusts of up to 53 mph were recorded. The County had approximately $500,000 in property damage from this event.

Sources: NOAA NCEI 2017; FEMA 2017; National Weather Service Storm Prediction Center 2017; Idaho State Hazard Mitigation Plan 2013

Table 3.3.R. Tornado Events in Idaho, 1936 to 2017

Dates of Event	Event Type	Counties Affected	Losses / Impacts
June 7, 1936	Tornado	Nez Perce	A tornado hit north of Reubens; a house and a barn were nearly leveled
April 26, 1940	Tornado	Gooding	A widely visible funnel cloud hit five farms west of the City of Gooding; three homes were destroyed.
April 7, 1978	Tornado (F2)	Bonneville	A tornado hit the edge of Idaho Falls, damaging the roofs of nine homes and 23 businesses
August 19, 1978	Tornado (F1)	Bonner	A poorly formed tornado did minor damage in Sandpoint; a woman was struck by a tree.
June 5, 1987	Tornado (F0)	Shoshone	A funnel cloud briefly touched down at a street fair in Pinehurst.
April 9, 1991	Tornado (F2)	Bonner	A tornado touched down at Priest River; no injuries were reported.
June 11, 1993	Tornado (F1)	Bannock	A tornado traveled 10 miles south to southeast of Pocatello, ending in the Town of Inkom. The tornado uprooted several trees, knocked down a grain elevator, overturned a truck, and knocked down several outbuildings. This event resulted in a State Disaster declaration for Bannock County.
May 29, 1994	Tornado (F1)	Bonner	Tornado recorded near Priest Lake; no injuries reported
April 25, 1995	Tornado (F0)	Bingham	A series of tornadoes touched down in central Bingham County, causing damage to mobile homes, highway signs, and recreational equipment.
July 10, 1998	Tornado (F0)	Owyhee	A manufactured home was flipped over by an F0 tornado at Oreana.
February 14, 2000	Tornado (F1)	Bingham	One injury
June 24, 2004	Tornado (F0)	Bonner	Priest Lake experienced a tornado with no injuries.
June 4, 2006	Tornado (F2)	Adams	A tornado struck the community of Bear in Adams County, resulting in extensive tree damage. Because downed trees and debris caused elevated wildfire risk and blocked roads, a State Disaster declaration was issued. The tornado path was 12 miles long and over half a mile wide along portions of its track. One serious injury occurred during this tornado, which was rated F2. Significant straight-line wind events have been recorded in the Lowman area (large-scale forest damage in the 1970s) and the Payette and Weiser area (in the 1990s).
June 23, 2011	Tornado (EF0)	Bingham	An EF0 tornado hit near the City of Moreland along Pioneer Road, damaging four homes. A shed at one home was destroyed and a garage to the back of another home was destroyed. A third home had wood siding removed and damaged trees. A camper was flipped over. The Jensen Grove Park near Blackfoot had 19 trees snapped or uprooted. The County experienced approximately $7,000 in property damage from this event.

Dates of Event	Event Type	Counties Affected	Losses / Impacts
September 1, 2012	Tornado (EF0)	Cassia	A weak tornado was confirmed about 4 to 5 miles east northeast of the City of Albion and east of the City of Declo. It was on open land and did no damage.
May 7, 2013	Tornado (EF0)	Jefferson	A weak tornado was confirmed with photographs and radar signatures just southeast of Monteview. The tornado was in open fields and no damage occurred.
May 8, 2013	Tornado (EF0)	Jerome	A Jerome County deputy reported a brief tornado touchdown. No damage was reported.
May 26, 2013	Tornado (EF0)	Elmore	An EF-0 tornado was spotted about 10 miles northwest of the City of Mountain Home. No damage was reported.
July 7, 2013	Tornado (EF0)	Bear Lake	A tornado was spotted by the public three miles west southwest of Wardboro in between the City of Paris and Dingle. No damage reported as tornado occurred in open area.
September 17, 2013	Tornado (EF0)	Clark, Fremont	Clark County—A COOP observer witnessed a tornado with debris being lifted about five miles east-southeast of City of Dubois. The tornado was in open area with no damage occurring and path unknown. Fremont County—A tornado was witnessed by the public in open land in Fremont County approximately 10 miles north-northwest of the City of St Anthony. No damage was reported with the open land storm.
May 10, 2014	Tornado (EF0)	Jefferson	A brief tornado touched down six miles northwest of Monteview. Tornado occurred over open land with no damage reported.
May 21, 2014	Tornado (EF0)	Power	A tornado was spotted about 10 miles west-northwest of the City of American Falls and it moved slightly north-northwest. It was then located 1.2 miles north-northwest of the intersection of North Pleasant Valley Road and County Line Road. A damage survey showed damage to a residence on North Pleasant Valley Road between Schritter and County Line Roads. Multiple trees were uprooted or had branches torn off. Shingles were torn off the hours and a shed door was damaged and blown off its hinges. There were also isolated reports of irrigation line damage as the tornado moved through mostly open fields. No other damage was found.
August 20, 2014	Tornado (EF0)	Custer	A funnel cloud was spotted as it briefly touched down two miles southeast of the Town of Mackay.
July 11, 2015	Tornado (EF0)	Jefferson	A tornado was spotted over in between the Cities of Mud Lake and Sage Junction in Jefferson County on July 11th.
June 30, 2016	Tornado (EF0)	Jerome	An EF0 tornado was spotted moving northwest to southeast along a gust front from a thunderstorm northeast of the City of Jerome. It was about 150 feet wide and moved through agricultural fields; no damage was reported.
July 31, 2016	Tornado (EF0)	Caribou	A weak tornado was spotted in open country just north of the City of Soda Springs; no damage was reported.

Sources: NOAA NCEI 2017; FEMA 2017; National Weather Service Storm Prediction Center 2017; Idaho State Hazard Mitigation Plan 2013

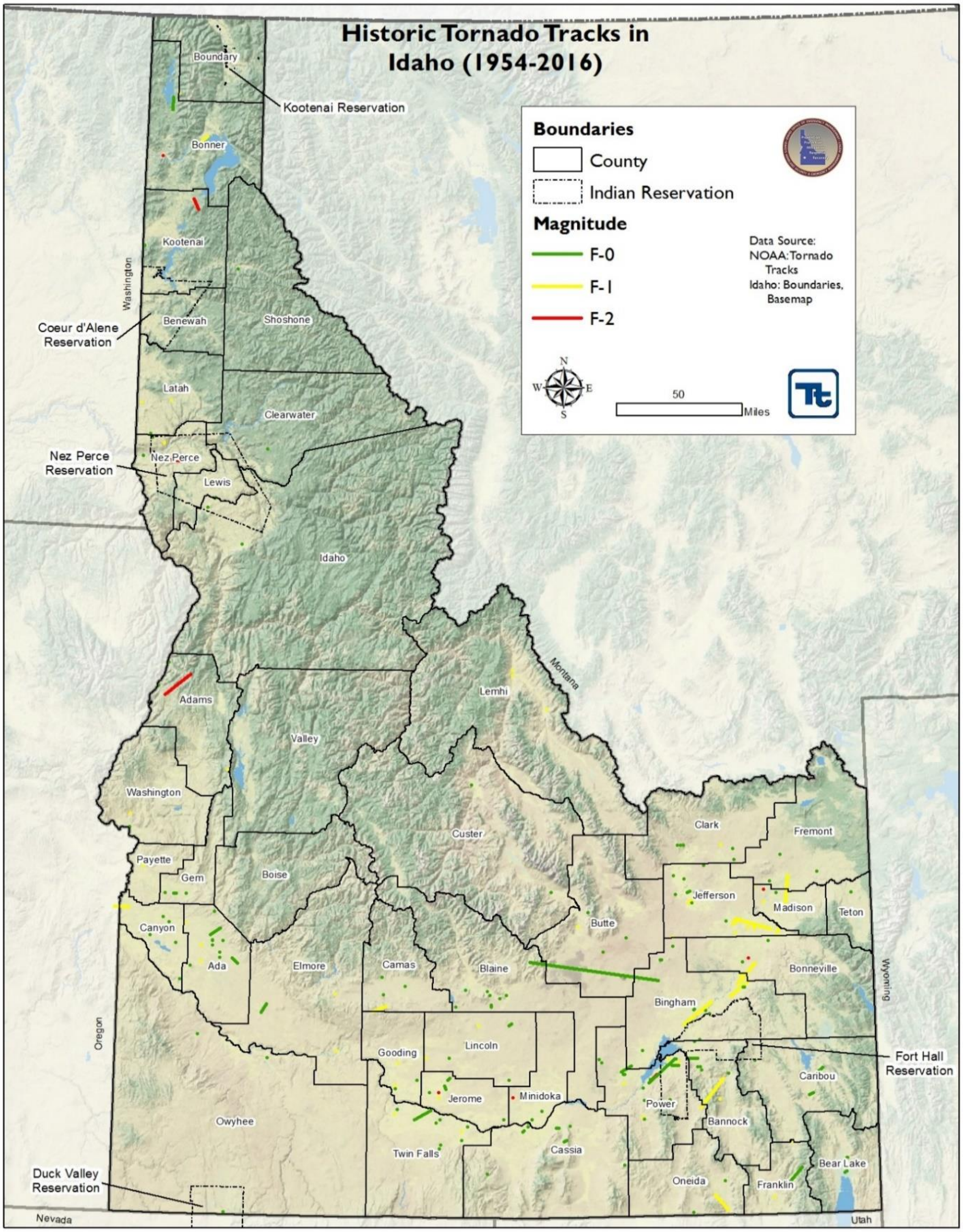


Figure 3.3.S. Tornadoes in Idaho, 1950 to 2016

Table 3.3.T. Severe Storm-Related State and Federal Declarations (1954 to 2017)

Year	Date	State	Federal	Counties Affected
1972	March 2, 1972	X	DR-324	Latah
1974	January 25, 1974	X	DR-415	Adams, Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Shoshone, and Washington
1989	January	X		Bonner, Clark
1993	January	X		Jerome
1994	January	X		Elmore
1996	February 11, 1996	X	DR-1102	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Payette, Shoshone
1997	January 4, 1997	X	DR-1154	Adams, Benewah, Boise, Bonner, Boundary, Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington
2006	February 27, 2006	X	DR-1630	Owyhee
2008	N/A	X		Bonner, Boundary, Kootenai, Latah, Shoshone
2009	N/A	X		Benewah
2010	July 27, 2010	X	DR-1927	Adams, Gem, Idaho, Lewis, Payette, Valley, Washington
2012	July 5, 2012	ID-02-2012		Bonner, Idaho, Latah, Shoshone
2015	November 12, 2015	ID-03-2015	DR-4246	Benewah, Bonner, Boundary, Coeur d'Alene Tribal Nation Land, and Kootenai
	December 16, 2015	ID-04-2015	DR-4252	Benewah, Bonner, and Kootenai
2017	February 5, 2017	ID-01-2017	DR-4310	Bingham, Cassia, Elmore, Franklin, Gooding, Jefferson, Jerome, Lincoln, Minidoka, Twin Falls, and Washington
	March 6, 2017	ID-02-2017	DR-4313	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Shoshone, and Valley

Source: Idaho State Hazard Mitigation Plan 2013; FEMA 2017
N/A Not Available

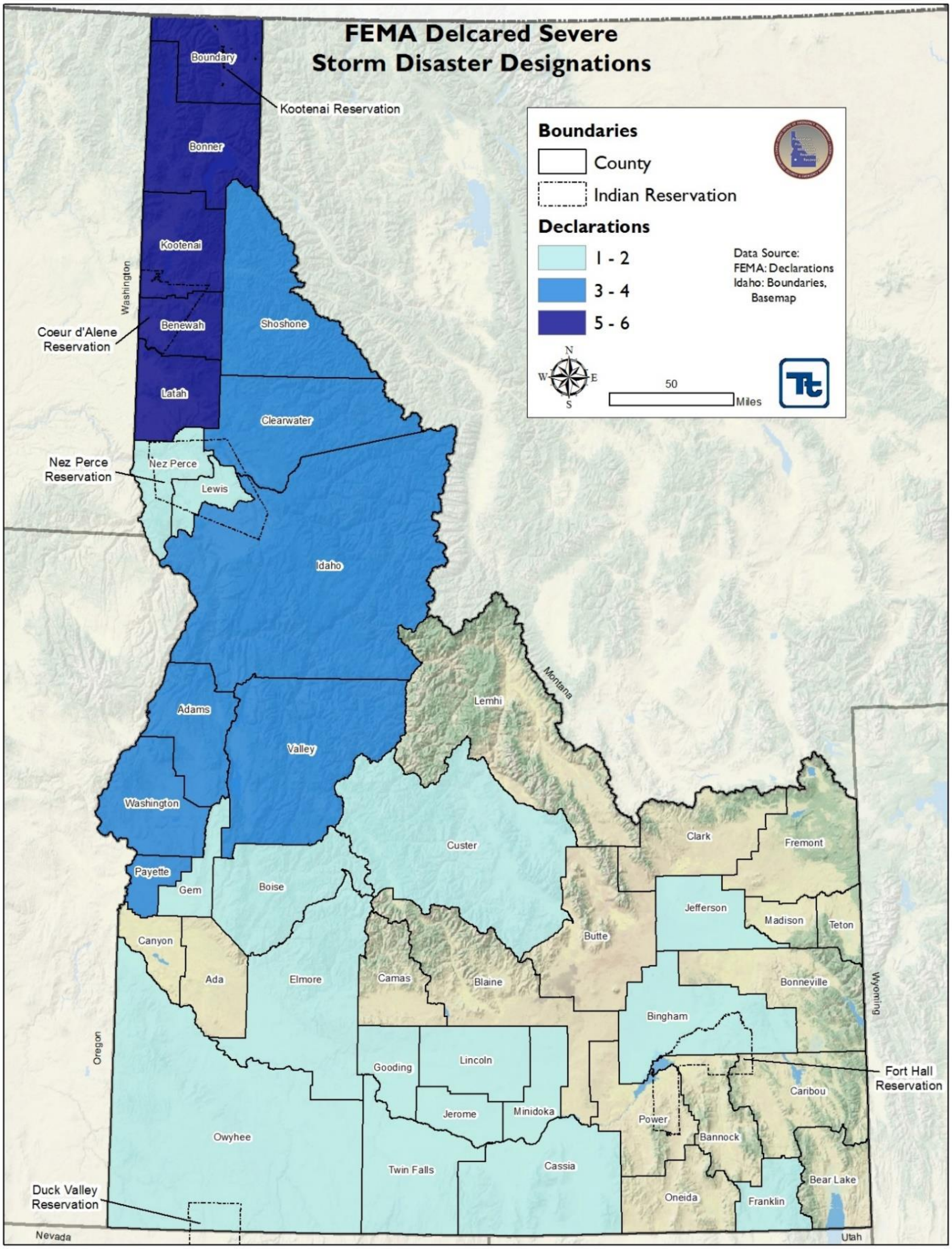


Figure 3.3.U. FEMA Severe Storm Declarations in Idaho

AVALANCHE

Source: CAIA, 2017

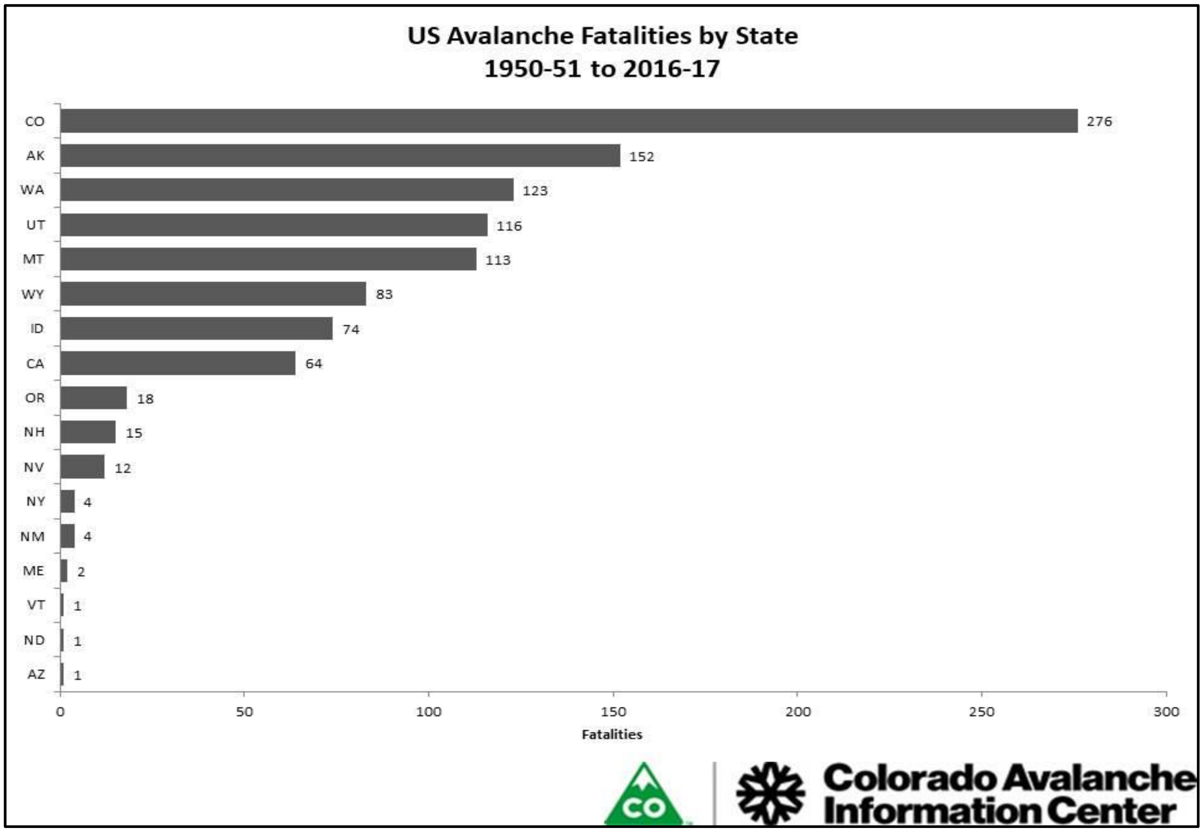


Figure 3.4.E. Past Avalanche Fatalities

Table 3.4.F. Avalanche Events in Idaho, 1999—2017

Date	Event Type / Location	Counties Affected	Description
February 9, 1999	Avalanche Town of Hailey	Blaine	3 houses damaged by avalanche
February 10, 1999	Avalanche Town of Hailey	Blaine	Park damaged, deer herd killed
February 20, 1999	Avalanche Portneuf Range Caribou National Forest	Bannock	1 skier caught and injured
January 22, 2000	Avalanche Clark Lake, near Lionhead Peak	Fremont	1 snowmobiler caught, buried and severely injured
January 28, 2000	Avalanche Smokey Mountains, near Sun Valley	Blaine	1 skier caught, totally buried, recovered with beacon
February 19, 2000	Avalanche St. Charles Canyon, near Bear Lake	Bear Lake	2 snowmobilers caught, 1 buried and killed
March 19, 2000	Avalanche Selkirk Mountains, west of Bonners Ferry	Boundary	1 snowmobiler caught and killed

Date	Event Type / Location	Counties Affected	Description
March 12, 2002	Avalanche Grove Creek, near Victor	Teton	1 snowmobiler caught, buried, and killed
March 22, 2002	Avalanche East Fork of Targhee Creek	Fremont	1 snowmobiler caught, buried, and killed (wearing a transceiver)
December 14, 2002	Avalanche Central Idaho	Lewis	2 backcountry skiers caught and buried in separate accidents
December 19, 2002	Avalanche Steve Baugh Bowl, Jedediah Smith Wilderness	Teton	1 skier caught, buried, and rescued with transceiver
December 28, 2002	Avalanche Trinity Mountain area, west of Fairfield	Camas	2 snowmobilers caught and buried, 1 killed
January 4, 2003	Avalanche Darby Canyon	Teton	1 snowmobiler caught, carried, and injured
February 22, 2003	Avalanche Echo Bowl near Priest Lake	Bonner	5 snowmobilers caught, 1 buried and killed
February 22, 2003	Avalanche Near Keokee Lake, NW of Schweitzer Mountain Resort	Bonner	1 backcountry skier caught buried and killed
January 2, 2004	Avalanche Soldier Mountain, near Soldier Mountain Ski Resort	Camas	House struck by an avalanche, 2 people buried and killed
February 28, 2004	Avalanche Apollo Creek, approx. 15mi NW of Ketchum	Blaine	1 snowmobiler caught, buried, and killed
March 7, 2004	Avalanche Jeru Peak, approx. 20mi N of Sandpoint	Bonner	1 snowmobiler caught, buried, and killed
January 16, 2005	Avalanche Lake Steven Area	Custer	2 snowboarders, caught, buried, and killed
March 25, 2005	Avalanche Galena Summit	Blaine	1 backcountry skier caught and seriously injured
March 30, 2005	Avalanche Fisher Creek drainage near Slab Butte	Adams	1 snowmobiler caught and buried. Rescued with beacon.
April 1, 2005	Avalanche Brodie Gulch, Baker Creek near Ketchum	Blaine	1 snowmobiler caught, buried, and killed
July 2, 2005	Avalanche Castle Peak, White Cloud Mountains	Custer	1 snowboarder caught, buried, and killed
March 1, 2006	Avalanche Mountains near Antelope Creek	Bonneville	1 snowmobiler caught, buried, and killed
April 2, 2006	Avalanche Mountains outside Spencer	Clark	2 snowmobilers caught, 1 killed
April 8, 2006	Avalanche Patriot Bowl, W of Trinity Mountain Lookout	Elmore	1 snowmobiler caught, buried, and killed
April 29, 2006	Avalanche Backcountry near Lookout Pass	Shoshone	1 skier caught, buried, and killed
February 17, 2007	Avalanche Palisades Peak Area	Bonneville	3 snowmobilers caught, 2 partially buried, 1 buried and killed

Date	Event Type / Location	Counties Affected	Description
March 10, 2007	Avalanche Apollo Creek in the Baker Creek drainage	Blaine	1 snowmobiler caught, buried, and injured
February 8, 2008	Avalanche Garden Valley	Boise	1 killed when house struck by avalanche, Roof cave in
March 16, 2008	Avalanche Sheep Mountain on the North Fork Clearwater River	Clearwater and Shoshone	4 snowmobilers caught, 2 buried, 1 killed
February 24, 2009	Avalanche Trinity Mountains near Featherville	Elmore	1 snowmobiler caught, buried, and rescued
February 27, 2009	Avalanche Trapper Creek, N of Priest Lake	Bonner	1 snowmobiler caught, buried, and injured
March 1, 2009	Avalanche Duck Lake area, N of Brundage Mountain ski area	Idaho	1 snowmobiler caught, carried, and seriously injured
March 6, 2009	Avalanche Black Lee Drainage, 7mi NE of McCall	Valley	4 skiers caught, 2 buried, 1 injured
March 6, 2009	Avalanche Gladiator Ridge, 20mi NW of Sun Valley	Blaine	2 skiers caught, 1 buried and killed, 1 seriously injured
April 5, 2009	Avalanche Norton Creek, 20m W of Ketchum	Blaine	1 snowmobiler caught, buried, and killed
December 18, 2009	Avalanche Rock Lake, W of Cascade	Valley	2 snowmobilers caught, 1 buried and killed, 1 fully buried and rescued
January 22, 2010	Avalanche Sun Valley Ski Resort, off trail run in bounds	Blaine	1 skier caught, buried, and killed
January 28, 2010	Avalanche Boardman Pass, Soldier Mountains W of Fairfield	Camas	1 snowmobiler caught, buried, and killed
January 30, 2010	Avalanche Garns Mountain in the Big Hole Range, W of Driggs	Teton	1 snowmobiler caught, buried, and killed
March 13, 2010	Avalanche North of Schweitzer Ski Area, Idaho Panhandle	Bonner	1 snowmobiler caught, buried, and killed
March 30, 2010	Avalanche Near Brundage Mountain	Valley	3 snowmobilers caught, 2 buried and killed
December 29, 2010	Avalanche Big Creek, NE of Calder	Shoshone	1 snowmobiler caught, buried, and killed
December 26, 2013	Avalanche Neely's Cove near Palisades Peak	Bonneville	1 snowmobiler caught, buried, and killed
February 16, 2014	Avalanche Frenchman Creek, northwest of Galena Summit	Blaine	4 snowmobiles caught and buried, 1 killed
January 31, 2016	Avalanche Twin Lakes near Brundage Mountain	Valley	1 snowmobiler caught and killed

Date	Event Type / Location	Counties Affected	Description
February 26, 2016	Avalanche Island Park	Fremont	3 residents buried, 1 killed
February 9, 2017	Avalanche McCoy Creek, Caribou Range east of Idaho Falls	Bonneville	1 snowmobiler caught, buried, and killed

Sources: Atkins, D 2017; CAIA 2017

Table 3.4G. Flooding, Landslides, and Avalanche-Related State and Federal Declarations (1954 to 2017)

Year	Date	State	Federal	Counties Affected	Comments
2017	March 10—29, 2017	ID-02-2017	None	Clearwater, Benewah, Bonner, Kootenai, Latah, Shoshone, Boundary, Idaho, Lewis, Valley	Beginning on February 10, 2017, the effects of extraordinary flooding caused by warmer temperatures, rain and rapid snow melt were experienced within the State of Idaho.

Note: FEMA-DR-4313 occurred from this state declaration, but FEMA did not include the avalanche hazard.
Source: Idaho Emergency Management 2017; FEMA 2017

DROUGHT

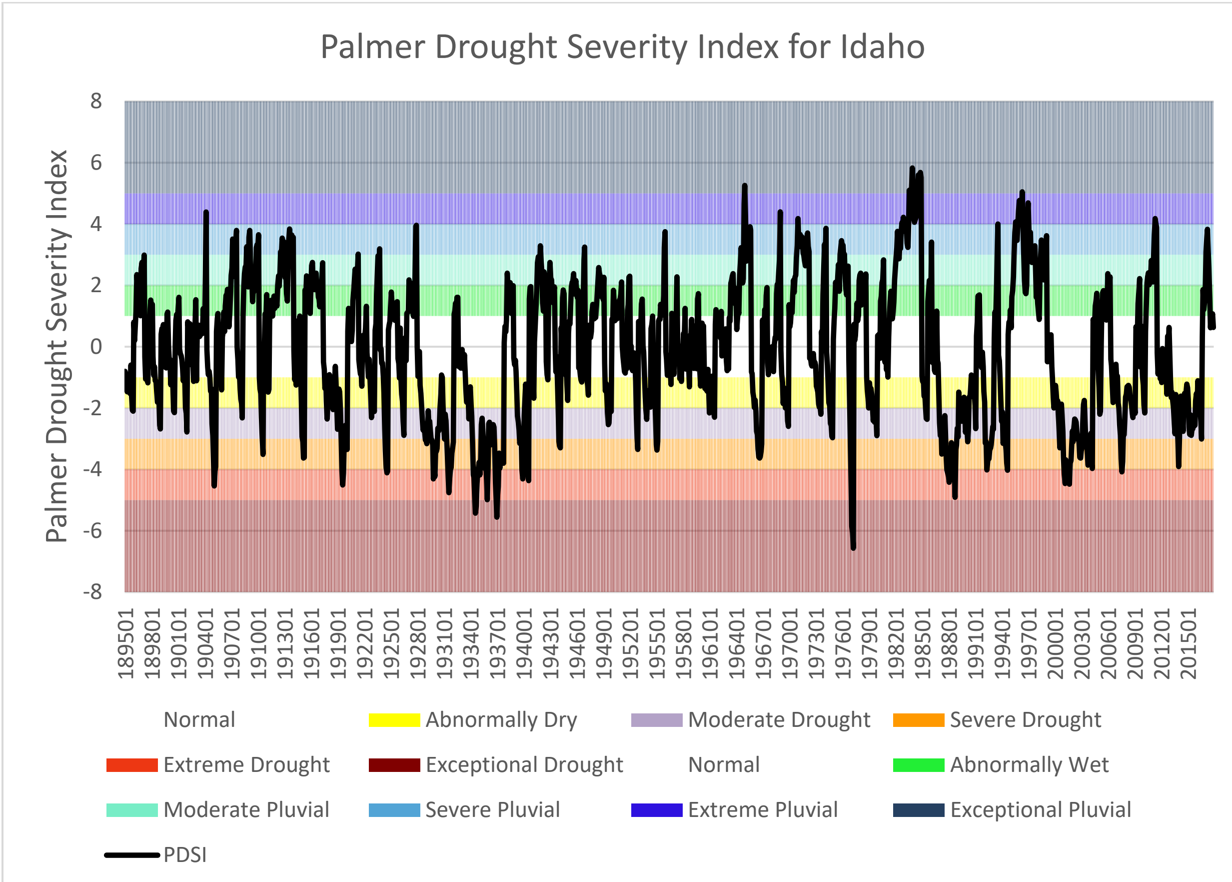


Figure 3.5.J. Drought as represented for the State of Idaho from 1895 to 2016.

Source: U.S. Drought Monitor, 2017

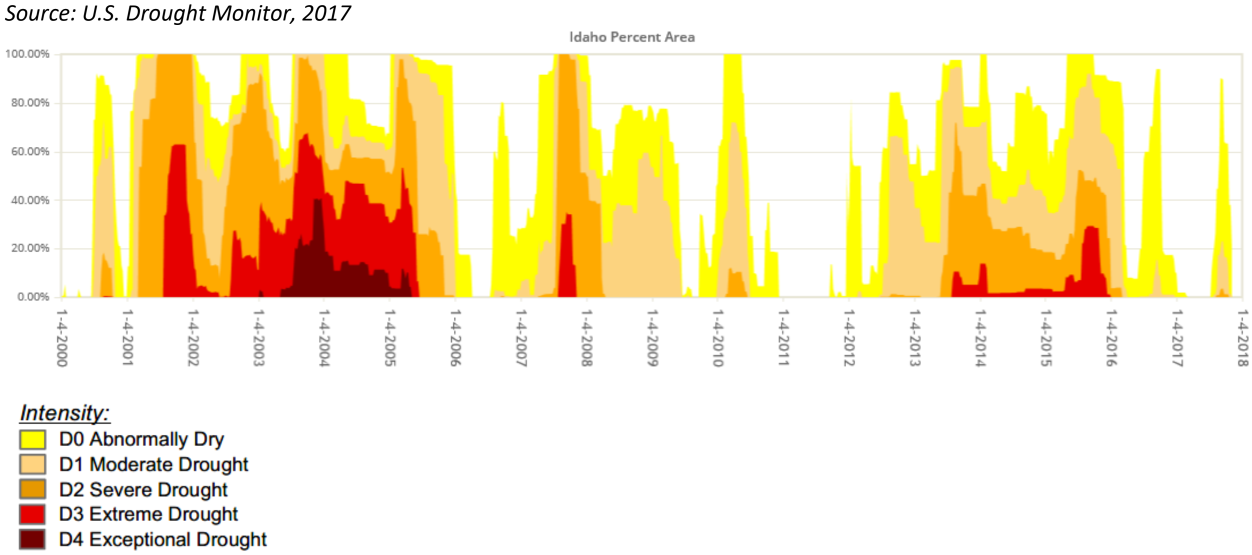


Figure 3.5.K U.S. Drought Monitor Historic Drought Intensity in Idaho

Source: Idaho State University, 2017

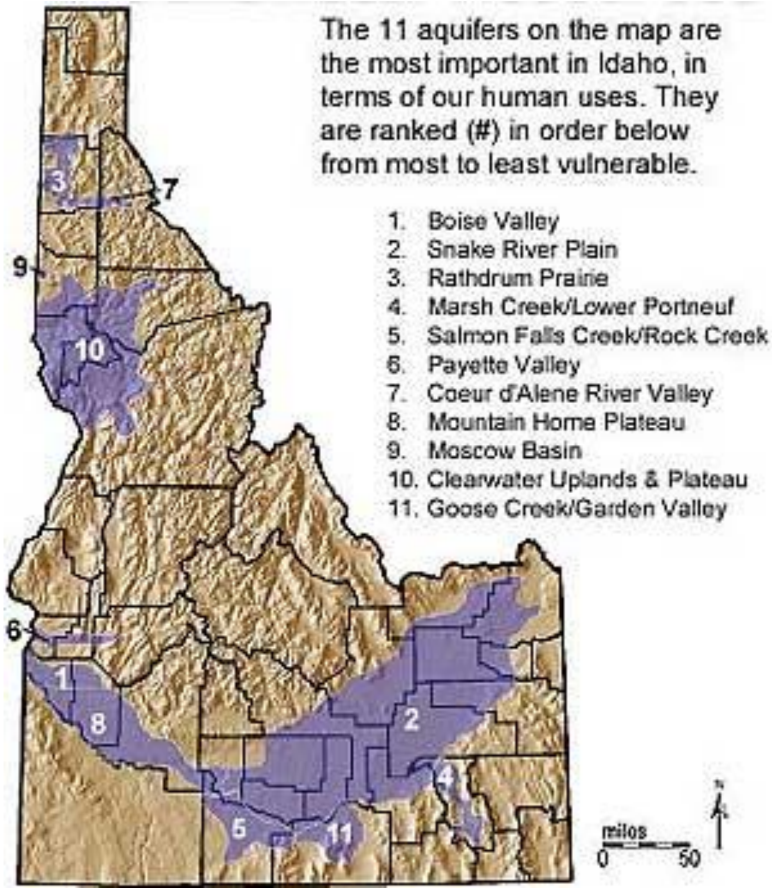


Figure 3.5.L. Idaho Aquifers Map

Table 3.5.M. Drought Events in Idaho, 1977—2017

Date	Event Type	Counties Affected	Description
1977	Drought FEMA-EM-3040	Adams, Bear Lake, Blaine, Camas, Caribou, Elmore, Idaho, Lincoln, Washington	This event was part of a more widespread water shortage faced by the United States. In Idaho, a lack of winter snowfall resulted in the lowest runoff on record at most gages in the state. Ski resorts were closed for much of the ski season. Irrigation ditches were closed well before the end of the growing season, and crop yields were below normal. Domestic wells in the Big and Little Wood River basins became dry early in April 1977, and many shallow wells in six western Idaho counties became dry in June.
2000	Drought State DRs issued in June – July	Custer, Blaine, Butte, Lemhi, Lincoln	Counties experienced severely restricted water supplies available for the current irrigation season.

Date	Event Type	Counties Affected	Description
2001	Drought State DRs issued in April – August	Ada, Adams, Bannock, Bear Lake, Bingham, Blaine, Boise, Bonneville, Butte, Canyon, Caribou, Cassia, Clarke, Custer, Elmore, Fremont, Gooding, Jefferson, Jerome, Lemhi, Lincoln, Madison, Oneida, Owyhee, Payette, Power, Teton, Twin Falls, Salmon Track within Twin Falls, Washington	Counties experienced severely restricted water supplies available for the current irrigation season. In particular, the hydrologic data showing that basin-wide snowpack is 41 percent of average, with values for individual sub basins ranging from 47 percent of normal for the Big Wood above Hailey to 22 percent of normal for Fish Creek.
2002	Drought State DRs issued in April – September	Butte, Blaine, Bonneville, Clark, Fremont, Bingham, Custer, Lincoln, Madison, Power, Bannock County, Jefferson, Elmore, Gooding, Oneida, Caribou, Bear Lake	Counties experienced severely restricted water supplies available for the current irrigation season as demonstrated by hydrologic data showing that the mid-April snowpack is 65 percent of average and stream flow for the basin is 60 percent of normal based on measurements from the Wild Horse gage on the North Fork of the Big Lost River for the October 2001 to March 2002 period.
2003	Drought State DRs issued in April – August	Bonneville, Teton, Lemhi, Jefferson, Bear Lake, Owyhee, Cassia, Madison, Blaine, Oneida, Caribou, Bannock, Bingham, Butte, Clark, Custer, Fremont, Lincoln, Power	The April 1st forecast from the NRCS Water Supply Outlook indicated that the April through July volume for 2003 was forecast to be 46 percent of normal. Counties experienced severely restricted water supplies available for the current irrigation season.
2004	Drought State DRs issued in April—September	Minidoka, Bear Lake, Jerome, Cassia, Elmore, Twin Falls, Franklin, Teton, Oneida, Jefferson, Bingham, Power, Madison, Bonneville, Bannock, Gooding, Blaine, Lemhi, Custer, Fremont, Caribou, Lincoln, Clark, Butte	Several years of drought have caused declines in groundwater levels, spring flows, and base flows of stream. The storage in Magic Reservoir is 25 percent of capacity and inflow is predicted to be 44 percent of average. Water supplies available from the Snake River for the current irrigation season are near the minimums of record and are similar to those experienced during the drought years of 1977 and 1992.
2005	Drought State DRs issued in March—June	Lincoln, Ada, Jerome, Gooding, Lemhi, Jefferson, Blaine, Caribou, Twin Falls, Elmore, Clark, Bannock, Power, Fremont, Madison, Canyon, Bingham, Bonneville, Custer, Butte	Severe and continuing drought conditions occurred. On March 7, 2005, the Rangeland Drought Task Force reported that several springs in the Challis are dried up for the first time in history.
2007	Drought State DRs issued in March—October	Lewis, Clearwater, Adams, Owyhee, City of Pierce, Oneida, Minidoka, Caribou, Bonneville, Bannock, Bingham, Jefferson, Lincoln, Madison, Teton, Blaine, Fremont, Lemhi, Clark, Custer, Butte	Severe and continuing drought conditions occurred in past several years excluding 2006. The below average precipitation has caused declines in groundwater levels, spring flows, and base stream flow. By October, the lack of precipitation during June through August has contributed to fire conditions and lack of forage for livestock.
2008	Drought State DRs issued in July—December	Lewis, Nez Perce, Custer, Butte	Below normal precipitation occurred during the growing seasons that critically affected wheat yields and reduced or damaged forage crops for livestock.
2010	Drought State DRs issued in April – May	Franklin, Clark, Lincoln, Blaine, Butte, Custer, Teton, Fremont	Counties experienced significant drought conditions due to below normal precipitation and snowpack levels. Specifically, total cumulative snowpack levels in the Big Lost, Little Lost and Salmon River drainages as of April were respectively only 62, 60 and 65 percent of normal.

Date	Event Type	Counties Affected	Description
2012	Drought State DRs issued May—September	Owyhee, Lemhi, Bannock, Teton, Bear Lake, Blaine, Oneida, Clark, Fremont	The drainage basins experienced rapid snowmelt and depleted snowpack conditions. For example, the snow water equivalent from snowpack levels in the Camas, Beaver, and Medicine Lodge basins in May was only 33 percent of average due to significant early snow melt.
2013	Drought State DRs issued May—August	Lincoln, Fremont, Butte, Blaine, Custer, Clark, Teton, Jefferson, Bingham, Gem, Bonneville, Bear Lake, Power, Madison, Lemhi, Caribou, Oneida, Bannock, Lewis	These counties rely upon water supplies from various drainage basins. The drainage basins experienced abnormally dry conditions due to below normal precipitation and snowpack levels.
2014	Drought State DRs issued in April	Blaine, Lincoln, Custer, Clark, Butte, Lincoln	Moderate to severe drought conditions due to below normal snowpack and precipitation levels.
2015	Drought State DRs issued in April	Butte, Custer, Blaine, Lincoln, Fremont, Teton, Clearwater, Lewis, Jefferson	Moderate to severe drought conditions due to below normal snowpack and precipitation levels.
2016	Drought State DRs issued August—September	Custer, Jefferson, Lemhi	Stream flow volumes in the area for the period June through September were forecasted to be about 44 to 70 percent of average.

Sources: Idaho State Hazard Mitigation Plan 2013b; IDNR, 2017; FEMA, 2017

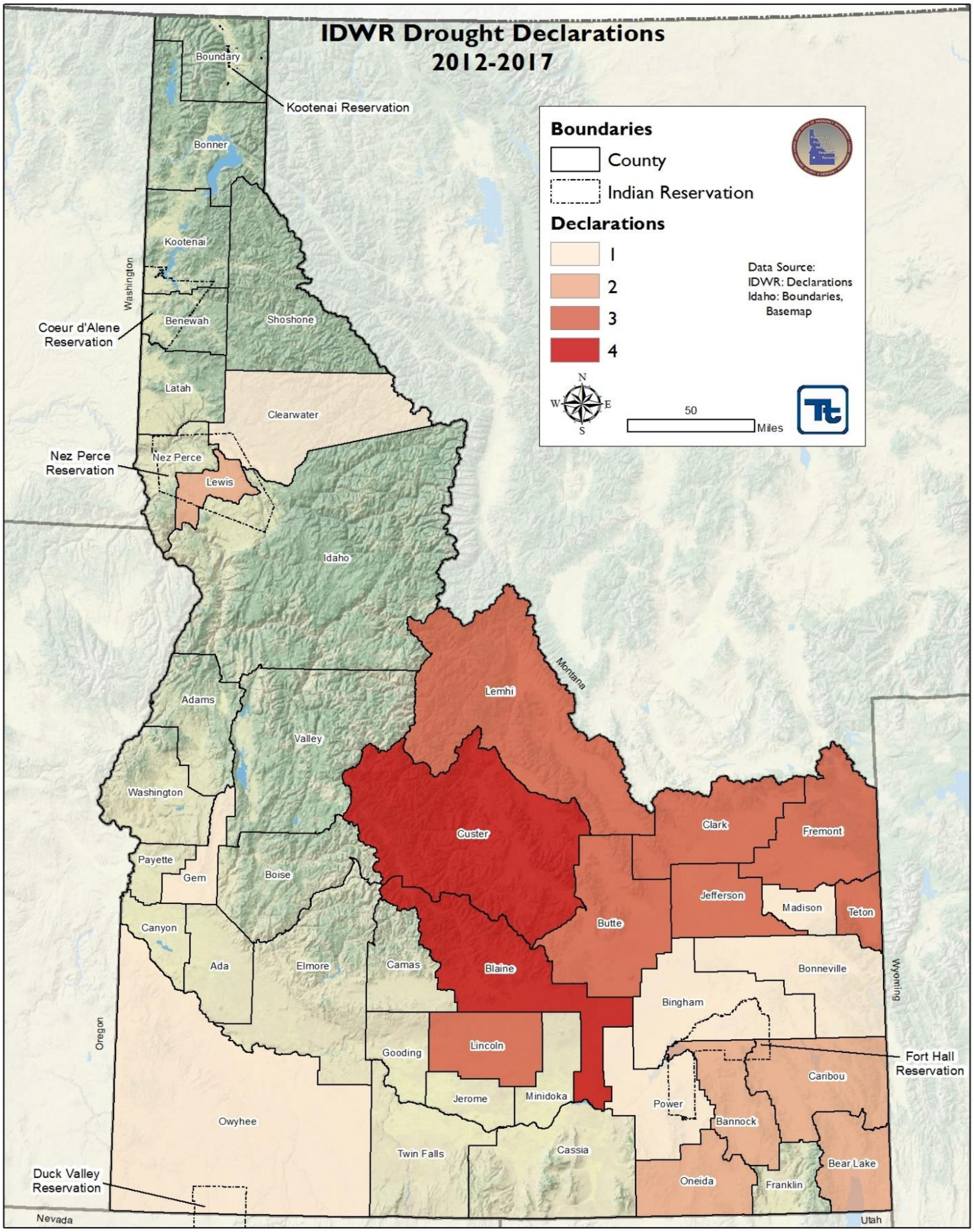


Figure 3.5.N. State Disaster Declarations in Idaho

Table 3.5.O. USDA Secretarial Disasters in Idaho, 2012-2017

County	2012	2013	2014	2015	2016	2017	6-Year Total
Ada	0	2	3	4	1	0	10
Adams	0	4	4	6	1	0	15
Bannock	2	1	2	1	0	0	6
Bear Lake	4	3	0	0	0	0	7
Benewah	0	0	0	4	0	0	4
Bingham	2	1	4	3	0	0	10
Blaine	1	3	6	6	0	0	16
Boise	0	2	2	4	0	0	8
Bonner	0	0	0	5	0	3	8
Bonneville	2	2	4	2	0	0	10
Boundary	0	0	0	4	0	3	7
Butte	2	3	4	4	0	0	13
Camas	0	3	3	4	0	0	10
Canyon	1	2	4	4	1	0	12
Caribou	3	2	2	1	0	0	8
Cassia	3	5	6	7	1	0	22
Clark	4	4	3	5	0	0	16
Clearwater	0	1	0	4	0	0	5
Custer	0	2	4	5	0	0	11
Elmore	0	3	6	8	1	0	18
Franklin	3	2	0	0	0	0	5
Fremont	5	6	3	5	0	0	19
Gem	0	3	4	5	1	0	13
Gooding	0	4	4	4	0	0	12
Idaho	1	3	3	6	0	0	13
Jefferson	2	3	5	4	0	0	14
Jerome	1	3	4	4	0	0	12
Kootenai	0	0	0	3	0	1	4
Latah	0	1	0	4	0	0	5
Lemhi	3	4	2	5	0	0	14
Lewis	0	1	0	2	0	0	3
Lincoln	0	3	2	3	0	0	8
Madison	1	2	4	2	0	0	9
Minidoka	1	3	3	4	0	0	11
Nez Perce	0	1	1	4	0	0	6
Oneida	3	4	2	2	1	0	12
Owyhee	2	5	7	8	2	0	24
Payette	1	3	4	4	1	0	13
Power	1	2	3	3	0	0	9
Shoshone	0	1	0	3	0	2	6
Teton	1	2	3	1	0	0	7
Twin Falls	2	4	6	6	1	0	19
Valley	1	2	3	5	1	0	12
Washington	1	4	5	6	1	0	17
TOTAL	**53**	**109**	**125**	**174**	**13**	**9**	**483**

Source: USDA, 2017

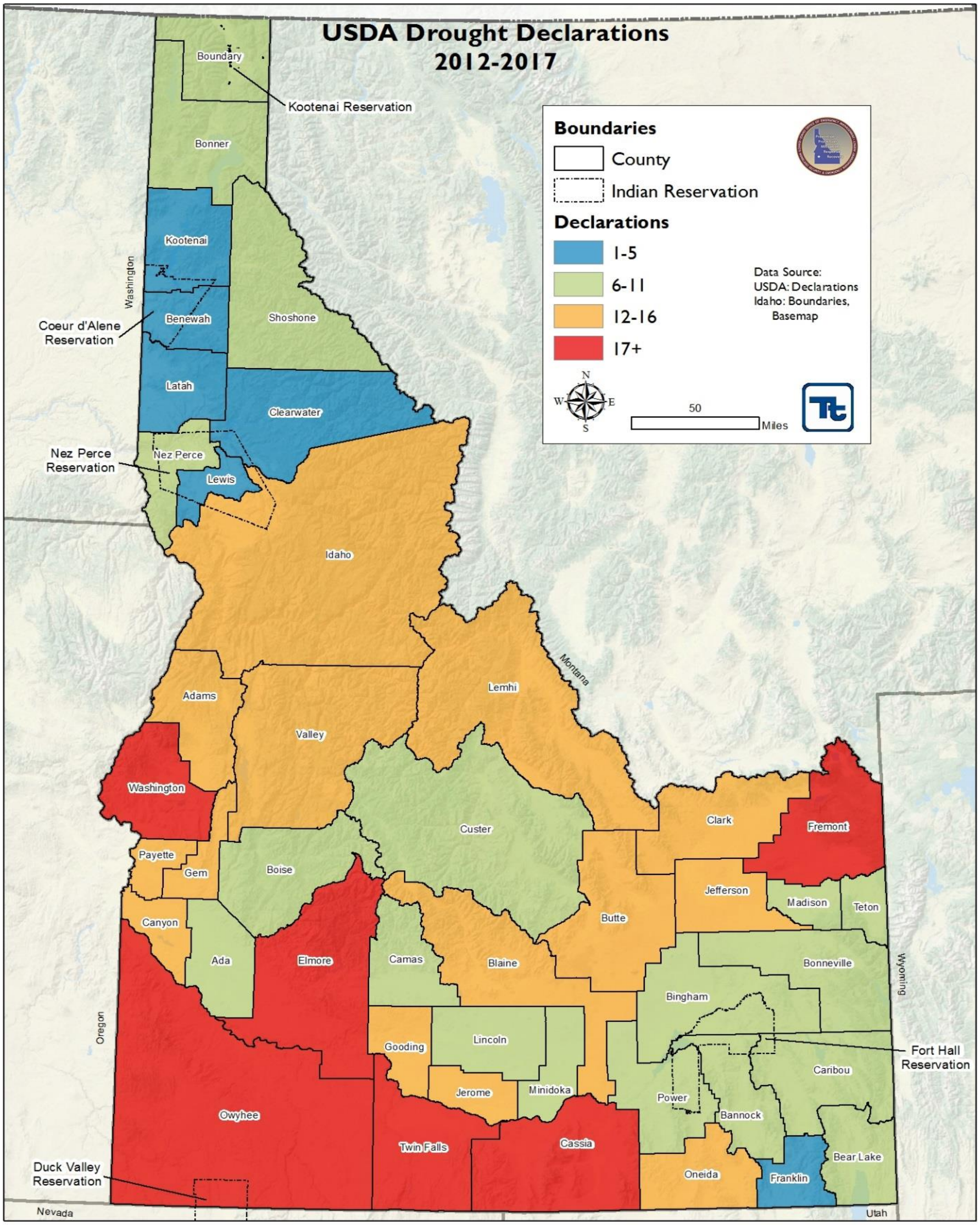


Figure 3.5.P USDA Secretarial Disaster Declaration in Idaho

EARTHQUAKE

Table 3.6.I. Earthquake Events in Idaho, 1872 – 2017

Date	Magnitude*	Location (recorded epicenter)	Counties Affected	Description
1872	7.4	Lake Chelan, WA	N/A	Largest quake in Washington State; felt strongly in North Idaho
1884	6	Bear Lake Valley	Bear Lake	Considerable damage to houses in Paris, ID
1905	6	SW Idaho or NE Nevada	Lincoln	Considerable damage at Shoshone, ID
1913	5	Adams County	Adams	Broke windows and dishes
1914	6	Utah-Idaho State line	Bear Lake	Intensity VII; between Ogden, UT and Montpelier, ID
1915	7.75	Pleasant Valley, NV	N/A	Considerable damage in SW Idaho, 100 miles from epicenter
1916	6	North of Boise	Ada	Boise residents rushed into the street; chimneys fell
1918	5	North Idaho	Bonner	Widely felt near Sandpoint
1925	6.6	SW Montana	N/A	Felt throughout Idaho
1926	4	North Idaho	Shoshone	Felt at Avery and Wallace
1927	5	Connor Creek	Valley	On Idaho-Oregon border, west of Cascade
1934	6.6	Hansel Valley, UT	N/A	Largest Utah event on record; 20 miles south of Idaho border; 2 fatalities
1935	6.25	Helena, MT	N/A	Extensive damage; multiple large events felt throughout Idaho; 4 fatalities
1936	6.4	Walla Walla, WA	N/A	Damaging earthquake; widely felt in Idaho
1942	5	Sandpoint area	Bonner	Cracked plaster; rock fell onto railroad tracks
1944	6	Central Idaho	N/A	Knocked people to ground in Custer County
1944	4	Lewiston area	Nez Perce	Widely felt in northern Idaho
1945	6	Central Idaho	Boise	Epicenter near Clayton; slight damage in Idaho City and Weiser
1947	6.25	Southwest Montana	N/A	Epicenter in Gravelly range, 10 miles north of Idaho border
1947	5	Central Idaho?	N/A	Several large cracks formed in a well-constructed brick building

Date	Magnitude*	Location (recorded epicenter)	Counties Affected	Description
August 18, 1959	7.3	Hebgen Lake, MT	Fremont	Major event, extensive fault scarps; 20 miles from Idaho; 29 fatalities. The Hebgen Lake earthquake (August 18, 1959) originated in Montana but was felt and caused considerable damage in Idaho. The Magnitude 7.3 event generated Intensity X shaking, killed 28 people as a result of an enormous landslide, formed "Quake Lake," and did $11 million damage to roads and timber. Many campers in the Yellowstone area were trapped for days (eventually rescued with the assistance of smoke jumpers and helicopters), and a fishing lodge dropped whole into a lake. There were six aftershocks of Magnitude 5.5 or greater within one day, and one of Magnitude 5.8 in 1964. The initial earthquake was felt in an area of over 450,000 square miles. In Idaho, Intensity VII was experienced in the areas of Big Springs, Island Park, and Henry's Lake. Big Springs increased its flow 15 percent and became rusty red colored, and wells in the Island Park area remained muddy for weeks. A man was knocked down at Edward's Lodge, and guests at Mack's Inn experienced hysteria. There was considerable damage to buildings in the Henry's Lake area. Trees swayed violently, breaking some roots, and cars jumped up and down. Chimneys fell, and a 7-foot-thick rock-and-concrete dock cracked.
1960	5	Soda Springs	Caribou	Foundations and plaster cracked
1962	5.7	Cache valley	Franklin	Heavily damaged older buildings
1963	5	Clayton	Custer	Plaster cracked and windows broken
1969	5	Ketchum	Blaine	Cement floors cracked
1975	6.1	NW Yellowstone	N/A	Widely felt in Yellowstone region
1975	6.1	Pocatello Valley	Oneida	Some 520 homes damaged in Ridgedale and Malad City
1977	4.5	Cascade	Valley	Drywall, foundations cracked; ceiling beams separated
1978	4	Flathead Lake, MT	N/A	Felt in NW Idaho

Date	Magnitude*	Location (recorded epicenter)	Counties Affected	Description
October 28, 1983	6.9	Borah Peak	Custer, Butte and Gooding	Major event, 21-mile surface scarp; 11 buildings destroyed, 2 fatalities The Borah Peak earthquake (October 28, 1983) was the largest ever recorded in Idaho, both in magnitude and in the amount of property damage, ($29.4M—in 2012 dollars). With a magnitude of 6.9, it was among the largest earthquakes to hit the State since the 1959 Hebgen Lake event. The epicenter was in the Barton Flats area, approximately 10 miles northwest of Mackay and 30 miles southeast of Challis. There have been a number of California earthquakes larger than this: 1999 Hector Mine (7.1), 1992 Landers (7.3), 1992 Cape Mendocino (7.2), 1989 Loma Prieta (6.9), and 1980 Humboldt (7.2). The maximum observed intensity was IX (based on surface faulting), and the earthquake was felt in an area of over 330,000 square miles. Four aftershocks of Magnitude 5.5 or greater were recorded within 1 year, and numerous more have occurred to date. Table 3.6.G above shows the shaking in MM Intensity scale units. The event caused two deaths in Challis (both school age children) and several minor injuries. There was an estimated $12.5 million in damage in the Challis-Mackay area, affecting sewer and water systems, roads, other public facilities, and personal property. The facilities of an irrigation company and a fish hatchery also experienced extensive damage. Although damage occurred as far away as Boise, the most severe property damage occurred in the towns of Challis and Mackay. Eleven commercial buildings, 39 private houses, and one school sustained major damage, and 200 houses sustained minor to moderate damage. Most of the damaged commercial buildings were of masonry construction, including brick, concrete block, or stone. The majority of the residential chimneys were cracked or twisted or collapsed. Significant ground displacement produced a 20-mile-long zone of fresh scarps and ground breakage in the Lost River Range. Displacement along the fault ranged from less than 1.5 feet to 9 feet. Other geologic effects included landslides and rock falls, flow changes in springs, and fluctuations in water levels. A temporary lake was formed by the rising water table south of Dickey, and widespread flooding occurred in the Warm Springs Creek area. The event resulted in State and Federal disaster declarations (designated DR-694). The declaration provided Public Assistance and Individual Assistance for Custer County, Individual Assistance for Butte County, and aid to schools in Butte and Gooding Counties
1984	5	Challis	Custer	Largest of many Borah Peak aftershocks
1988	4.1	Cooper Pass	Shoshone	Montana border NE of Mullan
1994	5.9	Draney Peak	Caribou	Remote area of Wyoming border; 1 injury from falling flower pot
1994	3.3	Avery area	Shoshone	Rare North Idaho event centered near Hoyt Mountain
1999	5.3	Lima, MT	N/A	In Red Rock valley, just north of Idaho border
2001	4	Spokane, WA	N/A	At least 75 felt events at shallow depth beneath the city
2005	5.6	Dillon, MT	N/A	Felt across Idaho

Date	Magnitude*	Location (recorded epicenter)	Counties Affected	Description
September – December 2005	4	Alpha Swarm	Valley	Between September and December 2005, thousands of small, very shallow earthquakes occurred near the community of Alpha in Valley County. These events, five with magnitudes as high as 4, were centered about 16 kilometers south of Cascade, in the vicinity of Clear Creek. The Idaho Geological Survey and Bureau of Homeland Security arranged for the deployment of a temporary seismic array to study the swarm. However, a seismologist from Boise State University reported a year later that, in his opinion, the swarm was incorrectly mapped due to "poor seismographic coverage." Although little damage was reported, many of the events were felt locally. Most of the Alpha swarm appears to have occurred along a previously unidentified fault that separates Long Valley to the north from Round Valley to the south. The latest of the five events may have been triggered by stress released from the other earthquakes. This event occurred several kilometers northwest of the others and was consistent with normal faulting on the Long Valley fault, one of the major Quaternary faults in Idaho.
2008	6.0	Wells, NV	N/A	The Wells, Nevada earthquake was felt in southern Idaho, and significant shaking was reported. On February 21, 2008, the northern Nevada town of Wells was struck by a 6.0 Magnitude earthquake resulting from a seismic event on a previously unmapped fault. Half of the non-residential buildings in Wells were damaged, and 10 of those sustained severe damage. The event appeared to occur almost instantaneously and caused nearly $9 million in damage. The community of Wells was severely disrupted for months and, due mostly to the lack of a presidential declaration and subsequent Federal aid, most of the heavily damaged buildings in the older part of town remain in ruins. The circumstances of this event could easily be replayed in many areas of Idaho.
2010	4.6	Randolph, UT	N/A	Shaking experienced in Idaho, Wyoming, and Utah

Date	Magnitude*	Location (recorded epicenter)	Counties Affected	Description
January and April 2010	4.8	Jackson Hole, WY	N/A	Shaking lasted ~10 seconds, toppled lamps in Jackson, shaking experienced in Idaho. In January and again in April 2010, a swarm of earthquakes occurred about 10 miles northwest of the Old Faithful area on the northwestern edge of the Yellowstone Caldera. Swarms have occurred in this area several times over the past 30 years; however, this swarm became the second largest ever recorded at Yellowstone –both longer (in time) and including more earthquakes than the December 2008-January 2009 swarm. As of September 2010, earthquake activity had returned to near background levels. To complicate matters, the plate beneath Yellowstone Lake ceased its tilting motion. Seismologists are uncertain as to whether or not this is a good thing. Damage from prehistoric caldera events was massive, and a similar event in this day and age would be cataclysmic. Because of recent Hollywood depictions of a Yellowstone super-volcano and despite the location of Yellowstone in neighboring Wyoming, a comment regarding geological and seismic potential is warranted. Regarding a super-volcano event, the USGS states in its Open-File Report 2007-1071, "the probability of a fourth large caldera-forming event at Yellowstone can be considered to be less than 1 in a million." The relatively greater hazards are hydrothermal explosions of which 26 have occurred in the past 30 years.
April 10, 2014	4	11km NW of Challis, ID	Custer	No reference and/or no damage reported.
April 13, 2014	4.8	15km NNW of Challis, ID	Custer	No reference and/or no damage reported.
April 14, 2014	7.4	13km NW of Challis, ID	Custer	No reference and/or no damage reported.
January 13, 2015	5	9km E of Challis, ID	Custer	No reference and/or no damage reported.
April 25, 2015	3.3 to 4.2	Lake Pend Oreille SE of Sandpoint, ID	Bonner	A sequence of three M3-4 earthquakes occurred around Lake Pend Oreille southeast of Sandpoint, Idaho, on April 24th, 2015. A sequence of three earthquakes, M4.1, M4.2, and M3.3, occurred and were followed by an elevated rate of seismicity. They were widely felt in much of northeastern Washington, northern Idaho, and northwestern Montana.
September 2, 2017	4 to 5.3	12-13km E of Soda Springs, ID	Caribou	No reference and/or no damage reported.
September 3, 2017	4 to 4.7	9-15km ESE of Soda Springs, ID	Caribou	No reference and/or no damage reported.
September 4, 2017	4.5	13km ESE Soda Springs, ID	Caribou	No reference and/or no damage reported.
September 5, 2017	4.1 to 4.3	12-17km ESE of Soda Springs, ID	Caribou	No reference and/or no damage reported.
September 6, 2017	4.1 to 4.6	10-15km ESE of Soda Springs, ID	Caribou	No reference and/or no damage reported.
September 7, 2017	4.1	17km ESE of Soda Springs, Idaho	Caribou	No reference and/or no damage reported.

Date	Magnitude*	Location (recorded epicenter)	Counties Affected	Description
September 9, 2017	4 to 4.1	18km ESE of Soda Springs, Idaho	Caribou	No reference and/or no damage reported.
September 10, 2017	4.1 to 5	12-18km ESE of Soda Springs, ID	Caribou	No reference and/or no damage reported.
September 11, 2017	4.1 to 4.7	17-18km SE of Soda Springs, ID	Caribou	No reference and/or no damage reported.
September 14, 2017	4	20km NNW of Montpelier, Idaho	Caribou	No reference and/or no damage reported.

Sources: Idaho State Hazard Mitigation Plan 2013; FEMA 2017; USGS 2017

* Magnitudes with deciles are approximate

Note: For events that occurred between 2010 and 2017, only those with magnitude 4

E East, FEMA—Federal Emergency Management Agency, ID – Idaho, K- Kilometers, N – North, N/A—Not available, S – South, USGS—U.S. Geological Survey, W – West.

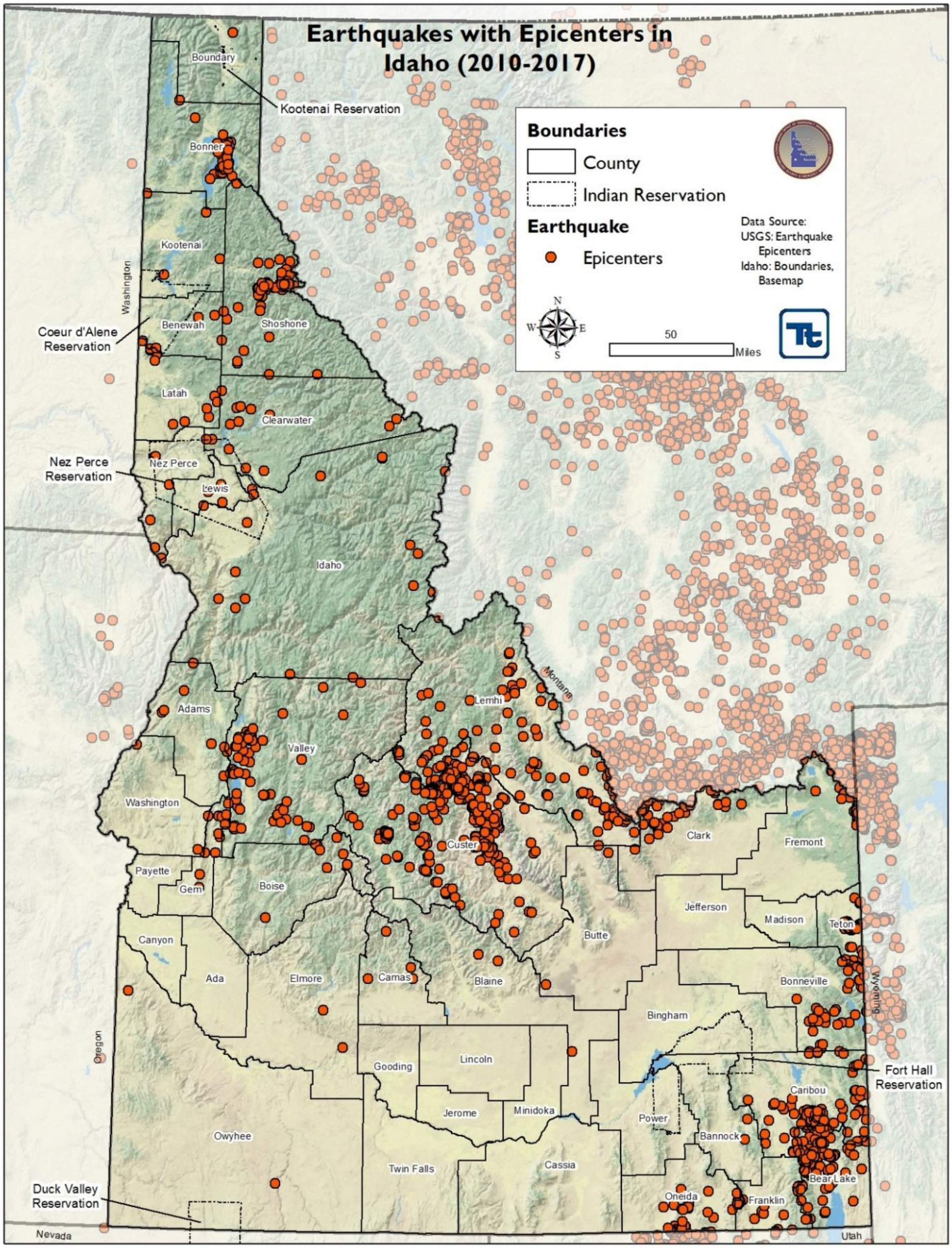


Figure 3.6.J. Earthquakes with Epicenters in Idaho, 2010 to 2017

Table 3.6.K. Earthquake-Related Disaster Declarations (1954 to 2017)

Year	Date	State	Federal	Counties Affected
1983	November 18, 1983	X	DR-694	Butte, Custer, and Gooding

Source: Idaho State Hazard Mitigation Plan 2013; FEMA 2017
Note: The date is the declaration date for the event

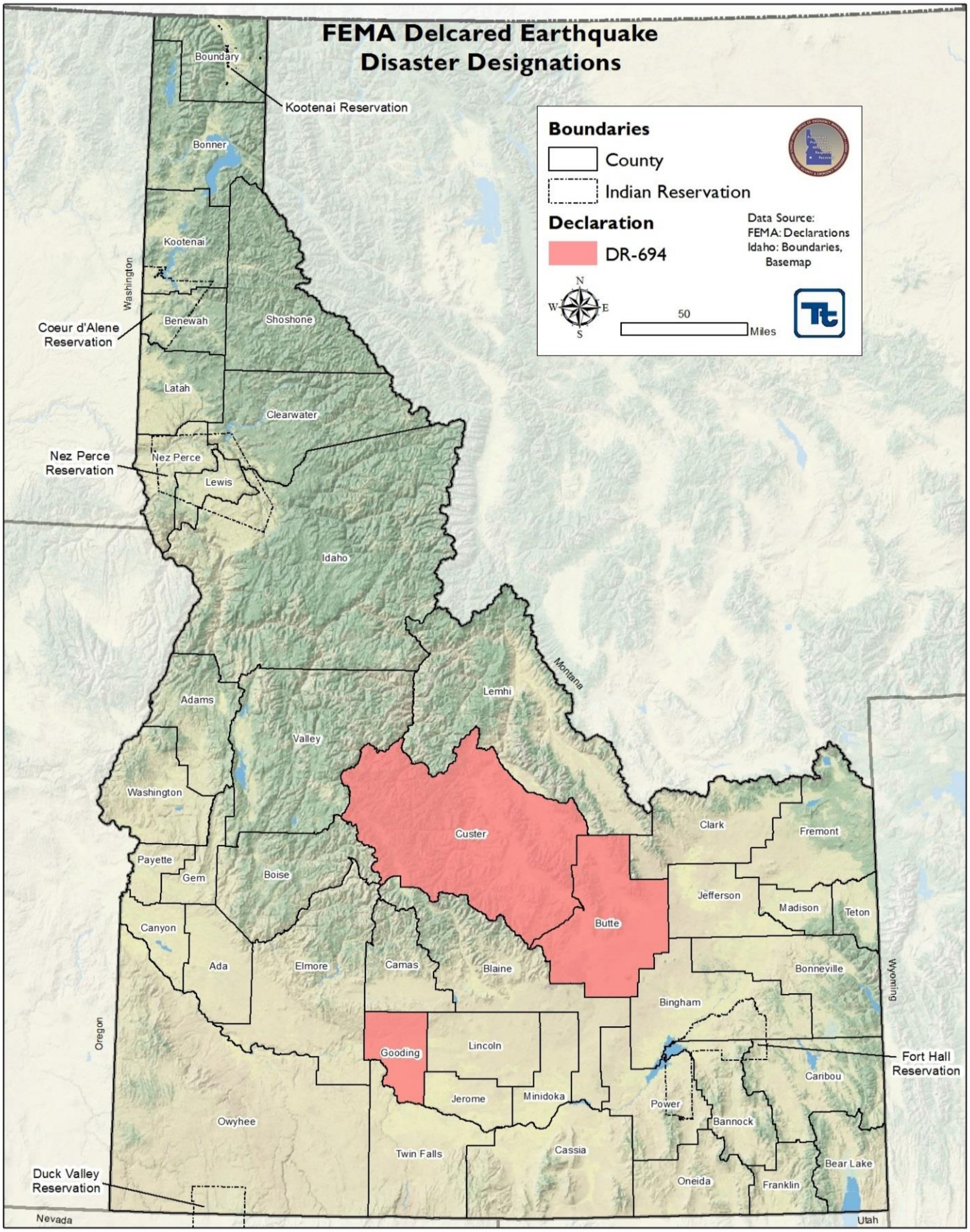


Figure 3.6.L. FEMA Disaster Declarations in Idaho

LANDSLIDE

Table 3.7.G. Landslide Events in Idaho, 1974—2017

Date	Event Type	Counties Affected	Description
January 27, 1974	Landslide	Idaho	Hat Creek Landslide, located on U.S. Highway 95 near the town of Pollock, Idaho, started moving on January 27, 1974. The slide closed U.S. Highway 95 and the toe impinged into the Little Salmon River. The slide was about 2,300 by 500 feet and involved about one million cubic yards of material. Investigation and analysis centered around four alternatives: complete removal, lower slide removal, upper slide removal, and stabilization of the upper slide with groundwater control. The stabilization of the upper slide by groundwater control was selected as the most cost-effective alternative. A construction dewatering system, consisting of 45 eductor well points, was installed to provide a stable trench excavation. A drain trench, 700 feet long, was constructed across the head of the slide. The drain trench contained a 6-inch perforated pipe and 10-inch collector drainpipe covered by 4-1/2 feet of filter material. The stabilization work was completed in November 1977 and realignment of U.S. Highway 95 in the fall of 1978 for a total cost of $770,000.
1979	Landslides	Gooding	A series of major landslides have struck the plateau along the Snake River located in Hagerman Fossil Beds National Monument since 1979. These large slope failures have occurred approximately every two years, and typically affect areas ranging from 300 to 800 feet wide and up to 1,000 feet long. The 1987 event destroyed a $1 million irrigation pumping facility and nearly killed two workers.
July 1982	Landslide	Boise	unknown
February 1986	Landslide	Boise	unknown
March 1986	Landslide	Boise, Elmore, Lewis, Nez Perce, Owyhee	unknown
April 1991	Landslide	Bonner	The damaging event that occurred near Sandpoint in April 1991 illustrates the somewhat confusing continuum between flash floods and debris flows. Although classified in the State declaration as a flash flood, the high debris load makes it somewhat indistinguishable from a debris flow. The torrents blew out large sections of the road leading to Schweitzer Basin ski area, stranding dozens of people; contaminated the city's primary water supply; and heavily damaged the water treatment facility. The cost to clean out and repair the water treatment facility was several hundred thousand dollars.
July 24, 1993	Landslide	Gooding	On July 24, 1993, approximately 100 acres of ground failed and slid into the Snake River just south of Bliss. The river was temporarily dammed, and a new set of rapids was created. The access road on the south side of the river was destroyed. The initial slide and subsequent erosion of the toe introduced a large amount of sediment into the river. The landslide site shows extensive evidence of earlier activity.

Date	Event Type	Counties Affected	Description
November 1996	Severe Storms, Flooding, Mud and Landslides (DR-1154)	Adams, Benewah, Boise, Bonner, Boundary	During late December 1996, above-normal snowfall in Northern and Central Idaho was quickly followed by significant amounts of warm rain. The melting snow and heavy rains overwhelmed rivers and their tributaries, leading to widespread landslides and severe flooding, mainly in the West-Central region of the State. Large sections of the highway system were damaged or destroyed, isolating several communities for days. Six deaths and three serious injuries were attributed to this disaster. Massive landslides and floods occurred in the Payette, Weiser, and Little Salmon River basins, causing extensive damage to structures, roads, and bridges. Boise County in particular experienced substantial landslide damage. Numerous soil failures on saturated faces of hillsides resulted in major landslides and mud flows. Numerous small landslides obstructed culverts, flowed over roads, and caused undercutting on the downhill side. Numerous debris flows throughout Western Idaho caused extensive damage. Deposits left by these flows were several feet deep and up to 300 feet wide, and they overwhelmed the 1- to 3-foot culverts designed to pass rainfall runoff. Several gulches had significant slides that overwhelmed structures built on the alluvial fans of debris flow. A massive debris flow that hit the community of Lower Banks flowed down from an area burned over in 1992. The slide deposited mud, rocks, and debris at the base of the slope and expanded to cover the whole community. Most buildings (residential and business) appeared to be damaged or destroyed. Buildings were moved from their foundations and submerged in mud up to two-thirds of the buildings' height. Many public facilities were damaged or destroyed. From Horseshoe Bend to Banks, access to U.S. Highway 55 was restricted for one week. Several slides occurred in a half-mile section near Banks, with the largest estimated at 100,000 cubic yards. Highways 17 and 21 were closed by landslides, isolating the communities of Lowman and Garden Valley. On Old Idaho 17 there were miles of highway with landslides every 200-500 feet. U.S. 95 experienced 11 washouts that isolated residents for days, and McCall was isolated and suffered economic hardship due to the disruption of its winter recreation activities. Local roads and forest access were likewise affected. Mudslides destroyed much of the 6,000-mile road system in the Boise National Forest, threatening fisheries and access to popular recreation areas in the spring. On January 4, 1997, the President declared a major disaster (designated as DR-1154) in the State of Idaho, 18 counties were declared eligible for Federal assistance. As of February 1, 2001, this funding included $19,404,105 in public assistance, $39,988 in individual assistance, $125,937 from the NRCS, $576,314 from the U.S. Army Corps of Engineers, and $5,593,892 in hazard mitigation grants. Much of the impact of these landslides occurred on virtually unpopulated public and private lands managed by the Forest Service, Bureau of Land Management, Idaho Department of Lands, and Boise Cascade Corporation. In addition to infrastructure damage (e.g., forest roads), the impact included a large input of sediment and woody debris into stream channels. The increased sediment in the stream channels affected fish habitat. Based on past studies, it is suspected that road construction played a large role in the origin of these slides. Recent wildfires may also have played a role in the extent and severity of the landslide by reducing root strength, reducing transpiration by plants, and increasing runoff due to reduced infiltration.

Date	Event Type	Counties Affected	Description
January 1997	Landslide	Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Washington	In early March 1997, northern Idaho received 12 to 18 inches of snow on top of an existing snowpack that exceeded 150 to 170 percent of the average. A subsequent rainstorm caused a rapid snowmelt. The resulting mudslides and flooding lasted for an extended period and damaged many public facilities, including county road systems. The President issued a Federal Disaster declaration (DR-1177) on June 13, 1997, for Boundary, Bonner, Benewah, Kootenai, and Shoshone Counties. Additional counties were affected by the rains.
March 1997	Severe Storms, Snowmelt, Land/Mud Slides, Flooding (DR-1177)	Benewah, Bonner, Boundary, Kootenai	In early March 1997, northern Idaho received 12 to 18 inches of snow on top of an existing snowpack that exceeded 150 to 170 percent of the average. A subsequent rainstorm caused a rapid snowmelt. The resulting mudslides and flooding lasted for an extended period and damaged many public facilities, including county road systems. The President issued a Federal Disaster declaration (DR-1177) for flooding on June 13, 1997, for Boundary, Bonner, Benewah, Kootenai, and Shoshone Counties.
May 4, 1998	Landslide	Lemhi, Nez Perce, Washington	A landslide that began on May 4, 1998, blocked Snake River Avenue in Lewiston, restricting access to some businesses. A second slide on May 13 destroyed a mobile home and caused an additional road closure. The Lewiston Elks Temple was also threatened by ongoing slide activity in the vicinity. Total public costs for this event are estimated at just under $4.5 million; approximately $4 million for Idaho Transportation Department and $485,000 for Nez Perce County.
October 19, 1998	Landslide	Boundary	On October 19, 1998, a mudslide covered Highway 95, 1 mile north of Bonner's Ferry. Additional sliding the next day caused extensive damage to the State highway, a county road, and 1,000 feet of Union Pacific Railroad tracks. The blockage kept emergency medical and fire services from half the county. Truck traffic was rerouted 112 miles around the slide, and up to five trains were stranded each day. The Governor declared a disaster (due to economic impact).
Summer 1999	Landslide	Twin Falls	The Bluegill Landslide (near Buhl on Salmon Falls Creek, 5 to 10 miles from its confluence with the Snake River) was identified during the summer of 1999, when local rock climbers noted changes in the bedrock cliffs, an unusual amount of rock fall, and fractures opening up on the trail. Subsequently, a 12-acre block of canyon rim composed of basalt and sediments began sliding into Salmon Falls Creek. This ongoing slide activity threaten irrigation pumping stations and generate flood risks to upstream and downstream development.
January 30, 2000	Landslide	Kootenai	A major landslide on January 30, 2000, blocked the only access road to Ravens Point (near Bayview). A second rockslide two days later exacerbated the problem. Access to 75 homes was cut off. Kootenai and Bonner counties, Timber Lakes Fire District, and Lakes Highway District provided essential services. Residents shared personal resources and maintained communication through a specially designed Web page. A 65-passenger ferry was leased for travel to and from Bayview. Governor Kempthorne and the Legislature authorized up to $725,400 for the Bureau of Homeland Security to reimburse local agencies. The NRCS provided much-needed Federal assistance in stabilizing the banks above the lake and removing road blockage. The State paid the non-Federal match required by NRCS. The request for a Presidential disaster declaration was not approved.

Date	Event Type	Counties Affected	Description
January 15, 2006	Landslide	Kootenai	On January 15, 2006, a landslide was caused by construction on U.S. Highway 95, north of Worley. It resulted in approximately $7,500 in damages to the project.
March 2011	Landslide, Flooding, Mudslides (DR-1987)	Bonner, Clearwater, Idaho, Nez Perce, Nez Perce Tribal Nation, Shoshone	On May 6, 2011, Governor C.L. “Butch” Otter requested a major disaster declaration due to flooding, landslides, and mudslides during the period of March 31 to April 11, 2011. The Governor requested a declaration for Public Assistance for six counties and one Tribal Nation and Hazard Mitigation statewide. On May 20, 2011, President Obama declared that a major disaster exists in the State of Idaho. This declaration made Public Assistance requested by the Governor available to State, Tribal, and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the flooding, landslides, and mudslides. This declaration made Public Assistance requested by the Governor available to State, Tribal, and eligible local governments and certain private nonprofit organizations on a cost-sharing basis for emergency work and the repair or replacement of facilities damaged by the flooding, landslides, and mudslides in Bonner, Clearwater, Idaho, Nez Perce, and Shoshone Counties and the Nez Perce Tribal Nation. This declaration made Hazard Mitigation Grant Program assistance requested by the Governor available for hazard mitigation measures statewide.
May – June 2013	Landslide	Gem	The State of Idaho Transportation Department (ITD) maintenance crews have been cleaning up debris from a sandstone ledge under a large canal on State Highway 52. The ledge has been falling apart for some time and the quantity of material required non-stop attention. The roadway was closed in June. The uncontrolled debris threatened public safety, canal stability, communication lines, transportation, economy, and infrastructure. Gem County was declared a disaster area on June 6, 2013, and ITD set up barriers and restricted traffic to one lane on the highway. Testing revealed water seepage from canal but has not been conclusively determined to cause the landslide. The canal was drained and will be relined.
August 4, 2014	Landslide, Severe Weather	Elmore	State Disaster Proclamation ID-01-2014
February 12, 2016	Landslide	Idaho	State Disaster Proclamation ID-01-2016 for Hwy 14 Landslide
March 2016	Landslide	Ada	Cracks started appearing in homes in the Terra Nativa subdivision north of Table Rock recreation area and just south of Table Rock Road in Boise. An investigation revealed that the ground under the homes was shifting slowly downhill. A half-dozen homes on Alto Via Court have been abandoned, and the owners are suing the city of Boise, Terra Nativa’s developers and engineers who worked on the project.
March 6, 2017	Landslides, Severe Storms, Flooding, Mudslides (DR-4313)	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Shoshone, Valley	State Disaster Proclamation ID-03-2017 and federal DR-4313 for flooding, landslides and avalanches that caused over $9 million in losses. The northern panhandle counties received persistent rainfall and snowmelt that caused widespread flooding, landslides, water over roads, damaged levees and flooding of homes and basements.

Date	Event Type	Counties Affected	Description
May 6, 2017	Landslides, Mudslides, Flooding (DR-4333)	Blaine, Camas, Custer, Elmore, and Gooding	State Disaster Proclamation ID-05-2017 Spring flooding and federal DR-4333 that caused over $3 million in losses. Landslides caused highways to be blocked. In particular, State Highway 3 between Kendrick and Juliaetta was blocked.

Sources: FEMA 2017; Idaho State Hazard Mitigation Plan 2013

Table 3.7.H. Landslide State and Federal Declarations (2011 to 2017)

Year	Date	State	Federal	Counties Affected
1996	November 1996	X	DR-1177	Adams, Benewah, Boise, Bonner, Boundary, Camas, Clearwater, Elmore, Gem, Idaho, Kootenai, Latah, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington
1997	March 1997	X	DR-1154	Benewah, Bingham, Bonner, Bonneville, Boundary, Butte, Custer, Fremont, Jefferson, Kootenai, Madison, Shoshone
2011	March 31, 2011	X	DR-1987	Bonner, Clearwater, Idaho, Nez Perce, Nez Perce Tribal Nation, Shoshone
2014	August 4, 2014	ID-01-2014	none	Elmore
2016	February 12, 2016	ID-01-2016	None	Idaho
2017	March 6, 2017	ID-03-2017	DR-4313	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Shoshone, Valley
	May 6, 2017	ID-05-2017	DR-4333	Blaine, Camas, Custer, Elmore, and Gooding

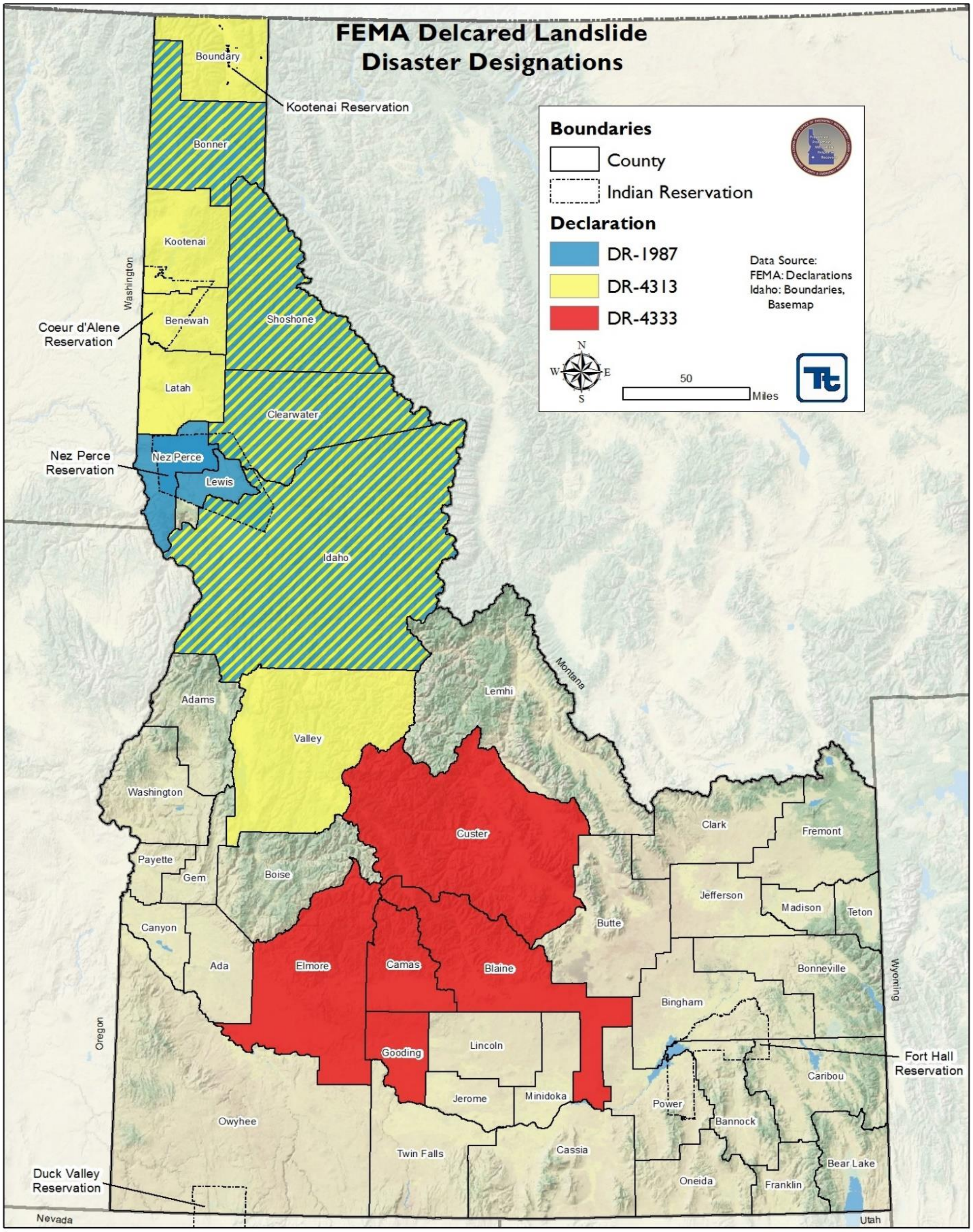


Figure 3.7.I. FEMA Disaster Declarations in Idaho

VOLCANIC ERUPTIONS

Table 3.8.E. Volcanic Eruptions Affecting Idaho, 1980—2017

Date	Event Type	Counties Affected	Description
May 18, 1980	Volcano Eruption DR-624	Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Nez Perce, Shoshone	Mount St. Helens: On May 18, 1980, Mount St. Helens, Washington, erupted, killing 57 people and causing over 1 billion dollars of damage in the Northwest. The eruption followed two months of earthquakes and minor eruptions, and this warning allowed most people in the proximal hazard area to evacuate prior to the eruption. Ashfall from the 1980 eruption of Mount St. Helens impacted northern Idaho, covering roads, affecting crops, machinery and vehicles, and creating health issues.

CIVIL DISTURBANCE

Table 3.9.D. Civil Disturbance Events in Idaho, 1885 – 2017

Date	Event Type	Counties Affected	Description
1885	Civil Disturbance	Statewide	Chinese immigrant mining disturbances
1892-1899	Coeur d'Alene Miners' Dispute	Kootenai	Miner strikes and confrontations
June 2001	Rainbow Family Gathering	Boise, Valley	The 2001 Rainbow Family gathering in Idaho's remote Sawtooth Mountains led to a state declaration.
2011	Occupy Boise	Ada	In 2011, Boise experienced Occupy Boise, an episode of civil disturbance that launched from the Occupy Together movement that started in the September 17, 2011, with the Occupy Wall Street protest in New York City. Local officials expended time and resources planning for contingencies and dealing with permit issues. The protest against corporate entities for political reasons remained peaceful. This group exercised their first amendment rights.
February 3, 2014	Protest	Ada	Forty-four gay-rights activists were arrested at the Boise for a silent protest to draw attention to anti-discrimination legislation. The protestors blocked all entrances to the Senate chambers for more than two hours. Police stated they took 43 people into custody after they demonstrators stood shoulder-to-shoulder and prevented lawmakers from getting past.
March 4, 2014	Protest	Ada	Twenty-three gay rights activists were arrested after they block the entrance to Governor Otter's office inside the Idaho Statehouse. Four were charged with trespassing, 18 with unlawful assembly and one with resisting arrest.

Sources: Idaho State Hazard Mitigation Plan 2013; FEMA 2017; Idaho Transportation Department 2017; Boise Public Radio 2014, 2016 and 2017

Table 3.9.E. Civil Disturbance-Related State and Federal Declarations (1954 to 2017)

Year	Date	State	Federal	Counties Affected
2001	June 2001	X		Boise, Valley

Source: FEMA 2017; Idaho State Hazard Mitigation Plan 2013

CYBER DISRUPTION

No tables or figures in previous plan for past occurrence.

HAZARDOUS MATERIAL

Figure 3.11.G. Idaho Hazardous Material Releases as Reported to IOEM

Year	Incidents
2012	226
2013	239
2014	208
2015	213
2016	174
2017	188
	n=1248

PANDEMIC

Table 3.12.A. Pandemic Events in Idaho, 1918 – 2017

Date	Event Type	Counties Affected	Description
1918	Influenza	Statewide	Caused an estimated 50 million deaths worldwide and about 675,000 in the United States. Communities throughout Idaho reported 1918 influenza outbreaks and deaths and prohibited public events. The State Board of Health cancelled public and private schools statewide in hopes of preventing the spread to children and families. The community of Hansen reported 46 cases in one day. The Pandemic of 1918 first affected Idaho in Canyon County. In less than two weeks, the number of cases grew to the extent the State was unable to track the disease accurately. Idaho officials and media urged Idahoans to remain calm, adding prohibition of public gatherings. By late October, there were reported influenza cases in Boise, Coeur d'Alene, Idaho Falls, Lewiston, Moscow, Pocatello, Twin Falls, Wallace, and other areas in the state. The military servicemen suffered great losses. Special trains transported the dead and coffins were in short supply.
1957–1958	Influenza	Statewide	Killed and estimated 1.1 million people worldwide and 116,000 in the United States. In Idaho, 49 deaths were attribute to the pandemic.
1968–1969	Influenza	Statewide	Caused an estimated 1 million deaths worldwide and about 100,000 in the United States. In Idaho, 61 deaths were attribute to the pandemic.
2009–2010	Influenza A(H1N1)	Statewide	Killed nearly 12,000 Americans during2009 through 2010; widespread in Idaho and led to several deaths

Date	Event Type	Counties Affected	Description
2014–2016	Ebola virus disease	N/A	During March 2014 through April 2016, West Africa experienced the largest outbreak of Ebola in history, with multiple countries affected, including the United States. In the United States, there were four cases including one death. Two cases were imported and two were locally acquired cases by healthcare workers. No cases occurred in Idaho; however, Idaho local and state public health officials and IOEM met with medical professionals, hospitals, emergency responders, universities and airports to discuss the need to look for symptoms that could indicate Ebola virus infection and educate health workers about effective response protocols to a suspected case. Exercising of Ebola virus disease response plans continues.
2015	Measles	N/A	A measles outbreak spread from Disneyland to 14 states and infected 102 people. Although there were no cases confirmed in Idaho, cases were detected in neighboring states affected.
September 2015	Mumps	Ada, Kootenai	A mumps outbreak began in September at the University of Idaho in Moscow and spread to other parts of Idaho. The State confirmed 21 cases of mumps on February 8, 2015. This outbreak led to confirmed cases in Washington State, linked to those identified at the University.
2016	Zika virus disease	Statewide	A widespread epidemic of Zika virus disease started in Brazil and spread to other parts of South and North America. Islands in the Pacific and Southeast Asia were also affected. The epidemic ended November 2016, as per WHO. In the United States, local cases of Zika virus transmission were reported in Miami-Dade County, Florida, and in Brownsville, Texas. There were five reported cases of Zika in Idaho; however, these were not acquired in the State.
2017	Rabies (bat)	Statewide	In Idaho, only bats are known to be natural reservoirs for rabies. During 1999 through 2016, an average of 15 bats tested positive for rabies each year. A handful of other species in Idaho have also been documented with a bat strain of rabies virus. Because other mammals have tested positive for rabies, the risk of rabies exposure from bites, scratches, or other exposures to saliva and nervous tissue from mammals other than bats must not be ignored as a possible source of rabies. Other strains of rabies (skunk, raccoon, fox, and canine) are not currently found in Idaho, but skunk strains have been moving westward and could potentially affect Idaho.

Sources: Idaho State Hazard Mitigation Plan 2013; FEMA 2017

Table 3.12.B. Number of reported cases of selected diseases — Idaho, 2013–2106

Reportable Disease	State of Idaho Reportable Disease Summary – Number of Cases			
	2013	2014	2015	2016
HIV	44	21	43	47
Measles	0	0	0	0
Mosquito-borne diseases				
Malaria	5	3	6	0
Zika virus disease	-	-	-	5
West Nile Virus Infections	40	19	13	9
Mumps	0	26	8	1
Pertussis	237	367	194	83
Plague	0	0	0	0
SARS (Severe Acute Respiratory Syndrome)	0	0	0	0

Reportable Disease	State of Idaho Reportable Disease Summary – Number of Cases			
	2013	2014	2015	2016
Tuberculosis	11	11	11	18

Source: Idaho Department of Health and Welfare, Idaho Reportable Disease Data and Statistics

RADIOLOGICAL

No tables or figures in previous plan for past occurrence.

DAM FAILURE

Source: http://www.damsafety.org.

Figure 3.15.F. Teton Dam Failure, June 1976

Table 3.15.D. Dam Failure Events in Idaho

Date	Event Type	Counties Affected	Losses / Impacts
June 5, 1976	Teton Dam Failure	Bingham, Bonneville, Fremont, Madison, and Jefferson	On June 5, 1976, Teton Dam failure resulted in 11 deaths and an estimated $2 billion in damage. The failure released 80 billion gallons of water, flooding Wilford, Sugar City, Rexburg, Roberts, Idaho Falls, and Blackfoot. On June 6, a federal disaster declaration was issued (DR-505) for Bingham, Bonneville, Fremont, Madison, and Jefferson Counties.
1984	Oakley Dam Failure	Cassia	Oakley Dam nearly overtopped. USACE completed Oakley Dam Advance Measures, which were a combination of emergency repairs to outlet controls and mitigation measures (emergency bypass canal, flashboards) by USACE.
1984	Twin Falls County Dam Failure	Twin Falls	Salmon Falls Creek release caused flooding.
1991	Kirby Dam Failure	Elmore	On May 26, 1991, Kirby Dam collapsed, cutting off electrical power and blocking the primary access bridge to Atlanta. Contaminated sediments (containing arsenic, mercury, and cadmium) were released into the Middle Fork of the Boise River.
2010	Brown's Pond Dam Failure	Valley	Browns Pond Dam was overtopped and breached during a June rain-on-snow event. A federal disaster declaration for Lewis, Idaho, Adams, Valley, Washington, Payette, and Gem Counties was issued July 27, 2010, for the storms that caused this event (DR- 1927).
July 1-11, 2012	Flood, Planned Dam Release	Boundary	Due to a very wet June and early July, large quantities of water were released through Libby Dam in northwest Montana to accommodate rising water levels in Lake Koocanusa. Planned dam releases up until this event kept the river at Bonners Ferry just below flood stage. However, added releases from the dam pushed the river above its flood stage, resulting in widespread flooding along the Kootenai River in Boundary County at Bonners Ferry and downstream to the Canadian border. Damage occurred along the dikes in Bonners Ferry. Volunteers shored up 500 feet of levee behind the Kootenai River Inn to prevent water from spilling in. Water filled sub- surface storage areas of the General Feed and Grain located in Bonners Ferry. Sloughing of dikes downstream of Bonners Ferry was observed. Over 5,000 acres of farmland was damaged, resulting in $4 million in crop damage.
August 9, 2013	Heavy rain, Flash Flood	Lemhi	Slow moving thunderstorms produced heavy rain and flash flooding over the old 2012 Mustang burn scar in Lemhi County. Increased flow, up to 2 feet in Colson Creek, broke up a temporary earthen dam that emptied the pond.
August 13, 2014	Heavy Rain, Flash Flood	Lemhi	Thunderstorms brought heavy rainfall that triggered debris flows across the Mustang burn scar, west of Shoup. The debris flows occurred at Boulder Creek, Owl Creek, Colson Creek and at an unnamed gulch. A dam located near the delta of Colson Creek was damaged.

Sources: NOAA NCEI 2020; FEMA 2020; Idaho State Hazard Mitigation Plan 2018

Source: Idaho Office of Emergency Management

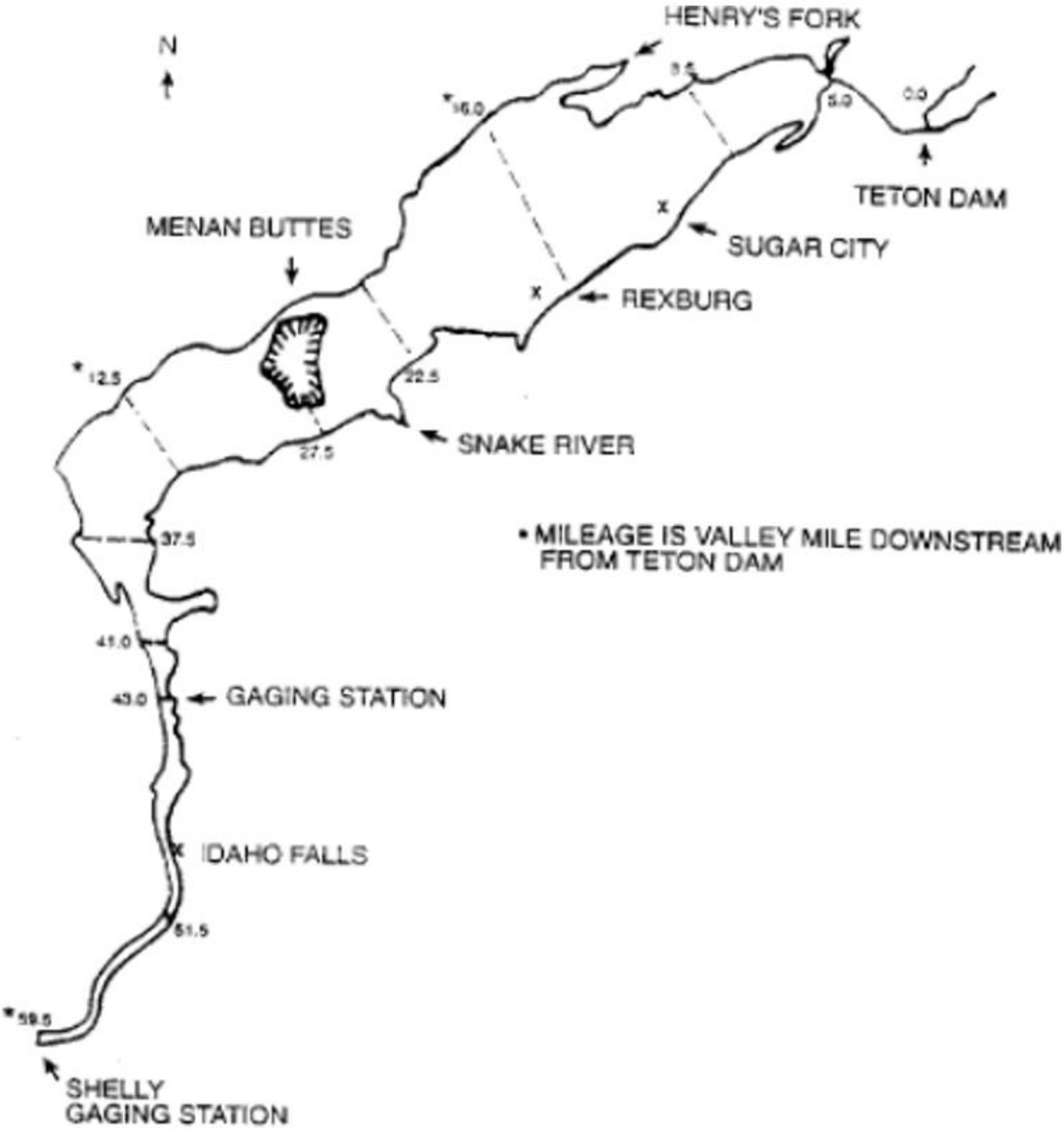


Figure 3.15.G. Teton Dam Inundation Area

State of Idaho Hazard Mitigation Plan

Appendix E. Detailed Risk Assessment Results

E. DETAILED RISK ASSESSMENT RESULTS

Each hazard chapter presents highlights of the risk assessment. This appendix contains the complete risk assessment results.

AVALANCHE EXPOSURE

Avalanche Exposure—Hazard Area			
County	**Total Area (acres)**	**Hazard Area (acres)**	**% of Total**
Ada	678,323	0	0.0%
Adams	876,653	80,191	9.1%
Bannock	734,679	0	0.0%
Bear Lake	671,942	134,214	20.0%
Benewah	502,829	138	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	808,716	47.6%
Boise	1,220,249	79,270	6.5%
Bonner	1,227,895	367,691	29.9%
Bonneville	1,215,994	130,607	10.7%
Boundary	818,171	475,632	58.1%
Butte	1,430,996	0	0.0%
Camas	688,595	426,989	62.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	34,517	3.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	11,597	1.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	554,975	17.6%
Elmore	1,984,649	121,544	6.1%
Franklin	427,606	147,964	34.6%
Fremont	1,214,126	44,287	3.6%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	66,687	1.2%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	23,800	2.8%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	278,802	16.5%
Teton	287,946	27,107	9.4%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	235,994	9.9%
Washington	943,451	0	0.0%
Total	**53,464,358**	**4,050,723**	**7.6%**

Avalanche Exposure—Population			
County	**Highly Vulnerable Population**	**Population**	**% Population Highly Vulnerable**
Ada	0	0	0.0%
Adams	0	35	0.0%
Bannock	0	0	0.0%
Bear Lake	0	851	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	5,495	20,475	26.8%
Boise	0	17	0.0%
Bonner	364	2,241	16.2%
Bonneville	0	468	0.0%
Boundary	0	236	0.0%
Butte	0	0	0.0%
Camas	0	320	0.0%
Canyon	0	0	0.0%
Caribou	0	184	0.0%
Cassia	0	0	0.0%
Clark	1	1	100.0%
Clearwater	0	0	0.0%
Custer	0	545	0.0%
Elmore	52	52	100.0%
Franklin	0	2,896	0.0%
Fremont	0	75	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	8	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	63	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	8,829	11,063	79.8%
Teton	0	382	0.0%
Twin Falls	0	0	0.0%
Valley	0	158	0.0%
Washington	0	0	0.0%
Total	**14,741**	**40,070**	**36.8%**

Avalanche Exposure—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	2	$5,534,058	2	$5,534,058
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	23	$15,500,577	22	$47,491,666	45	$62,992,243
Boise	0	$0	0	$0	0	$0
Bonner	17	$44,308,489	1	$2,767,029	18	$47,075,518
Bonneville	3	$8,301,087	0	$0	3	$8,301,087
Boundary	1	$2,767,029	0	$0	1	$2,767,029
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	39	$26,601,385	1	$2,767,029	40	$29,368,414
Elmore	0	$0	0	$0	0	$0
Franklin	8	$3,844,389	0	$0	8	$3,844,389
Fremont	0	$0	1	$15,792	1	$15,792
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	29	$42,244,054	20	$55,340,580	49	$97,584,634
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	1	$2,767,029	0	$0	1	$2,767,029
Washington	0	$0	0	$0	0	$0
Total	**121**	**$146,334,039**	**47**	**$113,916,154**	**168**	**$260,250,193**

Avalanche Exposure—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	3	$8,301,087	3	$8,301,087
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	6	$16,602,174	6	$16,602,174
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	42	$46,924,219	1	$2,767,029	43	$49,691,248
Dept. of Health and Welfare	0	$0	3	$8,301,087	3	$8,301,087
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	5	$823,040	0	$0	5	$823,040
Dept. of Parks and Recreation	20	$55,340,580	0	$0	20	$55,340,580
Dept. of Transportation	23	$10,797,689	0	$0	23	$10,797,689
Dept. of Transportation-Aeronautics	4	$476,576	0	$0	4	$476,576
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	1	$146,995	0	$0	1	$146,995
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	2	$5,534,058	1	$2,767,029	3	$8,301,087
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	6	$1,570,127	5	$5,666,082	11	$7,236,209
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	1	$2,767,029	1	$2,767,029
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	6	$16,602,174	3	$8,301,087	9	$24,903,261
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	7	$1,077,360	0	$0	7	$1,077,360
Idaho State Liquor Div.	0	$0	14	$38,738,406	14	$38,738,406
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	2	$5,534,058	2	$5,534,058
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	2	$5,534,058	0	$0	2	$5,534,058
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	1	$36,026	1	$2,767,029	2	$2,803,055
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	1	$1,423,887	0	$0	1	$1,423,887
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	1	$47,250	7	$11,404,057	8	$11,451,307
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**121**	**$146,334,039**	**47**	**$113,916,154**	**168**	**$260,250,193**

Avalanche Exposure—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	1
Benewah	0
Bingham	0
Blaine	22
Boise	0
Bonner	1
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	1
Cassia	0
Clark	0
Clearwater	0
Custer	20
Elmore	0
Franklin	3
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	73
Teton	2
Twin Falls	0
Valley	0
Washington	0
Total	**123**

Avalanche Exposure—State Highways

County	Miles of Highway
Ada	0
Adams	0
Bannock	0
Bear Lake	7
Benewah	0
Bingham	0
Blaine	73
Boise	0
Bonner	0
Bonneville	10
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	2
Cassia	0
Clark	0
Clearwater	0
Custer	51
Elmore	0
Franklin	12
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	89
Teton	3
Twin Falls	0
Valley	0
Washington	0
Total	**247**

Avalanche Exposure—State Dams	
County	**Number of State-Regulated Dams**
Ada	0
Adams	3
Bannock	0
Bear Lake	1
Benewah	0
Bingham	0
Blaine	7
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	3
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	7
Teton	0
Twin Falls	0
Valley	7
Washington	0
Total	**28**

Avalanche Exposure—Canals

County	Miles of Canal
Ada	0.0
Adams	2.3
Bannock	0.0
Bear Lake	51.3
Benewah	0.0
Bingham	0.0
Blaine	62.5
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	2.7
Butte	0.0
Camas	0.1
Canyon	0.0
Caribou	0.9
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	2.5
Elmore	0.0
Franklin	67.6
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	1.8
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	2.1
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**193.7**

Avalanche Exposure—Land Use

County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.00%	0	54,705	0.00%
Adams	0	8,605	0.00%	0	8,605	0.00%
Bannock	0	21,368	0.00%	0	22,966	0.00%
Bear Lake	3	5,493	0.05%	3	5,488	0.05%
Benewah	0	16,128	0.00%	0	16,128	0.00%
Bingham	0	7,906	0.00%	0	9,016	0.00%
Blaine	11	8,562	0.13%	12	9,426	0.13%
Boise	0	10,697	0.00%	0	9,037	0.00%
Bonner	8	102,182	0.01%	8	102,184	0.01%
Bonneville	0	12,203	0.00%	0	13,253	0.00%
Boundary	0	26,841	0.00%	0	26,841	0.00%
Butte	0	2,211	0.00%	0	2,218	0.00%
Camas	1	1,615	0.04%	2	2,172	0.07%
Canyon	0	31,858	0.00%	0	32,126	0.00%
Caribou	0	4,115	0.00%	0	4,115	0.00%
Cassia	0	6,296	0.00%	0	7,518	0.00%
Clark	0	482	0.00%	0	694	0.00%
Clearwater	0	4,621	0.00%	0	4,621	0.00%
Custer	0	5,190	0.00%	0	5,190	0.00%
Elmore	0	13,858	0.00%	0	15,500	0.00%
Franklin	4	8,751	0.05%	5	10,275	0.05%
Fremont	0	7,431	0.00%	0	9,135	0.00%
Gem	0	5,105	0.00%	0	5,440	0.00%
Gooding	0	8,160	0.00%	0	8,839	0.00%
Idaho	0	12,729	0.00%	0	12,729	0.00%
Jefferson	0	3,652	0.00%	0	3,460	0.00%
Jerome	0	11,005	0.00%	0	10,428	0.00%
Kootenai	0	121,486	0.00%	1	122,582	0.00%
Latah	0	11,845	0.00%	0	13,579	0.00%
Lemhi	0	11,637	0.00%	0	11,637	0.00%
Lewis	0	408	0.00%	0	408	0.00%
Lincoln	0	2,398	0.00%	0	2,958	0.00%
Madison	0	4,371	0.00%	0	4,978	0.00%
Minidoka	0	4,518	0.00%	0	4,363	0.00%
Nez Perce	0	9,844	0.00%	0	10,762	0.00%
Oneida	0	1,084	0.00%	0	1,084	0.00%
Owyhee	0	4,922	0.00%	0	4,820	0.00%
Payette	0	6,285	0.00%	0	5,915	0.00%
Power	0	4,381	0.00%	0	7,288	0.00%
Shoshone	7	6,724	0.11%	7	6,724	0.11%
Teton	2	5,545	0.03%	1	5,465	0.03%
Twin Falls	0	19,689	0.00%	0	22,871	0.00%
Valley	0	20,975	0.00%	0	20,975	0.00%
Washington	0	2,985	0.00%	0	3,023	0.00%
Total	**37**	**636,311**	**0.01%**	**40**	**661,541**	**0.01%**

Avalanche Exposure—Number of Critical Facilities in Hazard Area								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	**0**
Adams	0	0	0	0	0	0	0	**0**
Bannock	0	0	0	0	0	0	0	**0**
Bear Lake	0	0	0	0	0	0	0	**0**
Benewah	0	0	0	0	0	0	0	**0**
Bingham	0	0	0	0	0	0	0	**0**
Blaine	0	8	3	0	1	26	0	**38**
Boise	0	0	0	0	0	0	0	**0**
Bonner	0	3	0	0	0	3	0	**6**
Bonneville	0	0	0	0	0	0	0	**0**
Boundary	0	3	0	0	0	0	0	**3**
Butte	0	0	0	0	0	0	0	**0**
Camas	0	0	0	0	0	0	0	**0**
Canyon	0	0	0	0	0	0	0	**0**
Caribou	0	1	0	0	0	0	0	**1**
Cassia	0	0	0	0	0	0	0	**0**
Clark	0	0	0	0	0	0	0	**0**
Clearwater	0	0	0	0	0	0	0	**0**
Custer	0	1	0	0	1	3	0	**5**
Elmore	0	0	0	0	0	0	0	**0**
Franklin	0	1	0	0	0	0	0	**1**
Fremont	0	0	0	0	0	0	0	**0**
Gem	0	0	0	0	0	0	0	**0**
Gooding	0	0	0	0	0	0	0	**0**
Idaho	0	0	0	0	0	0	0	**0**
Jefferson	0	0	0	0	0	0	0	**0**
Jerome	0	0	0	0	0	0	0	**0**
Kootenai	0	0	0	0	0	0	1	**1**
Latah	0	0	0	0	0	0	0	**0**
Lemhi	0	0	0	0	0	0	0	**0**
Lewis	0	0	0	0	0	0	0	**0**
Lincoln	0	0	0	0	0	0	0	**0**
Madison	0	0	0	0	0	0	0	**0**
Minidoka	0	0	0	0	0	0	0	**0**
Nez Perce	0	0	0	0	0	0	0	**0**
Oneida	0	0	0	0	0	0	0	**0**
Owyhee	0	0	0	0	0	0	0	**0**
Payette	0	0	0	0	0	0	0	**0**
Power	0	0	0	0	0	0	0	**0**
Shoshone	0	11	0	0	1	20	9	**41**
Teton	0	1	0	0	0	0	0	**1**
Twin Falls	0	0	0	0	0	0	0	**0**
Valley	0	0	0	0	0	0	0	**0**
Washington	0	0	0	0	0	0	0	**0**
Total	**0**	**29**	**3**	**0**	**3**	**52**	**10**	**97**

Avalanche Exposure—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	77.1	77.1	0.0	0.0	0.9	0.9	48.2	48.2	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.4	0.4	0.0	5.4	5.4	0.0	200.9	200.9	0.0	0.9	0.0	-0.9	1.9	1.9	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	5.1	0.2	0.2	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	3.1	0.0	-3.1	4.6	5.0	0.3	23.3	24.6	1.3	1,006.0	1,004.0	-2.0	5.0	0.0	-5.0	221.5	221.5	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.4	27.4	0.0	0.0	0.0	0.0	96.4	96.4	0.0
Bonner	0.1	0.1	-0.1	0.3	0.3	0.0	10.3	10.3	0.0	532.3	532.3	0.0	0.0	1.0	1.0	31.3	31.3	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	191.3	191.3	0.0	1.0	0.0	-1.0	11.3	11.3	0.0
Boundary	0.0	1.5	1.5	0.0	0.0	0.0	0.2	0.2	0.0	678.2	678.2	0.0	0.0	0.0	0.0	64.7	64.7	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.6	0.9	652.4	651.5	-0.9	0.0	0.0	0.0	14.0	14.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	52.9	52.9	0.0	0.0	0.0	0.0	0.7	0.7	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.0	18.0	0.0	0.0	1.0	1.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.1	0.1	0.0	1.2	1.2	0.0	265.3	265.3	0.0	1.0	0.0	-1.0	599.7	599.7	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	83.3	83.3	0.0	0.0	0.3	0.3	106.6	106.6	0.0
Franklin	0.1	0.0	-0.1	0.2	0.2	0.0	9.8	14.0	4.1	219.4	215.3	-4.1	0.3	0.0	-0.3	1.3	1.3	0.0
Fremont	0.0	0.0	0.0	0.2	0.2	0.0	0.1	0.1	0.0	66.8	66.8	0.0	0.0	0.0	0.0	2.0	2.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	104.2	104.2	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.4	0.9	32.6	31.7	-0.9	0.0	4.0	4.0	4.1	4.1	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	1.5	0.0	-1.5	2.0	2.0	0.0	11.2	11.2	0.0	413.3	413.3	0.0	4.0	0.1	-3.9	3.5	3.5	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	1.8	1.8	0.0	39.6	39.6	0.0	0.1	0.0	-0.1	0.8	0.8	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	99.5	99.5	0.0	0.0	0.0	0.0	269.2	269.2	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**4.9**	**1.6**	**-3.3**	**7.9**	**8.2**	**0.3**	**65.0**	**72.3**	**7.2**	**4,657.3**	**4,649.4**	**-7.9**	**12.2**	**0.0**	**-12.2**	**1,581.9**	**1,581.9**	**0.0**

DAM FAILURE EXPOSURE

Dam Failure Exposure: Black Canyon Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	22,896	6.3%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	4,919	1.9%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**27,815**	**0.1%**

Dam Failure Exposure: Black Canyon Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	7,721	7,870	98.1%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	43	271	15.8%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**7,763**	**8,141**	**95.4%**

Dam Failure Exposure: Black Canyon Dam—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	10	$4,480,277	6	$13,852,857	16	$18,333,133
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**10**	**$4,480,277**	**6**	**$13,852,857**	**16**	**$18,333,133**

Dam Failure Exposure: Black Canyon Dam—State Facilities by Agency						
	State-Owned		State-Leased		State-Owned and -Leased	
Agency	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	2	$5,534,058	2	$5,534,058
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	5	$856,067	0	$0	5	$856,067
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	3	$520,604	2	$2,784,741	5	$3,305,344
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	1	$2,767,029	0	$0	1	$2,767,029
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	1	$336,577	0	$0	1	$336,577
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	1	$2,767,029	1	$2,767,029
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**10**	**$4,480,277**	**6**	**$13,852,857**	**16**	**$18,333,133**

Dam Failure Exposure: Black Canyon Dam—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	6
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	3
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**9**

Dam Failure Exposure: Black Canyon Dam—State Highways	
County	**Miles of Highway**
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	15.3
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	3.3
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**18.6**

Dam Failure Exposure: Black Canyon Dam—Canals	
County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	41.6
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	8.2
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**49.9**

Dam Failure Exposure: Black Canyon Dam—Land Use

County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Gem	1,227	5,105	24.0%	1,218	5,440	22.4%
Payette	23	6,285	0.4%	23	5,915	0.4%
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**1,250**	**636,309**	**0.2%**	**1,241**	**661,537**	**0.2%**

Dam Failure Exposure: Black Canyon Dam—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	5	0	0	1	12	7	25
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	4	4
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**5**	**0**	**0**	**1**	**12**	**11**	**29**

Dam Failure Exposure: Black Canyon Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	1.0	1.0	0.0	1.1	2.2	1.1	6.2	5.3	-1.0	25.1	24.9	-0.1	0.8	0.8	0.0	1.6	1.6	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	7.1	0.0	0.1	0.1	0.0	0.5	0.5	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**1.0**	**1.0**	**0.0**	**1.1**	**2.2**	**1.1**	**6.3**	**5.3**	**-1.0**	**32.2**	**32.1**	**-0.1**	**0.8**	**0.8**	**0.0**	**2.1**	**2.1**	**0.0**

Dam Failure Exposure: Blacks Creek Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	2,470	0.4%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	5,699	1.5%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**8,168**	**0.0%**

Dam Failure Exposure: Blacks Creek Dam—Population			
County	**Highly Vulnerable Population**	**Population**	**% Population Highly Vulnerable**
Ada	0	4,753	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	139	772	18.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**139**	**5,525**	**2.5%**

Dam Failure Exposure: Blacks Creek Dam—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Blacks Creek Dam—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	0	$0	0	$0	0	$0
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	0	$0	0	$0	0	$0
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	0	$0	0	$0
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	0	$0	0	$0	0	$0
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	0	$0	0	$0
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Blacks Creek Dam—State Bridges	
County	Number of Bridges
Ada	1
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	3
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**4**

Dam Failure Exposure: Blacks Creek Dam—State Highways	
County	Miles of Highway
Ada	1.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	1.4
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**2.4**

Dam Failure Exposure: Blacks Creek Dam—Canals	
County	Miles of Canal
Ada	1.6
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	7.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**8.6**

Dam Failure Exposure: Blacks Creek Dam—Land Use

County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada						
Adams						
Bannock						
Bear Lake						
Benewah						
Bingham						
Blaine						
Boise						
Bonner						
Bonneville						
Boundary						
Butte						
Camas						
Canyon						
Caribou						
Cassia						
Clark						
Clearwater						
Custer						
Elmore						
Franklin						
Fremont						
Gem						
Gooding						
Idaho						
Jefferson						
Jerome						
Kootenai						
Latah						
Lemhi						
Lewis						
Lincoln						
Madison						
Minidoka						
Nez Perce						
Oneida						
Owyhee						
Payette						
Power						
Shoshone						
Teton						
Twin Falls						
Valley						
Washington						
Total						

Dam Failure Exposure: Blacks Creek Dam—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	1	1	2
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	1	0	0	0	0	2	3
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	1	3	5

Dam Failure Exposure: Blacks Creek Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.3	0.4	0.1	0.3	0.4	0.1	1.1	1.0	-0.1	1.9	1.8	0.0	0.2	0.2	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	7.5	7.4	0.0	0.1	0.1	0.0	0.6	0.6	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.4**	**0.4**	**0.1**	**0.4**	**0.4**	**0.1**	**1.7**	**1.6**	**-0.1**	**9.4**	**9.3**	**-0.1**	**0.3**	**0.3**	**0.0**	**0.6**	**0.6**	**0.0**

Dam Failure Exposure: Crowther Dam—Hazard Area			
County	**Total Area (acres)**	**Hazard Area (acres)**	**% of Total**
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	5,967	0.8%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**5,967**	**0.0%**

Dam Failure Exposure: Crowther Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	363	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**0**	**363**	**0.0%**

Dam Failure Exposure: Crowther Dam—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Crowther Dam—State Facilities by Agency						
	State-Owned		State-Leased		State-Owned and -Leased	
Agency	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	0	$0	0	$0	0	$0
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	0	$0	0	$0	0	$0
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	0	$0	0	$0
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	0	$0	0	$0	0	$0
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	0	$0	0	$0
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Crowther Dam—State Bridges

County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**0**

Dam Failure Exposure: Crowther Dam—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	1.4
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**1.4**

Dam Failure Exposure: Crowther Dam—Canals

County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**0.0**

Dam Failure Exposure: Crowther Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	18	1,084	1.7%	18	1,084	1.7%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**18**	**636,309**	**<0.1%**	**18**	**661,537**	**<0.1%**

Dam Failure Exposure: Crowther Dam—Number of Critical Facilities in Hazard Area								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	1	0	0	1
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**1**	**0**	**0**	**1**

Dam Failure Exposure: Crowther Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.2	0.2	0.0	0.1	0.1	0.0	8.2	8.2	0.0	0.0	0.0	0.0	0.8	0.8	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**	**0.2**	**0.2**	**0.0**	**0.1**	**0.1**	**0.0**	**8.2**	**8.2**	**0.0**	**0.0**	**0.0**	**0.0**	**0.8**	**0.8**	**0.0**

Dam Failure Exposure: Deep Creek Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	8,946	1.2%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**8,946**	**0.0%**

Dam Failure Exposure: Deep Creek Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	583	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**0**	**583**	**0.0%**

Dam Failure Exposure: Deep Creek Dam—State Facilities by County						
	State-Owned		State-Leased		State-Owned and -Leased	
County	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	4	$4,054,867	3	$8,301,087	7	$12,355,954
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**4**	**$4,054,867**	**3**	**$8,301,087**	**7**	**$12,355,954**

Dam Failure Exposure: Deep Creek Dam—State Facilities by Agency						
	State-Owned		State-Leased		State-Owned and -Leased	
Agency	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	2	$457,607	0	$0	2	$457,607
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	1	$830,231	1	$2,767,029	2	$3,597,260
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	1	$2,767,029	0	$0	1	$2,767,029
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	1	$2,767,029	1	$2,767,029
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**4**	**$4,054,867**	**3**	**$8,301,087**	**7**	**$12,355,954**

Dam Failure Exposure: Deep Creek Dam—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**0**

Dam Failure Exposure: Deep Creek Dam—State Highways

County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	5.6
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**5.6**

Dam Failure Exposure: Deep Creek Dam—Canals	
County	**Miles of Canal**
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.1
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**0.1**

Dam Failure Exposure: Deep Creek Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	92	1,084	8.5%	92	1,084	8.5%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**92**	**636,309**	**<0.1%**	**92**	**661,537**	**<0.1%**

Dam Failure Exposure: Deep Creek Dam—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	5	1	6
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**5**	**1**	**6**

Dam Failure Exposure: Deep Creek Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.1	0.1	0.0	0.2	0.2	0.0	0.3	0.3	0.0	11.9	11.9	0.0	0.2	0.2	0.0	1.2	1.2	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.1**	**0.1**	**0.0**	**0.2**	**0.2**	**0.0**	**0.3**	**0.3**	**0.0**	**11.9**	**11.9**	**0.0**	**0.2**	**0.2**	**0.0**	**1.2**	**1.2**	**0.0**

Dam Failure Exposure: Fish Creek Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	7,859	0.5%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**7,859**	**0.0%**

Dam Failure Exposure: Fish Creek Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	115	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**0**	**115**	**0.0%**

Dam Failure Exposure: Fish Creek Dam—State Facilities by County						
	State-Owned		State-Leased		State-Owned and -Leased	
County	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	5	$1,272,780	0	$0	5	$1,272,780
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**5**	**$1,272,780**	**0**	**$0**	**5**	**$1,272,780**

Dam Failure Exposure: Fish Creek Dam—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	4	$1,265,780	0	$0	4	$1,265,780
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	1	$7,000	0	$0	1	$7,000
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	0	$0	0	$0	0	$0
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	0	$0	0	$0
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	0	$0	0	$0	0	$0
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	0	$0	0	$0
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**5**	**$1,272,780**	**0**	**$0**	**5**	**$1,272,780**

Dam Failure Exposure: Fish Creek Dam—State Bridges	
County	**Number of Bridges**
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**0**

Dam Failure Exposure: Fish Creek Dam—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	5.6
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**5.6**

Dam Failure Exposure: Fish Creek Dam—Canals	
County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	4.6
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**4.6**

Dam Failure Exposure: Fish Creek Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	13	8,562	0.1%	13	9,426	0.1%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**13**	**636,309**	**<0.1%**	**13**	**661,537**	**<0.1%**

Dam Failure Exposure: Fish Creek Dam—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

Dam Failure Exposure: Fish Creek Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	9.4	9.4	0.0	0.1	0.1	0.0	2.7	2.7	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**9.4**	**9.4**	**0.0**	**0.1**	**0.1**	**0.0**	**2.7**	**2.7**	**0.0**

Dam Failure Exposure: Lucky Peak Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	33,133	4.9%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	683	0.1%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	51,299	13.3%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	309	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	379	0.0%
Payette	262,660	9,828	3.7%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	14,093	1.5%
Total	**53,464,358**	**109,724**	**0.2%**

Dam Failure Exposure: Lucky Peak Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	5,575	104,308	5.3%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	2	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	5,493	18,471	29.7%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	14	14	100.0%
Payette	2,678	2,731	98.1%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	2,176	2,176	100.0%
Total	**15,936**	**127,702**	**12.5%**

Dam Failure Exposure: Lucky Peak Dam—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	388	$2,896,177,645	170	$628,582,023	558	$3,524,759,667
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	13	$2,485,679	4	$11,068,116	17	$13,553,795
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	1	$2,767,029	1	$2,767,029
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	1	$2,767,029	1	$2,767,029
Total	**401**	**$2,898,663,324**	**176**	**$645,184,197**	**577**	**$3,543,847,520**

Dam Failure Exposure: Lucky Peak Dam—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	4	$11,068,116	4	$11,068,116
Bean Commission	1	$2,767,029	2	$5,534,058	3	$8,301,087
Board of Tax Appeals	0	$0	2	$5,534,058	2	$5,534,058
Boise State University	195	$1,988,327,759	32	$168,684,706	227	$2,157,012,465
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	1	$13,230,295	0	$0	1	$13,230,295
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	14	$542,137,189	0	$0	14	$542,137,189
Dept. of Agriculture	5	$10,308,590	1	$2,767,029	6	$13,075,619
Dept. of Commerce	1	$2,767,029	0	$0	1	$2,767,029
Dept. of Correction	1	$2,121,354	4	$11,068,116	5	$13,189,470
Dept. of Education	0	$0	1	$2,767,029	1	$2,767,029
Dept. of Environmental Quality	0	$0	3	$8,301,087	3	$8,301,087
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	52	$25,041,745	3	$8,301,087	55	$33,342,832
Dept. of Health and Welfare	0	$0	12	$33,204,348	12	$33,204,348
Dept. of Insurance	0	$0	1	$2,767,029	1	$2,767,029
Dept. of Juvenile Corrections	0	$0	2	$5,534,058	2	$5,534,058
Dept. of Lands	7	$12,578,735	2	$5,534,058	9	$18,112,793
Dept. of Parks and Recreation	52	$129,078,628	0	$0	52	$129,078,628
Dept. of Transportation	45	$53,040,608	0	$0	45	$53,040,608
Dept. of Transportation-Aeronautics	1	$21,884	0	$0	1	$21,884
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	3	$5,594,942	3	$5,594,942
Div. of Financial Management	0	$0	1	$2,767,029	1	$2,767,029
Div. of Human Resources	0	$0	1	$2,767,029	1	$2,767,029
Div. of Military	5	$2,940,771	2	$38,744	7	$2,979,515
Div. of Occupational and Professional Licenses	0	$0	5	$13,835,145	5	$13,835,145
Div. of Veterans Services	0	$0	1	$2,767,029	1	$2,767,029
Div. of Vocational Rehabilitation	0	$0	1	$2,767,029	1	$2,767,029
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	2	$5,534,058	2	$5,534,058
Forest Products Commission	0	$0	3	$8,301,087	3	$8,301,087

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	2	$5,534,058	2	$5,534,058
Idaho Barley Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	1	$2,767,029	1	$2,767,029
Idaho Commission for Libraries	0	$0	1	$2,767,029	1	$2,767,029
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	2	$22,698,205	3	$8,301,087	5	$30,999,292
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	1	$2,767,029	1	$2,767,029
Idaho Potato Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho Public Television	0	$0	4	$11,068,116	4	$11,068,116
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	3	$8,301,087	3	$8,301,087
Idaho State Bar	0	$0	2	$5,534,058	2	$5,534,058
Idaho State Historical Society	10	$38,245,427	2	$5,534,058	12	$43,779,485
Idaho State Liquor Div.	0	$0	21	$58,107,609	21	$58,107,609
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	3	$8,301,087	3	$8,301,087
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	1	$1,073,655	0	$0	1	$1,073,655
IDHW - Bureau of Laboratories	1	$12,451,087	0	$0	1	$12,451,087
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	10	$27,670,290	10	$27,670,290
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	2	$5,534,058	1	$2,767,029	3	$8,301,087
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	1	$2,767,029	1	$2,767,029
Legislative Senate	0	$0	1	$2,767,029	1	$2,767,029
Legislative Services	0	$0	2	$5,534,058	2	$5,534,058
Lewis-Clark State College	0	$0	1	$2,767,029	1	$2,767,029
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	1	$2,767,029	1	$2,767,029
Lottery Commission	1	$2,767,029	2	$5,534,058	3	$8,301,087
Office of Administrative Hearings	0	$0	2	$5,534,058	2	$5,534,058
Office of Drug Policy	0	$0	1	$2,767,029	1	$2,767,029
Office of Performance Evaluations	0	$0	1	$2,767,029	1	$2,767,029
Office of Species Conservation	0	$0	1	$2,767,029	1	$2,767,029
Office of the State Controller	0	$0	1	$2,767,029	1	$2,767,029
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	1	$2,767,029	1	$2,767,029
Public Employee Retirement System of Idaho	2	$14,023,853	0	$0	2	$14,023,853
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	2	$5,534,058	2	$5,534,058
State Appellate Public Defender	0	$0	2	$5,534,058	2	$5,534,058
State Board of Education	0	$0	1	$2,767,029	1	$2,767,029
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	2	$17,508,396	0	$0	2	$17,508,396
State Public Defense Commission	0	$0	2	$5,534,058	2	$5,534,058
State Treasurer	0	$0	2	$5,534,058	2	$5,534,058
STEM Action Center	0	$0	2	$2,777,667	2	$2,777,667
University of Idaho	0	$0	5	$102,840,310	5	$102,840,310
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	1	$2,767,029	1	$2,767,029
Total	**401**	**$2,898,663,324**	**176**	**$645,184,197**	**577**	**$3,543,847,520**

Dam Failure Exposure: Lucky Peak Dam—State Bridges	
County	Number of Bridges
Ada	23
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	13
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	1
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	4
Total	**41**

Dam Failure Exposure: Lucky Peak Dam—State Highways	
County	**Miles of Highway**
Ada	35.5
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	30.1
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	6.6
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	8.0
Total	**80.2**

Dam Failure Exposure: Lucky Peak Dam—Canals	
County	Miles of Canal
Ada	92.8
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	130.6
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.1
Payette	6.1
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	3.0
Total	**232.5**

Dam Failure Exposure: Lucky Peak Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	8,151	50,150	16.3%	8,706	54,705	15.9%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	4	10,697	<0.1%	2	9,037	<0.1%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	2,643	31,858	8.3%	2,668	32,126	8.3%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	480	6,285	7.6%	410	5,915	6.9%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	624	2,985	20.9%	624	3,023	20.6%
Total	**11,902**	**636,309**	**1.9%**	**12,411**	**661,537**	**1.9%**

Dam Failure Exposure: Lucky Peak Dam—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	15	1	0	7	64	0	87
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	1	0	0	0	0	0	1
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	5	0	0	0	10	8	23
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	1	0	0	0	0	0	1
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	1	1	0	0	2	3	7
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	4	4
Total	**0**	**23**	**2**	**0**	**7**	**76**	**15**	**123**

Dam Failure Exposure: Lucky Peak Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	12.4	13.4	1.0	6.9	6.9	0.0	6.2	5.2	-1.0	12.7	12.5	-0.2	7.6	7.9	0.2	5.9	5.9	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	1.0	1.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	1.1	1.3	0.1	1.6	1.8	0.2	8.9	8.9	-0.1	59.6	59.3	-0.3	2.1	2.2	0.0	6.7	6.7	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.5	0.5	0.0
Payette	0.3	0.3	0.0	0.3	0.4	0.0	1.9	1.8	-0.1	10.9	10.9	0.0	0.4	0.4	0.0	1.3	1.3	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.1	0.1	0.0	0.2	0.2	0.0	1.9	1.9	0.0	16.5	16.5	0.0	0.6	0.6	0.0	2.4	2.4	0.0
Total	**14.0**	**15.1**	**1.1**	**9.0**	**9.3**	**0.3**	**18.9**	**17.8**	**-1.1**	**99.9**	**99.4**	**-0.5**	**10.8**	**11.0**	**0.2**	**18.2**	**18.1**	**0.0**

Dam Failure Exposure: Mackay Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	47,095	3.3%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	14,525	0.5%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**61,620**	**0.1%**

Dam Failure Exposure: Mackay Dam—Population

County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	1,160	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	695	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**0**	**1,855**	**0.0%**

Dam Failure Exposure: Mackay Dam—State Facilities by County						
	State-Owned		State-Leased		State-Owned and -Leased	
County	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	2	$3,918,194	5	$13,835,145	7	$17,753,339
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	8	$11,771,324	2	$5,534,058	10	$17,305,382
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**10**	**$15,689,518**	**7**	**$19,369,203**	**17**	**$35,058,721**

Dam Failure Exposure: Mackay Dam—State Facilities by Agency						
	State-Owned		State-Leased		State-Owned and -Leased	
Agency	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	4	$8,302,272	0	$0	4	$8,302,272
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	4	$1,853,188	0	$0	4	$1,853,188
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	1	$2,767,029	2	$5,534,058	3	$8,301,087
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	2	$5,534,058	2	$5,534,058
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	1	$2,767,029	0	$0	1	$2,767,029
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	1	$2,767,029	1	$2,767,029
Public Health Dist. 7 (Eastern)	0	$0	1	$2,767,029	1	$2,767,029
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	1	$2,767,029	1	$2,767,029
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**10**	**$15,689,518**	**7**	**$19,369,203**	**17**	**$35,058,721**

Dam Failure Exposure: Mackay Dam—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	9
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	2
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	11

Dam Failure Exposure: Mackay Dam—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	14.4
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	12.8
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**27.2**

Dam Failure Exposure: Mackay Dam—Canals

County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	21.9
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	16.9
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**38.9**

Dam Failure Exposure: Mackay Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	1,019	2,211	46.1%	1,016	2,218	45.8%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	1,488	5,190	28.7%	1,488	5,190	28.7%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**2,507**	**636,309**	**0.4%**	**2,504**	**661,537**	**0.4%**

Dam Failure Exposure: Mackay Dam—Number of Critical Facilities in Hazard Area								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	8	0	0	0	6	1	15
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	1	0	0	0	4	0	5
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	0	9	0	0	0	10	1	20

Dam Failure Exposure: Mackay Dam—ICLUS																		
	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.1	0.1	0.0	0.2	0.2	0.0	2.0	2.0	0.0	22.6	22.6	0.0	47.4	47.4	0.0	1.2	1.2	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.1	0.1	0.0	0.2	0.2	0.0	2.6	2.6	0.0	15.8	15.8	0.0	0.9	0.9	0.0	3.0	3.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.3**	**0.3**	**0.0**	**0.4**	**0.4**	**0.0**	**4.6**	**4.6**	**0.0**	**38.5**	**38.5**	**0.0**	**48.3**	**48.3**	**0.0**	**4.2**	**4.2**	**0.0**

Dam Failure Exposure: Mountain Home Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	11,130	0.6%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	1,762	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**12,892**	**0.0%**

Dam Failure Exposure: Mountain Home Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	1,384	2,332	59.3%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**1,384**	**2,332**	**59.3%**

Dam Failure Exposure: Mountain Home Dam—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Mountain Home Dam—State Facilities by Agency						
	State-Owned		State-Leased		State-Owned and -Leased	
Agency	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	0	$0	0	$0	0	$0
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	0	$0	0	$0	0	$0
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	0	$0	0	$0
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	0	$0	0	$0	0	$0
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	0	$0	0	$0
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Mountain Home Dam—State Bridges	
County	**Number of Bridges**
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	1
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**1**

Dam Failure Exposure: Mountain Home Dam—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	1.2
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.1
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	1.3

Dam Failure Exposure: Mountain Home Dam—Canals	
County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	6.8
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	6.8

Dam Failure Exposure: Mountain Home Dam—Land Use

County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	690	13,858	5.0%	658	15,500	4.2%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**690**	**636,309**	**0.1%**	**658**	**661,537**	**0.1%**

Dam Failure Exposure: Mountain Home Dam—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	1	0	0	0	3	0	4
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**1**	**0**	**0**	**0**	**3**	**0**	**4**

Dam Failure Exposure: Mountain Home Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.3	0.4	0.0	0.2	0.3	0.1	1.6	1.6	0.0	12.4	12.3	-0.1	0.3	0.3	0.0	2.6	2.6	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	2.8	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.3**	**0.4**	**0.0**	**0.2**	**0.3**	**0.1**	**1.6**	**1.6**	**0.0**	**12.4**	**12.3**	**-0.1**	**0.3**	**0.3**	**0.0**	**5.3**	**5.3**	**0.0**

Dam Failure Exposure: Oakley Dam—Hazard Area			
County	**Total Area (acres)**	**Hazard Area (acres)**	**% of Total**
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	74,956	4.5%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	1,239	0.3%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	708	0.2%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	6,366	1.3%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	3,044	0.2%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**86,314**	**0.2%**

Dam Failure Exposure: Oakley Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	4,952	12,358	40.1%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	10	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	3	5	60.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	510	512	99.6%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	49	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**5,465**	**12,934**	**42.3%**

Dam Failure Exposure: Oakley Dam—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	10	$5,294,562	15	$41,505,435	25	$46,799,997
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	2	$5,534,058	0	$0	2	$5,534,058
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**12**	**$10,828,620**	**15**	**$41,505,435**	**27**	**$52,334,055**

Dam Failure Exposure: Oakley Dam—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	4	$11,068,116	4	$11,068,116
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	2	$5,534,058	2	$5,534,058
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	1	$21,282	0	$0	1	$21,282
Dept. of Health and Welfare	0	$0	2	$5,534,058	2	$5,534,058
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	2	$5,534,058	0	$0	2	$5,534,058
Dept. of Transportation	6	$1,377,409	0	$0	6	$1,377,409
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	2	$1,128,842	1	$2,767,029	3	$3,895,871
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	2	$5,534,058	2	$5,534,058
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	2	$5,534,058	2	$5,534,058
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	1	$2,767,029	0	$0	1	$2,767,029
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	1	$2,767,029	1	$2,767,029
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**12**	**$10,828,620**	**15**	**$41,505,435**	**27**	**$52,334,055**

Dam Failure Exposure: Oakley Dam—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	4
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	1
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	1
Valley	0
Washington	0
Total	**6**

Dam Failure Exposure: Oakley Dam—State Highways

County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	25.9
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.2
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	2.1
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.3
Valley	0.0
Washington	0.0
Total	**28.5**

Dam Failure Exposure: Oakley Dam—Canals	
County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	256.6
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.8
Idaho	0.0
Jefferson	0.0
Jerome	0.2
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	8.3
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.2
Valley	0.0
Washington	0.0
Total	**266.1**

Dam Failure Exposure: Oakley Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	2,548	6,296	40.5%	2,402	7,518	31.9%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	22	8,160	0.3%	23	8,839	0.3%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	2	11,005	<0.1%	2	10,428	<0.1%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	109	4,518	2.4%	119	4,363	2.7%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	65	19,689	0.3%	64	22,871	0.3%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**2,746**	**636,309**	**0.4%**	**2,610**	**661,537**	**0.4%**

Dam Failure Exposure: Oakley Dam—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	8	0	0	2	16	2	28
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	2	0	0	0	0	0	2
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	1	1
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	3	0	0	0	0	0	3
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**13**	**0**	**0**	**2**	**16**	**3**	**34**

Dam Failure Exposure: Oakley Dam—ICLUS																		
	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	1.6	1.6	0.0	0.6	0.7	0.1	6.1	6.1	0.0	105.6	105.4	-0.2	2.1	2.2	0.0	1.1	1.1	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	1.5	1.5	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.8	0.8	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.1	0.0	0.1	0.1	0.0	0.2	0.2	0.0	3.0	3.0	0.0	0.2	0.2	0.0	6.4	6.4	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	1.3	1.3	0.0	0.1	0.1	0.0	3.2	3.2	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**1.6**	**1.7**	**0.1**	**0.7**	**0.8**	**0.1**	**6.5**	**6.6**	**0.0**	**110.6**	**110.4**	**-0.3**	**2.4**	**2.5**	**0.0**	**13.0**	**13.0**	**0.0**

Dam Failure Exposure: Strong Arm Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	2,469	0.6%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**2,469**	**0.0%**

Dam Failure Exposure: Strong Arm Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	65	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**0**	**65**	**0.0%**

Dam Failure Exposure: Strong Arm Dam—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Strong Arm Dam—State Facilities by Agency						
	State-Owned		State-Leased		State-Owned and -Leased	
Agency	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	0	$0	0	$0	0	$0
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	0	$0	0	$0	0	$0
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	0	$0	0	$0
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	0	$0	0	$0	0	$0
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	0	$0	0	$0
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Strong Arm Dam—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	1
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**1**

Dam Failure Exposure: Strong Arm Dam—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	1.1
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**1.1**

Dam Failure Exposure: Strong Arm Dam—Canals

County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.9
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**0.9**

Dam Failure Exposure: Strong Arm Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	11	8,751	0.1%	11	10,275	0.1%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**11**	**636,309**	**0.0%**	**11**	**661,537**	**0.0%**

Dam Failure Exposure: Strong Arm Dam—Number of Critical Facilities in Hazard Area								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0

Dam Failure Exposure: Strong Arm Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	3.0	3.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.1**	**0.0**	**3.0**	**3.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.7**	**0.7**	**0.0**

Dam Failure Exposure: Winchester Dam—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	113	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	1,934	0.4%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**2,047**	**0.0%**

Dam Failure Exposure: Winchester Dam—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	195	195	100.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**195**	**195**	**100.0%**

Dam Failure Exposure: Winchester Dam—State Facilities by County						
	State-Owned		State-Leased		State-Owned and -Leased	
County	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Winchester Dam—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	0	$0	0	$0	0	$0
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	0	$0	0	$0	0	$0
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	0	$0	0	$0	0	$0
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	0	$0	0	$0
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	0	$0	0	$0	0	$0
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	0	$0	0	$0
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**0**	**$0**	**0**	**$0**	**0**	**$0**

Dam Failure Exposure: Winchester Dam—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	0
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	0
Lewis	9
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	7
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**16**

Dam Failure Exposure: Winchester Dam—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	4.1
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	10.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**14.1**

Dam Failure Exposure: Winchester Dam—Canals

County	Miles of Canal
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**0.0**

Dam Failure Exposure: Winchester Dam—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	14	9,844	0.1%	14	10,762	0.1%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**15**	**636,309**	**<0.1%**	**15**	**661,537**	**<0.1%**

Dam Failure Exposure: Winchester Dam—Number of Critical Facilities in Hazard Area								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	2	2
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	1	0	0	0	2	5	8
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**1**	**0**	**0**	**0**	**2**	**7**	**10**

Dam Failure Exposure: Winchester Dam—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	1.1	1.1	-0.1	0.3	0.3	0.0	1.4	1.4	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.1**	**0.2**	**0.0**	**1.3**	**1.2**	**-0.1**	**0.3**	**0.3**	**0.0**	**1.4**	**1.4**	**0.0**

DAM FAILURE LOSS ESTIMATE

Dam Failure Loss Estimates: Black Canyon Dam—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$0	$0	$0	0.0%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$0	$0	$0	0.0%
Bear Lake	$118,567,794	$0	$0	$0	0.0%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$0	$0	$0	0.0%
Blaine	$73,361,974	$0	$0	$0	0.0%
Boise	$52,698,341	$0	$0	$0	0.0%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$0	$0	$0	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$0	$0	$0	0.0%
Camas	$16,931,555	$0	$0	$0	0.0%
Canyon	$338,752,262	$0	$0	$0	0.0%
Caribou	$41,741,085	$0	$0	$0	0.0%
Cassia	$136,212,673	$0	$0	$0	0.0%
Clark	$19,628,056	$0	$0	$0	0.0%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$0	$0	$0	0.0%
Elmore	$121,672,934	$0	$0	$0	0.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$0	$0	$0	0.0%
Gem	$32,328,886	$0	$55,527	$55,527	0.2%
Gooding	$204,224,556	$0	$0	$0	0.0%
Idaho	$117,609,627	$0	$0	$0	0.0%
Jefferson	$39,939,738	$0	$0	$0	0.0%
Jerome	$47,654,413	$0	$0	$0	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$0	$0	$0	0.0%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$0	$0	$0	0.0%
Madison	$37,896,876	$0	$0	$0	0.0%
Minidoka	$91,606,782	$0	$0	$0	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$0	$0	$0	0.0%
Owyhee	$124,432,815	$0	$0	$0	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$0	$0	$0	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$0	$0	$0	0.0%
Twin Falls	$237,242,142	$0	$0	$0	0.0%
Valley	$343,883,798	$0	$0	$0	0.0%
Washington	$24,170,129	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$0**	**$55,527**	**$55,527**	**0.0%**

Dam Failure Loss Estimates: Black Canyon Dam—State Facilities by Agency

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$0	$0	$0	0.0%	$0
Attorney General's Office	$0	$0	$0	0.0%	$0
Bean Commission	$0	$0	$0	0.0%	$0
Board of Tax Appeals	$0	$0	$0	0.0%	$0
Boise State University	$0	$0	$0	0.0%	$0
Boise Veteran's Home	$0	$0	$0	0.0%	$0
Commission for the Blind and Visually Impaired	$0	$0	$0	0.0%	$0
Commission on Aging	$0	$0	$0	0.0%	$0
Commission on Hispanic Affairs	$0	$0	$0	0.0%	$0
Commission on Pardons and Paroles	$0	$0	$0	0.0%	$0
Correctional Industries	$0	$0	$0	0.0%	$0
Council for Deaf and Hard of Hearing	$0	$0	$0	0.0%	$0
Dairy Products Commission	$0	$0	$0	0.0%	$0
Dept. of Administration	$0	$0	$0	0.0%	$0
Dept. of Agriculture	$0	$0	$0	0.0%	$0
Dept. of Commerce	$0	$0	$0	0.0%	$0
Dept. of Correction	$0	$0	$0	0.0%	$0
Dept. of Education	$0	$0	$0	0.0%	$0
Dept. of Environmental Quality	$0	$0	$0	0.0%	$0
Dept. of Finance	$0	$0	$0	0.0%	$0
Dept. of Fish and Game	$0	$0	$0	0.0%	$0
Dept. of Health and Welfare	$0	$0	$0	0.0%	$0
Dept. of Insurance	$0	$0	$0	0.0%	$0
Dept. of Juvenile Corrections	$0	$0	$0	0.0%	$0
Dept. of Lands	$0	$0	$0	0.0%	$0
Dept. of Parks and Recreation	$0	$0	$0	0.0%	$0
Dept. of Transportation	$0	$0	$0	0.0%	$0
Dept. of Transportation-Aeronautics	$0	$0	$0	0.0%	$0
Dept. of Transportation-Dist. 1	$0	$0	$0	0.0%	$0
Dept. of Transportation-Dist. 2	$0	$0	$0	0.0%	$0
Dept. of Transportation-Dist. 3	$0	$0	$0	0.0%	$0
Dept. of Transportation-Dist. 4	$0	$0	$0	0.0%	$0
Dept. of Transportation-Dist. 5	$0	$0	$0	0.0%	$0
Dept. of Transportation-Dist. 6	$0	$0	$0	0.0%	$0
Dept. of Water Resources	$0	$0	$0	0.0%	$0
Div. of Financial Management	$0	$0	$0	0.0%	$0
Div. of Human Resources	$0	$0	$0	0.0%	$0
Div. of Military	$0	$0	$0	0.0%	$0
Div. of Occupational and Professional Licenses	$0	$0	$0	0.0%	$0
Div. of Veterans Services	$0	$0	$0	0.0%	$0
Div. of Vocational Rehabilitation	$0	$0	$0	0.0%	$0
Educational Services for the Deaf and the Blind	$0	$0	$0	0.0%	$0
Endowment Fund Investment Board	$0	$0	$0	0.0%	$0
Forest Products Commission	$0	$0	$0	0.0%	$0

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$0	$0	$0	0.0%	$0
Idaho Barley Commission	$0	$0	$0	0.0%	$0
Idaho Beef Council	$0	$0	$0	0.0%	$0
Idaho Career & Technical Ed (Voc Ed)	$0	$0	$0	0.0%	$0
Idaho Commission for Libraries	$0	$0	$0	0.0%	$0
Idaho Crop Improvement Association	$0	$0	$0	0.0%	$0
Idaho Dept. of Labor	$0	$0	$0	0.0%	$0
Idaho Digital Learning Alliance	$0	$0	$0	0.0%	$0
Idaho Industrial Commission	$0	$0	$0	0.0%	$0
Idaho Office of Energy Resources	$0	$0	$0	0.0%	$0
Idaho Potato Commission	$0	$0	$0	0.0%	$0
Idaho Public Television	$0	$0	$0	0.0%	$0
Idaho Rangeland Resources Commission	$0	$0	$0	0.0%	$0
Idaho Soil and Water Conservation Commission	$0	$0	$0	0.0%	$0
Idaho State Bar	$0	$0	$0	0.0%	$0
Idaho State Historical Society	$0	$0	$0	0.0%	$0
Idaho State Liquor Div.	$0	$55,527	$55,527	0.0%	$0
Idaho State Police	$0	$0	$0	0.0%	$0
Idaho State University	$0	$0	$0	0.0%	$0
Idaho Tax Commission	$0	$0	$0	0.0%	$0
Idaho Wheat Commission	$0	$0	$0	0.0%	$0
IDHW - Bureau of Laboratories	$0	$0	$0	0.0%	$0
IDHW - State Hospital North	$0	$0	$0	0.0%	$0
IDHW - State Hospital South	$0	$0	$0	0.0%	$0
IDHW - State Hospital West	$0	$0	$0	0.0%	$0
IDHW Southwest Idaho Treatment Center	$0	$0	$0	0.0%	$0
Information Technology Services	$0	$0	$0	0.0%	$0
ISP - Racing Commission	$0	$0	$0	0.0%	$0
ISP ΓÇô State Brand Board	$0	$0	$0	0.0%	$0
Judicial Branch / Supreme Court	$0	$0	$0	0.0%	$0
Lava Hot Springs Foundation	$0	$0	$0	0.0%	$0
Legislative House	$0	$0	$0	0.0%	$0
Legislative Senate	$0	$0	$0	0.0%	$0
Legislative Services	$0	$0	$0	0.0%	$0
Lewis-Clark State College	$0	$0	$0	0.0%	$0
Lewiston Veteran's Home	$0	$0	$0	0.0%	$0
Lieutenant Governor	$0	$0	$0	0.0%	$0
Lottery Commission	$0	$0	$0	0.0%	$0
Office of Administrative Hearings	$0	$0	$0	0.0%	$0
Office of Drug Policy	$0	$0	$0	0.0%	$0
Office of Performance Evaluations	$0	$0	$0	0.0%	$0
Office of Species Conservation	$0	$0	$0	0.0%	$0
Office of the State Controller	$0	$0	$0	0.0%	$0
Pocatello Veteran's Home	$0	$0	$0	0.0%	$0

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$0	$0	$0	0.0%	$0
Public Charter School Commission	$0	$0	$0	0.0%	$0
Public Employee Retirement System of Idaho	$0	$0	$0	0.0%	$0
Public Health Dist. 1 (Panhandle)	$0	$0	$0	0.0%	$0
Public Health Dist. 2 (North Central)	$0	$0	$0	0.0%	$0
Public Health Dist. 3 (Southwest)	$0	$0	$0	0.0%	$0
Public Health Dist. 4 (Central)	$0	$0	$0	0.0%	$0
Public Health Dist. 5 (South Central)	$0	$0	$0	0.0%	$0
Public Health Dist. 6 (South Eastern)	$0	$0	$0	0.0%	$0
Public Health Dist. 7 (Eastern)	$0	$0	$0	0.0%	$0
Public Safety Communications	$0	$0	$0	0.0%	$0
Public Utilities Commission	$0	$0	$0	0.0%	$0
Secretary of State	$0	$0	$0	0.0%	$0
State Appellate Public Defender	$0	$0	$0	0.0%	$0
State Board of Education	$0	$0	$0	0.0%	$0
State Independent Living Council	$0	$0	$0	0.0%	$0
State Insurance Fund	$0	$0	$0	0.0%	$0
State Public Defense Commission	$0	$0	$0	0.0%	$0
State Treasurer	$0	$0	$0	0.0%	$0
STEM Action Center	$0	$0	$0	0.0%	$0
University of Idaho	$0	$0	$0	0.0%	$0
Veteran's Cemetery - Blackfoot	$0	$0	$0	0.0%	$0
Veterans State Cemetery Boise	$0	$0	$0	0.0%	$0
Workforce Development Council	$0	$0	$0	0.0%	$0
Total	**$0**	**$55,527**	**$55,527**	**0.0%**	**$0**

Dam Failure Loss Estimates: Black Canyon Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Gem	0.0	12.8	0.0	0.0	0.0	47.4	0.0	**26.7**
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Total	**0.0**	**12.8**	**0.0**	**0.0**	**0.0**	**47.4**	**0.0**	**26.7**

Dam Failure Loss Estimates: Blacks Creek Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.2
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.1

Dam Failure Loss Estimates: Crowther Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Dam Failure Loss Estimates: Deep Creek Dam—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$0	$0	$0	0.0%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$0	$0	$0	0.0%
Bear Lake	$118,567,794	$0	$0	$0	0.0%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$0	$0	$0	0.0%
Blaine	$73,361,974	$0	$0	$0	0.0%
Boise	$52,698,341	$0	$0	$0	0.0%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$0	$0	$0	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$0	$0	$0	0.0%
Camas	$16,931,555	$0	$0	$0	0.0%
Canyon	$338,752,262	$0	$0	$0	0.0%
Caribou	$41,741,085	$0	$0	$0	0.0%
Cassia	$136,212,673	$0	$0	$0	0.0%
Clark	$19,628,056	$0	$0	$0	0.0%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$0	$0	$0	0.0%
Elmore	$121,672,934	$0	$0	$0	0.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$0	$0	$0	0.0%
Gem	$32,328,886	$0	$0	$0	0.0%
Gooding	$204,224,556	$0	$0	$0	0.0%
Idaho	$117,609,627	$0	$0	$0	0.0%
Jefferson	$39,939,738	$0	$0	$0	0.0%
Jerome	$47,654,413	$0	$0	$0	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$0	$0	$0	0.0%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$0	$0	$0	0.0%
Madison	$37,896,876	$0	$0	$0	0.0%
Minidoka	$91,606,782	$0	$0	$0	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$83,251	$11,815	$95,066	0.3%
Owyhee	$124,432,815	$0	$0	$0	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$0	$0	$0	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$0	$0	$0	0.0%
Twin Falls	$237,242,142	$0	$0	$0	0.0%
Valley	$343,883,798	$0	$0	$0	0.0%
Washington	$24,170,129	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$83,251**	**$11,815**	**$95,066**	**0.0%**

Dam Failure Loss Estimates: Deep Creek Dam—State Facilities by Agency

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$0	$0	0.0%
Bean Commission	$8,301,087	$0	$0	$0	0.0%
Board of Tax Appeals	$5,534,058	$0	$0	$0	0.0%
Boise State University	$2,246,961,513	$0	$0	$0	0.0%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$0	$0	$0	0.0%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$0	$0	$0	0.0%
Dept. of Agriculture	$97,806,722	$0	$0	$0	0.0%
Dept. of Commerce	$11,068,116	$0	$0	$0	0.0%
Dept. of Correction	$864,744,339	$0	$0	$0	0.0%
Dept. of Education	$2,767,029	$0	$0	$0	0.0%
Dept. of Environmental Quality	$168,788,769	$0	$0	$0	0.0%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$0	$0	$0	0.0%
Dept. of Health and Welfare	$215,154,580	$0	$0	$0	0.0%
Dept. of Insurance	$19,369,203	$0	$0	$0	0.0%
Dept. of Juvenile Corrections	$114,560,510	$0	$0	$0	0.0%
Dept. of Lands	$102,437,415	$0	$0	$0	0.0%
Dept. of Parks and Recreation	$1,954,405,534	$0	$0	$0	0.0%
Dept. of Transportation	$308,229,590	$31,975	$0	$31,975	0.0%
Dept. of Transportation-Aeronautics	$7,908,250	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$49,955,576	$0	$0	$0	0.0%
Div. of Financial Management	$2,767,029	$0	$0	$0	0.0%
Div. of Human Resources	$2,767,029	$0	$0	$0	0.0%
Div. of Military	$910,834,534	$51,276	$0	$51,276	0.0%
Div. of Occupational and Professional Licenses	$42,040,410	$0	$0	$0	0.0%
Div. of Veterans Services	$26,236,632	$0	$0	$0	0.0%
Div. of Vocational Rehabilitation	$88,544,928	$0	$0	$0	0.0%
Educational Services for the Deaf and the Blind	$73,782,544	$0	$0	$0	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$0	$0	0.0%
Forest Products Commission	$11,068,116	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$0	$0	0.0%
Idaho Barley Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$0	$0	0.0%
Idaho Commission for Libraries	$2,767,029	$0	$0	$0	0.0%
Idaho Crop Improvement Association	$7,437,949	$0	$0	$0	0.0%
Idaho Dept. of Labor	$73,269,804	$0	$0	$0	0.0%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$0	$0	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$0	$0	0.0%
Idaho Potato Commission	$5,534,058	$0	$0	$0	0.0%
Idaho Public Television	$156,044,267	$0	$0	$0	0.0%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$0	$0	0.0%
Idaho State Bar	$5,534,058	$0	$0	$0	0.0%
Idaho State Historical Society	$63,895,732	$0	$0	$0	0.0%
Idaho State Liquor Div.	$676,566,597	$0	$0	$0	0.0%
Idaho State Police	$94,954,955	$0	$0	$0	0.0%
Idaho State University	$1,474,436,327	$0	$0	$0	0.0%
Idaho Tax Commission	$24,903,261	$0	$0	$0	0.0%
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$0	$0	$0	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$0	$0	0.0%
ISP - Racing Commission	$5,534,058	$0	$0	$0	0.0%
ISP ΓÇô State Brand Board	$13,835,145	$0	$0	$0	0.0%
Judicial Branch / Supreme Court	$143,885,508	$0	$0	$0	0.0%
Lava Hot Springs Foundation	$19,261,830	$0	$0	$0	0.0%
Legislative House	$2,767,029	$0	$0	$0	0.0%
Legislative Senate	$2,767,029	$0	$0	$0	0.0%
Legislative Services	$5,534,058	$0	$0	$0	0.0%
Lewis-Clark State College	$295,427,089	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$0	$0	0.0%
Lottery Commission	$38,750,553	$0	$0	$0	0.0%
Office of Administrative Hearings	$5,534,058	$0	$0	$0	0.0%
Office of Drug Policy	$2,767,029	$0	$0	$0	0.0%
Office of Performance Evaluations	$2,767,029	$0	$0	$0	0.0%
Office of Species Conservation	$16,602,174	$0	$0	$0	0.0%
Office of the State Controller	$11,068,116	$0	$0	$0	0.0%
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$0	$0	0.0%
Public Employee Retirement System of Idaho	$22,324,940	$0	$0	$0	0.0%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$0	$0	$0	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$0	$0	$0	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$0	$0	$0	0.0%
Public Health Dist. 7 (Eastern)	$18,747,629	$0	$0	$0	0.0%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$0	$0	0.0%
State Appellate Public Defender	$5,534,058	$0	$0	$0	0.0%
State Board of Education	$98,757,000	$0	$0	$0	0.0%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$0	$0	$0	0.0%
State Public Defense Commission	$5,534,058	$0	$0	$0	0.0%
State Treasurer	$5,534,058	$0	$0	$0	0.0%
STEM Action Center	$2,777,667	$0	$0	$0	0.0%
University of Idaho	$2,035,323,146	$0	$11,815	$11,815	0.0%
Veteran's Cemetery - Blackfoot	$2,532,000	$0	$0	$0	0.0%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$2,767,029	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$83,251**	**$11,815**	**$95,066**	**0.0%**

Dam Failure Loss Estimates: Deep Creek Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	5.9	0.0	5.9
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**5.9**	**0.0**	**5.9**

Dam Failure Loss Estimates: Fish Creek Dam—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$3,920,676,272	$0	$0	$0	0.0%
Adams	$3,437,650	$0	$0	$0	0.0%
Bannock	$1,275,354,316	$0	$0	$0	0.0%
Bear Lake	$2,352,576	$0	$0	$0	0.0%
Benewah	$11,666,055	$0	$0	$0	0.0%
Bingham	$119,312,779	$0	$0	$0	0.0%
Blaine	$9,720,307	$24,030	$0	$24,030	0.2%
Boise	$8,425,877	$0	$0	$0	0.0%
Bonner	$25,177,402	$0	$0	$0	0.0%
Bonneville	$214,506,299	$0	$0	$0	0.0%
Boundary	$5,357,591	$0	$0	$0	0.0%
Butte	$2,321,957	$0	$0	$0	0.0%
Camas	$3,096,410	$0	$0	$0	0.0%
Canyon	$139,526,174	$0	$0	$0	0.0%
Caribou	$5,769,708	$0	$0	$0	0.0%
Cassia	$8,929,339	$0	$0	$0	0.0%
Clark	$5,792,911	$0	$0	$0	0.0%
Clearwater	$108,677,084	$0	$0	$0	0.0%
Custer	$9,417,332	$0	$0	$0	0.0%
Elmore	$5,457,716	$0	$0	$0	0.0%
Franklin	$4,482,765	$0	$0	$0	0.0%
Fremont	$58,668,923	$0	$0	$0	0.0%
Gem	$1,891,567	$0	$0	$0	0.0%
Gooding	$60,339,048	$0	$0	$0	0.0%
Idaho	$31,831,728	$0	$0	$0	0.0%
Jefferson	$15,036,477	$0	$0	$0	0.0%
Jerome	$14,450,065	$0	$0	$0	0.0%
Kootenai	$81,041,216	$0	$0	$0	0.0%
Latah	$1,594,194,273	$0	$0	$0	0.0%
Lemhi	$16,908,513	$0	$0	$0	0.0%
Lewis	$4,544,803	$0	$0	$0	0.0%
Lincoln	$7,847,151	$0	$0	$0	0.0%
Madison	$4,692,528	$0	$0	$0	0.0%
Minidoka	$5,828,883	$0	$0	$0	0.0%
Nez Perce	$307,373,967	$0	$0	$0	0.0%
Oneida	$5,621,111	$0	$0	$0	0.0%
Owyhee	$5,450,568	$0	$0	$0	0.0%
Payette	$14,283,151	$0	$0	$0	0.0%
Power	$9,284,577	$0	$0	$0	0.0%
Shoshone	$3,583,174	$0	$0	$0	0.0%
Teton	$6,183,885	$0	$0	$0	0.0%
Twin Falls	$35,249,025	$0	$0	$0	0.0%
Valley	$11,840,318	$0	$0	$0	0.0%
Washington	$4,800,926	$0	$0	$0	0.0%
Total	**$8,190,404,397**	**$24,030**	**$0**	**$24,030**	**0.0%**

Dam Failure Loss Estimates: Fish Creek Dam—State Facilities by Agency

Agency	Total Value	Loss: State-Owned Facilities	Loss: State-Leased Facilities	Loss: Total	% of Total Value
Arts Commission	$0	$0	$0	$0	
Attorney General's Office	$0	$0	$0	$0	
Bean Commission	$0	$0	$0	$0	
Board of Tax Appeals	$0	$0	$0	$0	
Boise State University	$2,017,298,106	$0	$0	$0	0.0%
Boise Veteran's Home	$32,552,259	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$13,230,295	$0	$0	$0	0.0%
Commission on Aging	$0	$0	$0	$0	
Commission on Hispanic Affairs	$0	$0	$0	$0	
Commission on Pardons and Paroles	$0	$0	$0	$0	
Correctional Industries	$9,549,750	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$0	$0	$0	$0	
Dairy Products Commission	$2,102,638	$0	$0	$0	0.0%
Dept. of Administration	$958,334,364	$0	$0	$0	0.0%
Dept. of Agriculture	$14,795,852	$0	$0	$0	0.0%
Dept. of Commerce	$0	$0	$0	$0	
Dept. of Correction	$682,120,425	$0	$0	$0	0.0%
Dept. of Education	$0	$0	$0	$0	
Dept. of Environmental Quality	$0	$0	$0	$0	
Dept. of Finance	$0	$0	$0	$0	
Dept. of Fish and Game	$106,636,080	$0	$0	$0	0.0%
Dept. of Health and Welfare	$13,161,463	$0	$0	$0	0.0%
Dept. of Insurance	$0	$0	$0	$0	
Dept. of Juvenile Corrections	$64,753,988	$0	$0	$0	0.0%
Dept. of Lands	$36,028,719	$0	$0	$0	0.0%
Dept. of Parks and Recreation	$6,417,118	$0	$0	$0	0.0%
Dept. of Transportation	$219,684,662	$24,030	$0	$24,030	0.0%
Dept. of Transportation-Aeronautics	$2,374,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$11,217,170	$0	$0	$0	0.0%
Div. of Financial Management	$0	$0	$0	$0	
Div. of Human Resources	$0	$0	$0	$0	
Div. of Military	$91,793,950	$0	$0	$0	0.0%
Div. of Occupational and Professional Licenses	$534,975	$0	$0	$0	0.0%
Div. of Veterans Services	$1,333,371	$0	$0	$0	0.0%
Div. of Vocational Rehabilitation	$0	$0	$0	$0	
Educational Services for the Deaf and the Blind	$40,578,196	$0	$0	$0	0.0%
Endowment Fund Investment Board	$0	$0	$0	$0	
Forest Products Commission	$0	$0	$0	$0	

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$0	$0	$0	$0	
Idaho Barley Commission	$0	$0	$0	$0	
Idaho Beef Council	$0	$0	$0	$0	
Idaho Career & Technical Ed (Voc Ed)	$0	$0	$0	$0	
Idaho Commission for Libraries	$0	$0	$0	$0	
Idaho Crop Improvement Association	$1,903,891	$0	$0	$0	0.0%
Idaho Dept. of Labor	$40,065,456	$0	$0	$0	0.0%
Idaho Digital Learning Alliance	$0	$0	$0	$0	
Idaho Industrial Commission	$0	$0	$0	$0	
Idaho Office of Energy Resources	$0	$0	$0	$0	
Idaho Potato Commission	$0	$0	$0	$0	
Idaho Public Television	$1,090,643	$0	$0	$0	0.0%
Idaho Rangeland Resources Commission	$0	$0	$0	$0	
Idaho Soil and Water Conservation Commission	$0	$0	$0	$0	
Idaho State Bar	$0	$0	$0	$0	
Idaho State Historical Society	$50,060,587	$0	$0	$0	0.0%
Idaho State Liquor Div.	$18,013,695	$0	$0	$0	0.0%
Idaho State Police	$78,352,781	$0	$0	$0	0.0%
Idaho State University	$1,253,074,007	$0	$0	$0	0.0%
Idaho Tax Commission	$0	$0	$0	$0	
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$0	$0	$0	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$0	$0	$0	$0	
ISP - Racing Commission	$0	$0	$0	$0	
ISP ΓÇô State Brand Board	$0	$0	$0	$0	
Judicial Branch / Supreme Court	$0	$0	$0	$0	
Lava Hot Springs Foundation	$16,494,801	$0	$0	$0	0.0%
Legislative House	$0	$0	$0	$0	
Legislative Senate	$0	$0	$0	$0	
Legislative Services	$0	$0	$0	$0	
Lewis-Clark State College	$234,552,451	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$0	$0	$0	$0	
Lottery Commission	$12,147	$0	$0	$0	0.0%
Office of Administrative Hearings	$0	$0	$0	$0	
Office of Drug Policy	$0	$0	$0	$0	
Office of Performance Evaluations	$0	$0	$0	$0	
Office of Species Conservation	$0	$0	$0	$0	
Office of the State Controller	$0	$0	$0	$0	
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$0	$0	$0	$0	
Public Charter School Commission	$0	$0	$0	$0	
Public Employee Retirement System of Idaho	$11,256,824	$0	$0	$0	0.0%
Public Health Dist. 1 (Panhandle)	$15,822,213	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$11,397,223	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$10,590,362	$0	$0	$0	0.0%
Public Health Dist. 5 (South Central)	$9,039,145	$0	$0	$0	0.0%
Public Health Dist. 6 (South Eastern)	$9,039,560	$0	$0	$0	0.0%
Public Health Dist. 7 (Eastern)	$10,446,542	$0	$0	$0	0.0%
Public Safety Communications	$0	$0	$0	$0	
Public Utilities Commission	$0	$0	$0	$0	
Secretary of State	$0	$0	$0	$0	
State Appellate Public Defender	$0	$0	$0	$0	
State Board of Education	$95,989,971	$0	$0	$0	0.0%
State Independent Living Council	$0	$0	$0	$0	
State Insurance Fund	$17,508,396	$0	$0	$0	0.0%
State Public Defense Commission	$0	$0	$0	$0	
State Treasurer	$0	$0	$0	$0	
STEM Action Center	$10,638	$0	$0	$0	0.0%
University of Idaho	$1,750,319,159	$0	$0	$0	0.0%
Veteran's Cemetery - Blackfoot	$2,532,000	$0	$0	$0	0.0%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$0	$0	$0	$0	
Total	**$8,190,404,396**	**$24,030**	**$0**	**$24,030**	**0.0%**

Dam Failure Loss Estimates: Lucky Peak Dam—State Facilities by County					
		Loss			
County	Total Value	State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$2,292,405,400	$451,176,378	$2,743,581,778	48.5%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$0	$0	$0	0.0%
Bear Lake	$118,567,794	$0	$0	$0	0.0%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$0	$0	$0	0.0%
Blaine	$73,361,974	$0	$0	$0	0.0%
Boise	$52,698,341	$212,371	$0	$212,371	0.4%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$0	$0	$0	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$0	$0	$0	0.0%
Camas	$16,931,555	$0	$0	$0	0.0%
Canyon	$338,752,262	$576,798	$3,397,091	$3,973,889	1.2%
Caribou	$41,741,085	$0	$0	$0	0.0%
Cassia	$136,212,673	$0	$0	$0	0.0%
Clark	$19,628,056	$0	$0	$0	0.0%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$0	$0	$0	0.0%
Elmore	$121,672,934	$0	$0	$0	0.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$0	$0	$0	0.0%
Gem	$32,328,886	$0	$0	$0	0.0%
Gooding	$204,224,556	$0	$0	$0	0.0%
Idaho	$117,609,627	$0	$0	$0	0.0%
Jefferson	$39,939,738	$0	$0	$0	0.0%
Jerome	$47,654,413	$0	$0	$0	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$0	$0	$0	0.0%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$0	$0	$0	0.0%
Madison	$37,896,876	$0	$0	$0	0.0%
Minidoka	$91,606,782	$0	$0	$0	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$0	$0	$0	0.0%
Owyhee	$124,432,815	$0	$0	$0	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$0	$0	$0	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$0	$0	$0	0.0%
Twin Falls	$237,242,142	$0	$0	$0	0.0%
Valley	$343,883,798	$0	$0	$0	0.0%
Washington	$24,170,129	$0	$1,846,634	$1,846,634	7.6%
Total	**$14,773,166,388**	**$2,293,194,569**	**$456,420,103**	**$2,749,614,672**	**18.6%**

Dam Failure Loss Estimates: Lucky Peak Dam—State Facilities by Agency

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$4,923,201	$4,923,201	44.5%
Bean Commission	$8,301,087	$1,248,435	$2,496,870	$3,745,305	45.1%
Board of Tax Appeals	$5,534,058	$0	$5,257,355	$5,257,355	95.0%
Boise State University	$2,246,961,513	$1,748,515,775	$142,175,877	$1,890,691,652	84.1%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$2,240,500	$0	$2,240,500	5.9%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$293,708,159	$0	$293,708,159	30.0%
Dept. of Agriculture	$97,806,722	$7,369,903	$0	$7,369,903	7.5%
Dept. of Commerce	$11,068,116	$667,570	$0	$667,570	6.0%
Dept. of Correction	$864,744,339	$352,189	$9,612,236	$9,964,426	1.2%
Dept. of Education	$2,767,029	$0	$497,646	$497,646	18.0%
Dept. of Environmental Quality	$168,788,769	$0	$6,061,392	$6,061,392	3.6%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$21,006,622	$7,886,033	$28,892,655	7.3%
Dept. of Health and Welfare	$215,154,580	$0	$11,747,013	$11,747,013	5.5%
Dept. of Insurance	$19,369,203	$0	$667,570	$667,570	3.4%
Dept. of Juvenile Corrections	$114,560,510	$0	$2,864,463	$2,864,463	2.5%
Dept. of Lands	$102,437,415	$6,457,929	$1,949,585	$8,407,514	8.2%
Dept. of Parks and Recreation	$1,954,405,534	$99,033,902	$0	$99,033,902	5.1%
Dept. of Transportation	$308,229,590	$48,035,996	$0	$48,035,996	15.6%
Dept. of Transportation-Aeronautics	$7,908,250	$16,794	$0	$16,794	0.2%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$49,955,576	$0	$2,667,175	$2,667,175	5.3%
Div. of Financial Management	$2,767,029	$0	$1,686,548	$1,686,548	61.0%
Div. of Human Resources	$2,767,029	$0	$1,686,548	$1,686,548	61.0%
Div. of Military	$910,834,534	$1,222,884	$15,723	$1,238,607	0.1%
Div. of Occupational and Professional Licenses	$42,040,410	$0	$12,244,808	$12,244,808	29.1%
Div. of Veterans Services	$26,236,632	$0	$28,924	$28,924	0.1%
Div. of Vocational Rehabilitation	$88,544,928	$0	$497,646	$497,646	0.6%
Educational Services for the Deaf and the Blind	$73,782,544	$0	$0	$0	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$3,657,693	$3,657,693	66.1%
Forest Products Commission	$11,068,116	$0	$4,817,590	$4,817,590	43.5%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$2,372,255	$2,372,255	42.9%
Idaho Barley Commission	$2,767,029	$0	$1,248,435	$1,248,435	45.1%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$497,646	$497,646	18.0%
Idaho Commission for Libraries	$2,767,029	$0	$693,081	$693,081	25.0%
Idaho Crop Improvement Association	$7,437,949	$0	$0	$0	0.0%
Idaho Dept. of Labor	$73,269,804	$20,294,014	$6,666,348	$26,960,361	36.8%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$0	$0	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$1,686,548	$1,686,548	61.0%
Idaho Potato Commission	$5,534,058	$0	$2,344,235	$2,344,235	42.4%
Idaho Public Television	$156,044,267	$0	$7,404,415	$7,404,415	4.7%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$6,292,997	$6,292,997	16.2%
Idaho State Bar	$5,534,058	$0	$3,703,724	$3,703,724	66.9%
Idaho State Historical Society	$63,895,732	$22,498,763	$3,069,830	$25,568,593	40.0%
Idaho State Liquor Div.	$676,566,597	$0	$42,818,212	$42,818,212	6.3%
Idaho State Police	$94,954,955	$0	$0	$0	0.0%
Idaho State University	$1,474,436,327	$0	$6,350,533	$6,350,533	0.4%
Idaho Tax Commission	$24,903,261	$0	$0	$0	0.0%
Idaho Wheat Commission	$1,073,655	$487,497	$0	$487,497	45.4%
IDHW - Bureau of Laboratories	$12,451,087	$2,067,143	$0	$2,067,143	16.6%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$0	$0	$0	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$15,591,101	$15,591,101	21.7%
ISP - Racing Commission	$5,534,058	$0	$0	$0	0.0%
ISP ΓÇô State Brand Board	$13,835,145	$0	$0	$0	0.0%
Judicial Branch / Supreme Court	$143,885,508	$3,035,038	$700,476	$3,735,514	2.6%
Lava Hot Springs Foundation	$19,261,830	$0	$0	$0	0.0%
Legislative House	$2,767,029	$0	$1,582,164	$1,582,164	57.2%
Legislative Senate	$2,767,029	$0	$2,054,925	$2,054,925	74.3%
Legislative Services	$5,534,058	$0	$2,249,733	$2,249,733	40.7%
Lewis-Clark State College	$295,427,089	$0	$2,462,656	$2,462,656	0.8%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$1,281,153	$1,281,153	46.3%
Lottery Commission	$38,750,553	$1,735,434	$5,257,355	$6,992,789	18.0%
Office of Administrative Hearings	$5,534,058	$0	$3,657,693	$3,657,693	66.1%
Office of Drug Policy	$2,767,029	$0	$1,686,548	$1,686,548	61.0%
Office of Performance Evaluations	$2,767,029	$0	$1,432,231	$1,432,231	51.8%
Office of Species Conservation	$16,602,174	$0	$1,686,548	$1,686,548	10.2%
Office of the State Controller	$11,068,116	$0	$667,570	$667,570	6.0%
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$700,476	$700,476	25.3%
Public Employee Retirement System of Idaho	$22,324,940	$2,416,331	$0	$2,416,331	10.8%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$0	$0	$0	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$0	$0	$0	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$0	$0	$0	0.0%
Public Health Dist. 7 (Eastern)	$18,747,629	$0	$0	$0	0.0%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$2,380,382	$2,380,382	43.0%
State Appellate Public Defender	$5,534,058	$0	$5,257,355	$5,257,355	95.0%
State Board of Education	$98,757,000	$0	$497,646	$497,646	0.5%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$10,783,691	$0	$10,783,691	53.2%
State Public Defense Commission	$5,534,058	$0	$3,657,693	$3,657,693	66.1%
State Treasurer	$5,534,058	$0	$3,373,095	$3,373,095	61.0%
STEM Action Center	$2,777,667	$0	$1,409,958	$1,409,958	50.8%
University of Idaho	$2,035,323,146	$0	$89,542,716	$89,542,716	4.4%
Veteran's Cemetery - Blackfoot	$2,532,000	$0	$0	$0	0.0%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$2,767,029	$0	$700,476	$700,476	25.3%
Total	**$14,773,166,388**	**$2,293,194,569**	**$456,420,103**	**$2,749,614,672**	**18.6%**

Dam Failure Loss Estimates: Lucky Peak Dam—Average % of Structure Value to Critical Facilities

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		60.9	40.0	48.1	54.5	0.0	54.9	48.1
Adams		37.0	0.0	0.0	39.0	0.0	38.3	0.0
Bannock		37.1	0.0	0.0	0.0	0.0	37.1	0.0
Bear Lake		29.6	0.0	0.0	0.0	0.0	29.6	0.0
Benewah		14.0	30.2	0.0	3.7	0.0	12.9	0.0
Bingham		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lewis		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		51.3	35.1	48.1	51.1	0.0	50.7	48.1

Dam Failure Loss Estimates: Mackay Dam—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$0	$0	$0	0.0%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$0	$0	$0	0.0%
Bear Lake	$118,567,794	$0	$0	$0	0.0%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$0	$0	$0	0.0%
Blaine	$73,361,974	$0	$0	$0	0.0%
Boise	$52,698,341	$0	$0	$0	0.0%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$0	$0	$0	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$23,484	$267,664	$291,148	1.2%
Camas	$16,931,555	$0	$0	$0	0.0%
Canyon	$338,752,262	$0	$0	$0	0.0%
Caribou	$41,741,085	$0	$0	$0	0.0%
Cassia	$136,212,673	$0	$0	$0	0.0%
Clark	$19,628,056	$0	$0	$0	0.0%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$754,040	$102,998	$857,039	0.9%
Elmore	$121,672,934	$0	$0	$0	0.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$0	$0	$0	0.0%
Gem	$32,328,886	$0	$0	$0	0.0%
Gooding	$204,224,556	$0	$0	$0	0.0%
Idaho	$117,609,627	$0	$0	$0	0.0%
Jefferson	$39,939,738	$0	$0	$0	0.0%
Jerome	$47,654,413	$0	$0	$0	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$0	$0	$0	0.0%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$0	$0	$0	0.0%
Madison	$37,896,876	$0	$0	$0	0.0%
Minidoka	$91,606,782	$0	$0	$0	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$0	$0	$0	0.0%
Owyhee	$124,432,815	$0	$0	$0	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$0	$0	$0	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$0	$0	$0	0.0%
Twin Falls	$237,242,142	$0	$0	$0	0.0%
Valley	$343,883,798	$0	$0	$0	0.0%
Washington	$24,170,129	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$777,524**	**$370,663**	**$1,148,187**	**0.0%**

Dam Failure Loss Estimates: Mackay Dam—State Facilities by Agency

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$0	$0	0.0%
Bean Commission	$8,301,087	$0	$0	$0	0.0%
Board of Tax Appeals	$5,534,058	$0	$0	$0	0.0%
Boise State University	$2,246,961,513	$0	$0	$0	0.0%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$0	$0	$0	0.0%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$0	$0	$0	0.0%
Dept. of Agriculture	$97,806,722	$0	$0	$0	0.0%
Dept. of Commerce	$11,068,116	$0	$0	$0	0.0%
Dept. of Correction	$864,744,339	$0	$0	$0	0.0%
Dept. of Education	$2,767,029	$0	$0	$0	0.0%
Dept. of Environmental Quality	$168,788,769	$0	$0	$0	0.0%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$621,540	$0	$621,540	0.2%
Dept. of Health and Welfare	$215,154,580	$0	$0	$0	0.0%
Dept. of Insurance	$19,369,203	$0	$0	$0	0.0%
Dept. of Juvenile Corrections	$114,560,510	$0	$0	$0	0.0%
Dept. of Lands	$102,437,415	$0	$0	$0	0.0%
Dept. of Parks and Recreation	$1,954,405,534	$0	$0	$0	0.0%
Dept. of Transportation	$308,229,590	$17,410	$0	$17,410	0.0%
Dept. of Transportation-Aeronautics	$7,908,250	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$49,955,576	$0	$0	$0	0.0%
Div. of Financial Management	$2,767,029	$0	$0	$0	0.0%
Div. of Human Resources	$2,767,029	$0	$0	$0	0.0%
Div. of Military	$910,834,534	$115,091	$77,220	$192,311	0.0%
Div. of Occupational and Professional Licenses	$42,040,410	$0	$0	$0	0.0%
Div. of Veterans Services	$26,236,632	$0	$0	$0	0.0%
Div. of Vocational Rehabilitation	$88,544,928	$0	$0	$0	0.0%
Educational Services for the Deaf and the Blind	$73,782,544	$0	$0	$0	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$0	$0	0.0%
Forest Products Commission	$11,068,116	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$0	$0	0.0%
Idaho Barley Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$0	$0	0.0%
Idaho Commission for Libraries	$2,767,029	$0	$0	$0	0.0%
Idaho Crop Improvement Association	$7,437,949	$0	$0	$0	0.0%
Idaho Dept. of Labor	$73,269,804	$0	$0	$0	0.0%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$0	$0	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$0	$0	0.0%
Idaho Potato Commission	$5,534,058	$0	$0	$0	0.0%
Idaho Public Television	$156,044,267	$0	$0	$0	0.0%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$0	$0	0.0%
Idaho State Bar	$5,534,058	$0	$0	$0	0.0%
Idaho State Historical Society	$63,895,732	$0	$0	$0	0.0%
Idaho State Liquor Div.	$676,566,597	$0	$102,998	$102,998	0.0%
Idaho State Police	$94,954,955	$0	$0	$0	0.0%
Idaho State University	$1,474,436,327	$0	$0	$0	0.0%
Idaho Tax Commission	$24,903,261	$0	$0	$0	0.0%
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$0	$0	$0	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$0	$0	0.0%
ISP - Racing Commission	$5,534,058	$0	$0	$0	0.0%
ISP ΓÇô State Brand Board	$13,835,145	$0	$0	$0	0.0%
Judicial Branch / Supreme Court	$143,885,508	$23,484	$0	$23,484	0.0%
Lava Hot Springs Foundation	$19,261,830	$0	$0	$0	0.0%
Legislative House	$2,767,029	$0	$0	$0	0.0%
Legislative Senate	$2,767,029	$0	$0	$0	0.0%
Legislative Services	$5,534,058	$0	$0	$0	0.0%
Lewis-Clark State College	$295,427,089	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$0	$0	0.0%
Lottery Commission	$38,750,553	$0	$0	$0	0.0%
Office of Administrative Hearings	$5,534,058	$0	$0	$0	0.0%
Office of Drug Policy	$2,767,029	$0	$0	$0	0.0%
Office of Performance Evaluations	$2,767,029	$0	$0	$0	0.0%
Office of Species Conservation	$16,602,174	$0	$0	$0	0.0%
Office of the State Controller	$11,068,116	$0	$0	$0	0.0%
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$0	$0	0.0%
Public Employee Retirement System of Idaho	$22,324,940	$0	$0	$0	0.0%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$0	$0	$0	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$0	$0	$0	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$0	$149,076	$149,076	0.7%
Public Health Dist. 7 (Eastern)	$18,747,629	$0	$0	$0	0.0%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$0	$0	0.0%
State Appellate Public Defender	$5,534,058	$0	$0	$0	0.0%
State Board of Education	$98,757,000	$0	$0	$0	0.0%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$0	$0	$0	0.0%
State Public Defense Commission	$5,534,058	$0	$0	$0	0.0%
State Treasurer	$5,534,058	$0	$0	$0	0.0%
STEM Action Center	$2,777,667	$0	$0	$0	0.0%
University of Idaho	$2,035,323,146	$0	$41,369	$41,369	0.0%
Veteran's Cemetery - Blackfoot	$2,532,000	$0	$0	$0	0.0%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$2,767,029	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$777,524**	**$370,663**	**$1,148,187**	**0.0%**

Dam Failure Loss Estimates: Mackay Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		0.0	0.0		0.0	0.0	0.0	0.0
Adams		0.0	0.0		0.0	0.0	0.0	0.0
Bannock		0.0	0.0		0.0	0.0	0.0	0.0
Bear Lake		0.0	0.0		0.0	0.0	0.0	0.0
Benewah		0.0	0.0		0.0	0.0	0.0	0.0
Bingham		0.0	0.0		0.0	0.0	0.0	0.0
Blaine		0.0	0.0		0.0	0.0	0.0	0.0
Boise		0.0	0.0		0.0	0.0	0.0	0.0
Bonner		0.0	0.0		0.0	0.0	0.0	0.0
Bonneville		0.0	0.0		0.0	0.0	0.0	0.0
Boundary		0.0	0.0		0.0	0.0	0.0	0.0
Butte		0.3	0.0		0.0	1.1	0.0	0.7
Camas		0.0	0.0		0.0	0.0	0.0	0.0
Canyon		0.0	0.0		0.0	0.0	0.0	0.0
Caribou		0.0	0.0		0.0	0.0	0.0	0.0
Cassia		0.0	0.0		0.0	0.0	0.0	0.0
Clark		0.0	0.0		0.0	0.0	0.0	0.0
Clearwater		0.0	0.0		0.0	0.0	0.0	0.0
Custer		0.1	0.0		0.0	2.1	0.0	1.7
Elmore		0.0	0.0		0.0	0.0	0.0	0.0
Franklin		0.0	0.0		0.0	0.0	0.0	0.0
Fremont		0.0	0.0		0.0	0.0	0.0	0.0
Gem		0.0	0.0		0.0	0.0	0.0	0.0
Gooding		0.0	0.0		0.0	0.0	0.0	0.0
Idaho		0.0	0.0		0.0	0.0	0.0	0.0
Jefferson		0.0	0.0		0.0	0.0	0.0	0.0
Jerome		0.0	0.0		0.0	0.0	0.0	0.0
Kootenai		0.0	0.0		0.0	0.0	0.0	0.0
Latah		0.0	0.0		0.0	0.0	0.0	0.0
Lemhi		0.0	0.0		0.0	0.0	0.0	0.0
Lewis		0.0	0.0		0.0	0.0	0.0	0.0
Lincoln		0.0	0.0		0.0	0.0	0.0	0.0
Madison		0.0	0.0		0.0	0.0	0.0	0.0
Minidoka		0.0	0.0		0.0	0.0	0.0	0.0
Nez Perce		0.0	0.0		0.0	0.0	0.0	0.0
Oneida		0.0	0.0		0.0	0.0	0.0	0.0
Owyhee		0.0	0.0		0.0	0.0	0.0	0.0
Payette		0.0	0.0		0.0	0.0	0.0	0.0
Power		0.0	0.0		0.0	0.0	0.0	0.0
Shoshone		0.0	0.0		0.0	0.0	0.0	0.0
Teton		0.0	0.0		0.0	0.0	0.0	0.0
Twin Falls		0.0	0.0		0.0	0.0	0.0	0.0
Valley		0.0	0.0		0.0	0.0	0.0	0.0
Washington		0.0	0.0		0.0	0.0	0.0	0.0
Total		**0.3**	**0.0**		**0.0**	**1.5**	**0.0**	**0.9**

Dam Failure Loss Estimates: Mountain Home Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		0.0	0.0		0.0	0.0	0.0	0.0
Adams		0.0	0.0		0.0	0.0	0.0	0.0
Bannock		0.0	0.0		0.0	0.0	0.0	0.0
Bear Lake		0.0	0.0		0.0	0.0	0.0	0.0
Benewah		0.0	0.0		0.0	0.0	0.0	0.0
Bingham		0.0	0.0		0.0	0.0	0.0	0.0
Blaine		0.0	0.0		0.0	0.0	0.0	0.0
Boise		0.0	0.0		0.0	0.0	0.0	0.0
Bonner		0.0	0.0		0.0	0.0	0.0	0.0
Bonneville		0.0	0.0		0.0	0.0	0.0	0.0
Boundary		0.0	0.0		0.0	0.0	0.0	0.0
Butte		0.0	0.0		0.0	0.0	0.0	0.0
Camas		0.0	0.0		0.0	0.0	0.0	0.0
Canyon		0.0	0.0		0.0	0.0	0.0	0.0
Caribou		0.0	0.0		0.0	0.0	0.0	0.0
Cassia		0.0	0.0		0.0	0.0	0.0	0.0
Clark		0.0	0.0		0.0	0.0	0.0	0.0
Clearwater		0.0	0.0		0.0	0.0	0.0	0.0
Custer		0.0	0.0		0.0	0.0	0.0	0.0
Elmore		0.0	0.0		0.0	4.9	0.0	3.7
Franklin		0.0	0.0		0.0	0.0	0.0	0.0
Fremont		0.0	0.0		0.0	0.0	0.0	0.0
Gem		0.0	0.0		0.0	0.0	0.0	0.0
Gooding		0.0	0.0		0.0	0.0	0.0	0.0
Idaho		0.0	0.0		0.0	0.0	0.0	0.0
Jefferson		0.0	0.0		0.0	0.0	0.0	0.0
Jerome		0.0	0.0		0.0	0.0	0.0	0.0
Kootenai		0.0	0.0		0.0	0.0	0.0	0.0
Latah		0.0	0.0		0.0	0.0	0.0	0.0
Lemhi		0.0	0.0		0.0	0.0	0.0	0.0
Lewis		0.0	0.0		0.0	0.0	0.0	0.0
Lincoln		0.0	0.0		0.0	0.0	0.0	0.0
Madison		0.0	0.0		0.0	0.0	0.0	0.0
Minidoka		0.0	0.0		0.0	0.0	0.0	0.0
Nez Perce		0.0	0.0		0.0	0.0	0.0	0.0
Oneida		0.0	0.0		0.0	0.0	0.0	0.0
Owyhee		0.0	0.0		0.0	0.0	0.0	0.0
Payette		0.0	0.0		0.0	0.0	0.0	0.0
Power		0.0	0.0		0.0	0.0	0.0	0.0
Shoshone		0.0	0.0		0.0	0.0	0.0	0.0
Teton		0.0	0.0		0.0	0.0	0.0	0.0
Twin Falls		0.0	0.0		0.0	0.0	0.0	0.0
Valley		0.0	0.0		0.0	0.0	0.0	0.0
Washington		0.0	0.0		0.0	0.0	0.0	0.0
Total		0.0	0.0		0.0	4.9	0.0	3.7

Dam Failure Loss Estimates: Oakley Dam—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$0	$0	$0	0.0%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$0	$0	$0	0.0%
Bear Lake	$118,567,794	$0	$0	$0	0.0%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$0	$0	$0	0.0%
Blaine	$73,361,974	$0	$0	$0	0.0%
Boise	$52,698,341	$0	$0	$0	0.0%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$0	$0	$0	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$0	$0	$0	0.0%
Camas	$16,931,555	$0	$0	$0	0.0%
Canyon	$338,752,262	$0	$0	$0	0.0%
Caribou	$41,741,085	$0	$0	$0	0.0%
Cassia	$136,212,673	$409,352	$3,492,585	$3,901,937	2.9%
Clark	$19,628,056	$0	$0	$0	0.0%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$0	$0	$0	0.0%
Elmore	$121,672,934	$0	$0	$0	0.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$0	$0	$0	0.0%
Gem	$32,328,886	$0	$0	$0	0.0%
Gooding	$204,224,556	$387,384	$0	$387,384	0.2%
Idaho	$117,609,627	$0	$0	$0	0.0%
Jefferson	$39,939,738	$0	$0	$0	0.0%
Jerome	$47,654,413	$0	$0	$0	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$0	$0	$0	0.0%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$0	$0	$0	0.0%
Madison	$37,896,876	$0	$0	$0	0.0%
Minidoka	$91,606,782	$0	$0	$0	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$0	$0	$0	0.0%
Owyhee	$124,432,815	$0	$0	$0	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$0	$0	$0	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$0	$0	$0	0.0%
Twin Falls	$237,242,142	$0	$0	$0	0.0%
Valley	$343,883,798	$0	$0	$0	0.0%
Washington	$24,170,129	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$796,736**	**$3,492,585**	**$4,289,321**	**0.0%**

Dam Failure Loss Estimates: Oakley Dam—State Facilities by Agency					
		Loss			
Agency	Total Value	State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$0	$0	0.0%
Bean Commission	$8,301,087	$0	$0	$0	0.0%
Board of Tax Appeals	$5,534,058	$0	$0	$0	0.0%
Boise State University	$2,246,961,513	$0	$0	$0	0.0%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$0	$0	$0	0.0%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$0	$0	$0	0.0%
Dept. of Agriculture	$97,806,722	$0	$619,393	$619,393	0.6%
Dept. of Commerce	$11,068,116	$0	$0	$0	0.0%
Dept. of Correction	$864,744,339	$0	$596,369	$596,369	0.1%
Dept. of Education	$2,767,029	$0	$0	$0	0.0%
Dept. of Environmental Quality	$168,788,769	$0	$0	$0	0.0%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$2,653	$0	$2,653	0.0%
Dept. of Health and Welfare	$215,154,580	$0	$738,759	$738,759	0.3%
Dept. of Insurance	$19,369,203	$0	$0	$0	0.0%
Dept. of Juvenile Corrections	$114,560,510	$0	$0	$0	0.0%
Dept. of Lands	$102,437,415	$0	$0	$0	0.0%
Dept. of Parks and Recreation	$1,954,405,534	$387,384	$0	$387,384	0.0%
Dept. of Transportation	$308,229,590	$137,248	$0	$137,248	0.0%
Dept. of Transportation-Aeronautics	$7,908,250	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$49,955,576	$0	$0	$0	0.0%
Div. of Financial Management	$2,767,029	$0	$0	$0	0.0%
Div. of Human Resources	$2,767,029	$0	$0	$0	0.0%
Div. of Military	$910,834,534	$754	$290,099	$290,853	0.0%
Div. of Occupational and Professional Licenses	$42,040,410	$0	$0	$0	0.0%
Div. of Veterans Services	$26,236,632	$0	$0	$0	0.0%
Div. of Vocational Rehabilitation	$88,544,928	$0	$0	$0	0.0%
Educational Services for the Deaf and the Blind	$73,782,544	$0	$0	$0	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$0	$0	0.0%
Forest Products Commission	$11,068,116	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$0	$0	0.0%
Idaho Barley Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$0	$0	0.0%
Idaho Commission for Libraries	$2,767,029	$0	$0	$0	0.0%
Idaho Crop Improvement Association	$7,437,949	$0	$0	$0	0.0%
Idaho Dept. of Labor	$73,269,804	$0	$0	$0	0.0%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$0	$0	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$0	$0	0.0%
Idaho Potato Commission	$5,534,058	$0	$0	$0	0.0%
Idaho Public Television	$156,044,267	$0	$0	$0	0.0%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$244,409	$244,409	0.6%
Idaho State Bar	$5,534,058	$0	$0	$0	0.0%
Idaho State Historical Society	$63,895,732	$0	$0	$0	0.0%
Idaho State Liquor Div.	$676,566,597	$0	$389,903	$389,903	0.1%
Idaho State Police	$94,954,955	$0	$0	$0	0.0%
Idaho State University	$1,474,436,327	$0	$403,633	$403,633	0.0%
Idaho Tax Commission	$24,903,261	$0	$0	$0	0.0%
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$0	$0	$0	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$0	$0	0.0%
ISP - Racing Commission	$5,534,058	$0	$0	$0	0.0%
ISP ΓÇô State Brand Board	$13,835,145	$0	$0	$0	0.0%
Judicial Branch / Supreme Court	$143,885,508	$268,697	$0	$268,697	0.2%
Lava Hot Springs Foundation	$19,261,830	$0	$0	$0	0.0%
Legislative House	$2,767,029	$0	$0	$0	0.0%
Legislative Senate	$2,767,029	$0	$0	$0	0.0%
Legislative Services	$5,534,058	$0	$0	$0	0.0%
Lewis-Clark State College	$295,427,089	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$0	$0	0.0%
Lottery Commission	$38,750,553	$0	$0	$0	0.0%
Office of Administrative Hearings	$5,534,058	$0	$0	$0	0.0%
Office of Drug Policy	$2,767,029	$0	$0	$0	0.0%
Office of Performance Evaluations	$2,767,029	$0	$0	$0	0.0%
Office of Species Conservation	$16,602,174	$0	$0	$0	0.0%
Office of the State Controller	$11,068,116	$0	$0	$0	0.0%
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$0	$0	0.0%
Public Employee Retirement System of Idaho	$22,324,940	$0	$0	$0	0.0%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$0	$0	$0	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$0	$0	$0	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$0	$0	$0	0.0%
Public Health Dist. 7 (Eastern)	$18,747,629	$0	$0	$0	0.0%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$0	$0	0.0%
State Appellate Public Defender	$5,534,058	$0	$0	$0	0.0%
State Board of Education	$98,757,000	$0	$0	$0	0.0%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$0	$0	$0	0.0%
State Public Defense Commission	$5,534,058	$0	$0	$0	0.0%
State Treasurer	$5,534,058	$0	$0	$0	0.0%
STEM Action Center	$2,777,667	$0	$0	$0	0.0%
University of Idaho	$2,035,323,146	$0	$210,019	$210,019	0.0%
Veteran's Cemetery - Blackfoot	$2,532,000	$0	$0	$0	0.0%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$2,767,029	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$796,736**	**$3,492,585**	**$4,289,321**	**0.0%**

Dam Failure Loss Estimates: Oakley Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		0.0	0.0		0.0	0.0	0.0	**0.0**
Adams		0.0	0.0		0.0	0.0	0.0	**0.0**
Bannock		0.0	0.0		0.0	0.0	0.0	**0.0**
Bear Lake		0.0	0.0		0.0	0.0	0.0	**0.0**
Benewah		0.0	0.0		0.0	0.0	0.0	**0.0**
Bingham		0.0	0.0		0.0	0.0	0.0	**0.0**
Blaine		0.0	0.0		0.0	0.0	0.0	**0.0**
Boise		0.0	0.0		0.0	0.0	0.0	**0.0**
Bonner		0.0	0.0		0.0	0.0	0.0	**0.0**
Bonneville		0.0	0.0		0.0	0.0	0.0	**0.0**
Boundary		0.0	0.0		0.0	0.0	0.0	**0.0**
Butte		0.0	0.0		0.0	0.0	0.0	**0.0**
Camas		0.0	0.0		0.0	0.0	0.0	**0.0**
Canyon		0.0	0.0		0.0	0.0	0.0	**0.0**
Caribou		0.0	0.0		0.0	0.0	0.0	**0.0**
Cassia		12.8	0.0		13.4	8.2	0.0	**10.0**
Clark		0.0	0.0		0.0	0.0	0.0	**0.0**
Clearwater		0.0	0.0		0.0	0.0	0.0	**0.0**
Custer		0.0	0.0		0.0	0.0	0.0	**0.0**
Elmore		0.0	0.0		0.0	0.0	0.0	**0.0**
Franklin		0.0	0.0		0.0	0.0	0.0	**0.0**
Fremont		0.0	0.0		0.0	0.0	0.0	**0.0**
Gem		0.0	0.0		0.0	0.0	0.0	**0.0**
Gooding		21.0	0.0		0.0	0.0	0.0	**21.0**
Idaho		0.0	0.0		0.0	0.0	0.0	**0.0**
Jefferson		0.0	0.0		0.0	0.0	0.0	**0.0**
Jerome		0.0	0.0		0.0	0.0	0.0	**0.0**
Kootenai		0.0	0.0		0.0	0.0	0.0	**0.0**
Latah		0.0	0.0		0.0	0.0	0.0	**0.0**
Lemhi		0.0	0.0		0.0	0.0	0.0	**0.0**
Lewis		0.0	0.0		0.0	0.0	0.0	**0.0**
Lincoln		0.0	0.0		0.0	0.0	0.0	**0.0**
Madison		0.0	0.0		0.0	0.0	0.0	**0.0**
Minidoka		0.0	0.0		0.0	0.0	0.0	**0.0**
Nez Perce		0.0	0.0		0.0	0.0	0.0	**0.0**
Oneida		0.0	0.0		0.0	0.0	0.0	**0.0**
Owyhee		0.0	0.0		0.0	0.0	0.0	**0.0**
Payette		0.0	0.0		0.0	0.0	0.0	**0.0**
Power		0.0	0.0		0.0	0.0	0.0	**0.0**
Shoshone		0.0	0.0		0.0	0.0	0.0	**0.0**
Teton		0.0	0.0		0.0	0.0	0.0	**0.0**
Twin Falls		16.3	0.0		0.0	0.0	0.0	**16.3**
Valley		0.0	0.0		0.0	0.0	0.0	**0.0**
Washington		0.0	0.0		0.0	0.0	0.0	**0.0**
Total		**15.3**	**0.0**		**13.4**	**8.2**	**0.0**	**11.7**

Dam Failure Loss Estimates: Winchester Dam—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		0.0	0.0		0.0	0.0	0.0	0.0
Adams		0.0	0.0		0.0	0.0	0.0	0.0
Bannock		0.0	0.0		0.0	0.0	0.0	0.0
Bear Lake		0.0	0.0		0.0	0.0	0.0	0.0
Benewah		0.0	0.0		0.0	0.0	0.0	0.0
Bingham		0.0	0.0		0.0	0.0	0.0	0.0
Blaine		0.0	0.0		0.0	0.0	0.0	0.0
Boise		0.0	0.0		0.0	0.0	0.0	0.0
Bonner		0.0	0.0		0.0	0.0	0.0	0.0
Bonneville		0.0	0.0		0.0	0.0	0.0	0.0
Boundary		0.0	0.0		0.0	0.0	0.0	0.0
Butte		0.0	0.0		0.0	0.0	0.0	0.0
Camas		0.0	0.0		0.0	0.0	0.0	0.0
Canyon		0.0	0.0		0.0	0.0	0.0	0.0
Caribou		0.0	0.0		0.0	0.0	0.0	0.0
Cassia		0.0	0.0		0.0	0.0	0.0	0.0
Clark		0.0	0.0		0.0	0.0	0.0	0.0
Clearwater		0.0	0.0		0.0	0.0	0.0	0.0
Custer		0.0	0.0		0.0	0.0	0.0	0.0
Elmore		0.0	0.0		0.0	0.0	0.0	0.0
Franklin		0.0	0.0		0.0	0.0	0.0	0.0
Fremont		0.0	0.0		0.0	0.0	0.0	0.0
Gem		0.0	0.0		0.0	0.0	0.0	0.0
Gooding		0.0	0.0		0.0	0.0	0.0	0.0
Idaho		0.0	0.0		0.0	0.0	0.0	0.0
Jefferson		0.0	0.0		0.0	0.0	0.0	0.0
Jerome		0.0	0.0		0.0	0.0	0.0	0.0
Kootenai		0.0	0.0		0.0	0.0	0.0	0.0
Latah		0.0	0.0		0.0	0.0	0.0	0.0
Lemhi		0.0	0.0		0.0	0.0	0.0	0.0
Lewis		0.0	0.0		0.0	0.0	0.0	0.0
Lincoln		0.0	0.0		0.0	0.0	0.0	0.0
Madison		0.0	0.0		0.0	0.0	0.0	0.0
Minidoka		0.0	0.0		0.0	0.0	0.0	0.0
Nez Perce		12.5	0.0		0.0	9.5	0.0	10.5
Oneida		0.0	0.0		0.0	0.0	0.0	0.0
Owyhee		0.0	0.0		0.0	0.0	0.0	0.0
Payette		0.0	0.0		0.0	0.0	0.0	0.0
Power		0.0	0.0		0.0	0.0	0.0	0.0
Shoshone		0.0	0.0		0.0	0.0	0.0	0.0
Teton		0.0	0.0		0.0	0.0	0.0	0.0
Twin Falls		0.0	0.0		0.0	0.0	0.0	0.0
Valley		0.0	0.0		0.0	0.0	0.0	0.0
Washington		0.0	0.0		0.0	0.0	0.0	0.0
Total		**12.5**	**0.0**		**0.0**	**9.5**	**0.0**	**10.5**

EARTHQUAKE EXPOSURE

Earthquake Exposure—Hazard Area			
County	**Total Area (acres)**	**Hazard Area (acres)**	**% of Total**
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	671,940	100.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	34,881	2.6%
Blaine	1,697,810	94,324	5.6%
Boise	1,220,249	69,833	5.7%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	504,194	41.5%
Boundary	818,171	0	0.0%
Butte	1,430,996	271,875	19.0%
Camas	688,595	368	0.1%
Canyon	386,679	0	0.0%
Caribou	1,152,858	835,994	72.5%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	176,969	15.7%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	2,386,080	75.6%
Elmore	1,984,649	1,188	0.1%
Franklin	427,606	381,011	89.1%
Fremont	1,214,126	351,265	28.9%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	990,077	33.9%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	43,931	5.7%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	21,947	7.6%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**6,835,876**	**12.8%**

Earthquake Exposure—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	6,054	0.0%
Benewah	0	0	0.0%
Bingham	0	1	0.0%
Blaine	0	309	0.0%
Boise	0	21	0.0%
Bonner	0	0	0.0%
Bonneville	0	1,578	0.0%
Boundary	0	0	0.0%
Butte	0	138	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	5,766	0.0%
Cassia	0	0	0.0%
Clark	85	85	99.8%
Clearwater	0	0	0.0%
Custer	0	3,818	0.0%
Elmore	0	0	0.0%
Franklin	0	13,421	0.0%
Fremont	0	918	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	944	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	146	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	1,906	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**85**	**35,107**	**0.2%**

Earthquake Exposure—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	50	$104,621,951	6	$13,945,842	56	$118,567,794
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	3	$445,521	1	$5,535	4	$451,056
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	7	$11,936,126	1	$2,767,029	8	$14,703,155
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	28	$16,387,600	10	$24,958,610	38	$41,346,210
Cassia	0	$0	0	$0	0	$0
Clark	1	$166,046	0	$0	1	$166,046
Clearwater	0	$0	0	$0	0	$0
Custer	85	$72,980,460	9	$24,903,261	94	$97,883,721
Elmore	0	$0	0	$0	0	$0
Franklin	21	$12,783,852	12	$33,204,348	33	$45,988,200
Fremont	43	$68,759,404	3	$2,816,030	46	$71,575,434
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	9	$4,546,332	4	$11,068,116	13	$15,614,448
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	1	$2,767,029	0	$0	1	$2,767,029
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	1	$2,767,029	0	$0	1	$2,767,029
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**249**	**$298,161,350**	**46**	**$113,668,771**	**295**	**$411,830,121**

Earthquake Exposure—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	3	$8,301,087	3	$8,301,087
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	2	$5,534,058	2	$5,534,058
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	103	$58,298,541	2	$5,534,058	105	$63,832,599
Dept. of Health and Welfare	0	$0	1	$2,767,029	1	$2,767,029
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	66	$182,623,914	0	$0	66	$182,623,914
Dept. of Transportation	40	$13,460,089	0	$0	40	$13,460,089
Dept. of Transportation-Aeronautics	6	$525,200	0	$0	6	$525,200
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	1	$2,767,029	1	$2,767,029
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	11	$8,528,063	11	$16,822,756	22	$25,350,820
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	2	$5,534,058	2	$5,534,058
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	4	$11,068,116	3	$8,301,087	7	$19,369,203
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	7	$1,077,360	0	$0	7	$1,077,360
Idaho State Liquor Div.	0	$0	11	$30,437,319	11	$30,437,319
Idaho State Police	3	$202,848	0	$0	3	$202,848
Idaho State University	5	$11,309,104	0	$0	5	$11,309,104
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	4	$11,068,116	0	$0	4	$11,068,116
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	3	$8,301,087	3	$8,301,087
Public Health Dist. 7 (Eastern)	0	$0	2	$5,534,058	2	$5,534,058
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	4	$11,068,116	4	$11,068,116
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**249**	**$298,161,350**	**46**	**$113,668,771**	**295**	**$411,830,121**

Earthquake Exposure—State Bridges

County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	21
Benewah	0
Bingham	0
Blaine	6
Boise	3
Bonner	0
Bonneville	1
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	22
Cassia	0
Clark	5
Clearwater	0
Custer	47
Elmore	0
Franklin	18
Fremont	5
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	9
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	2
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	3
Twin Falls	0
Valley	0
Washington	0
Total	**142**

Earthquake Exposure—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	98.5
Benewah	0.0
Bingham	0.0
Blaine	23.2
Boise	7.4
Bonner	0.0
Bonneville	24.9
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	89.3
Cassia	0.0
Clark	16.7
Clearwater	0.0
Custer	178.2
Elmore	0.0
Franklin	90.6
Fremont	33.4
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	69.2
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	17.1
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	5.5
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**654.0**

Earthquake Exposure—State Dams	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	98.5
Benewah	0.0
Bingham	0.0
Blaine	23.2
Boise	7.4
Bonner	0.0
Bonneville	24.9
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	89.3
Cassia	0.0
Clark	16.7
Clearwater	0.0
Custer	178.2
Elmore	0.0
Franklin	90.6
Fremont	33.4
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	69.2
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	17.1
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	5.5
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**654.0**

Earthquake Exposure—Canals	
County	Miles of Canal
Ada	200.1
Adams	195.3
Bannock	120.6
Bear Lake	106.4
Benewah	61.7
Bingham	36.6
Blaine	24.2
Boise	16.0
Bonner	11.0
Bonneville	4.4
Boundary	2.8
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**779.0**

Earthquake Exposure—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	5,493	5,493	100.0%	5,488	5,488	100.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	87	8,562	1.0%	87	9,426	0.9%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	457	12,203	3.7%	678	13,253	5.1%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	1	2,211	0.1%	1	2,218	0.1%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	3,989	4,115	97.0%	3,989	4,115	97.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	65	482	13.4%	44	694	6.4%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	4,902	5,190	94.5%	4,902	5,190	94.5%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	8,096	8,751	92.5%	9,610	10,275	93.5%
Fremont	1,797	7,431	24.2%	1,682	9,135	18.4%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	637	11,637	5.5%	637	11,637	5.5%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	362	1,084	33.4%	362	1,084	33.4%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	909	5,545	16.4%	891	5,465	16.3%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**26,795**	**636,309**	**4.2%**	**28,371**	**661,537**	**4.3%**

Earthquake Exposure—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	9	0	0	1	23	18	51
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	2	0	0	0	1	0	3
Boundary	0	0	0	0	0	0	0	0
Butte	0	2	0	0	0	0	0	2
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	32	1	0	1	10	10	54
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	4	4
Clearwater	0	0	0	0	0	0	0	0
Custer	0	12	0	0	1	16	0	29
Elmore	0	0	0	0	0	0	0	0
Franklin	0	10	1	0	1	15	6	33
Fremont	0	10	0	0	0	5	0	15
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	4	0	4
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	1	0	0	0	2	0	3
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**78**	**2**	**0**	**4**	**76**	**38**	**198**

Earthquake Exposure—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.6	0.6	0.0	1.6	1.6	0.0	15.3	15.3	0.0	876.3	876.3	0.0	4.5	4.5	0.0	151.3	151.3	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	54.1	54.1	0.0	0.0	0.0	0.0	0.4	0.4	0.0
Blaine	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.0	29.9	29.9	0.0	0.4	0.4	0.0	116.8	116.8	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	49.4	49.4	0.0	0.1	0.1	0.0	59.5	59.5	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.1	0.1	0.0	3.7	4.1	0.3	684.2	683.8	-0.3	6.7	6.7	0.0	92.9	92.9	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	396.2	396.2	0.0	0.1	0.1	0.0	28.5	28.5	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.7	0.7	0.0	0.7	0.7	0.0	7.7	7.7	0.0	1,219.1	1,219.1	0.0	4.7	4.7	0.0	73.2	73.2	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	267.1	267.0	-0.1	0.3	0.3	0.0	8.6	8.6	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.3	0.3	0.0	1.0	1.0	0.0	11.0	11.0	0.0	2,459.5	2,459.5	0.0	5.2	5.2	0.0	1,251.3	1,251.3	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	1.9	0.0
Franklin	0.9	1.4	0.5	1.9	2.3	0.4	30.6	36.7	6.1	542.0	534.9	-7.1	10.7	10.8	0.2	9.0	9.0	0.0
Fremont	0.3	0.3	0.0	1.1	1.1	0.0	5.6	5.6	0.0	441.5	441.5	0.0	1.4	1.4	0.0	98.5	98.5	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.1	0.1	0.0	1.3	1.3	0.0	1,302.2	1,302.2	0.0	1.7	1.7	0.0	241.7	241.7	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	0.0	67.1	67.1	0.0	0.3	0.3	0.0	0.5	0.5	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.2	0.2	0.1	0.9	1.1	0.2	3.0	2.8	-0.1	29.1	29.0	-0.1	0.2	0.2	0.0	0.9	0.9	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**3.0**	**3.5**	**0.5**	**7.4**	**8.0**	**0.6**	**79.2**	**85.6**	**6.4**	**8,418.3**	**8,410.7**	**-7.6**	**36.4**	**36.5**	**0.2**	**2,135.0**	**2,135.0**	**0.0**

EARTHQUAKE LOSS ESTIMATE

Earthquake Loss Estimates: Borah Peak Scenario—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$1,544	$1,010	$2,554	0.0%
Adams	$22,806,853	$0	$986	$986	0.0%
Bannock	$1,529,920,984	$5,738	$7,194	$12,932	0.0%
Bear Lake	$118,567,794	$527	$0	$527	0.0%
Benewah	$219,193,230	$15	$50	$65	0.0%
Bingham	$199,556,620	$10,978	$162	$11,141	0.0%
Blaine	$73,361,974	$51,352	$216,714	$268,066	0.4%
Boise	$52,698,341	$5,504	$1,941	$7,445	0.0%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$667	$1,479	$2,146	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$6,572	$22,966	$29,538	0.1%
Camas	$16,931,555	$2,621	$1,669	$4,290	0.0%
Canyon	$338,752,262	$15	$0	$15	0.0%
Caribou	$41,741,085	$468	$9	$477	0.0%
Cassia	$136,212,673	$8,362	$15,787	$24,149	0.0%
Clark	$19,628,056	$387	$0	$388	0.0%
Clearwater	$313,437,230	$147	$75	$222	0.0%
Custer	$100,729,289	$3,282,760	$2,167,444	$5,450,204	5.4%
Elmore	$121,672,934	$6,999	$6,212	$13,211	0.0%
Franklin	$45,988,200	$443	$0	$443	0.0%
Fremont	$318,769,649	$476	$8	$484	0.0%
Gem	$32,328,886	$0	$470	$470	0.0%
Gooding	$204,224,556	$25,821	$1,107	$26,928	0.0%
Idaho	$117,609,627	$395	$1,311	$1,707	0.0%
Jefferson	$39,939,738	$330	$0	$330	0.0%
Jerome	$47,654,413	$28,332	$23,534	$51,866	0.1%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$32	$50	$82	0.0%
Lemhi	$77,783,151	$92,788	$183,335	$276,123	0.4%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$14,850	$3,044	$17,894	0.1%
Madison	$37,896,876	$31	$1,229	$1,260	0.0%
Minidoka	$91,606,782	$19,023	$1,937	$20,960	0.0%
Nez Perce	$550,872,519	$16	$0	$16	0.0%
Oneida	$27,757,343	$1,860	$0	$1,860	0.0%
Owyhee	$124,432,815	$2,753	$498	$3,251	0.0%
Payette	$53,021,557	$0	$2	$2	0.0%
Power	$103,363,563	$32,472	$9,668	$42,140	0.0%
Shoshone	$100,429,189	$1	$25	$26	0.0%
Teton	$44,922,291	$129	$0	$129	0.0%
Twin Falls	$237,242,142	$27,539	$5	$27,544	0.0%
Valley	$343,883,798	$2,209	$2,437	$4,646	0.0%
Washington	$24,170,129	$443	$2	$444	0.0%
Total	**$14,773,166,388**	**$3,634,598**	**$2,672,361**	**$6,306,959**	**0.0%**

Earthquake Loss Estimates: Borah Peak Scenario—State Facilities by Agency

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$0	$0	0.0%
Bean Commission	$8,301,087	$0	$0	$0	0.0%
Board of Tax Appeals	$5,534,058	$0	$0	$0	0.0%
Boise State University	$2,246,961,513	$0	$0	$0	0.0%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$0	$0	$0	0.0%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$0	$0	$0	0.0%
Dept. of Agriculture	$97,806,722	$186	$830	$1,016	0.0%
Dept. of Commerce	$11,068,116	$0	$0	$0	0.0%
Dept. of Correction	$864,744,339	$852	$15,772	$16,624	0.0%
Dept. of Education	$2,767,029	$0	$0	$0	0.0%
Dept. of Environmental Quality	$168,788,769	$0	$5,811	$5,811	0.0%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$466,052	$9,911	$475,963	0.1%
Dept. of Health and Welfare	$215,154,580	$180	$6,364	$6,544	0.0%
Dept. of Insurance	$19,369,203	$0	$0	$0	0.0%
Dept. of Juvenile Corrections	$114,560,510	$7	$0	$7	0.0%
Dept. of Lands	$102,437,415	$1	$830	$831	0.0%
Dept. of Parks and Recreation	$1,954,405,534	$258,858	$0	$258,858	0.0%
Dept. of Transportation	$308,229,590	$29,658	$0	$29,658	0.0%
Dept. of Transportation-Aeronautics	$7,908,250	$396	$0	$396	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$100	$0	$100	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$34	$0	$34	0.5%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$49,955,576	$19,093	$35	$19,128	0.0%
Div. of Financial Management	$2,767,029	$0	$0	$0	0.0%
Div. of Human Resources	$2,767,029	$0	$0	$0	0.0%
Div. of Military	$910,834,534	$748,826	$1,126,730	$1,875,556	0.2%
Div. of Occupational and Professional Licenses	$42,040,410	$4	$0	$4	0.0%
Div. of Veterans Services	$26,236,632	$0	$0	$0	0.0%
Div. of Vocational Rehabilitation	$88,544,928	$0	$553	$553	0.0%
Educational Services for the Deaf and the Blind	$73,782,544	$2,807	$277	$3,083	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$0	$0	0.0%
Forest Products Commission	$11,068,116	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$0	$0	0.0%
Idaho Barley Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$0	$0	0.0%
Idaho Commission for Libraries	$2,767,029	$0	$0	$0	0.0%
Idaho Crop Improvement Association	$7,437,949	$29	$5	$34	0.0%
Idaho Dept. of Labor	$73,269,804	$104	$0	$104	0.0%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$553	$553	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$0	$0	0.0%
Idaho Potato Commission	$5,534,058	$0	$0	$0	0.0%
Idaho Public Television	$156,044,267	$72,288	$1,328,130	$1,400,417	0.9%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$830	$830	0.0%
Idaho State Bar	$5,534,058	$0	$0	$0	0.0%
Idaho State Historical Society	$63,895,732	$26	$0	$26	0.0%
Idaho State Liquor Div.	$676,566,597	$0	$101,550	$101,550	0.0%
Idaho State Police	$94,954,955	$404	$0	$404	0.0%
Idaho State University	$1,474,436,327	$2,007,697	$11,068	$2,018,765	0.1%
Idaho Tax Commission	$24,903,261	$0	$0	$0	0.0%
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$355	$0	$355	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$0	$0	0.0%
ISP - Racing Commission	$5,534,058	$0	$0	$0	0.0%
ISP ΓÇô State Brand Board	$13,835,145	$0	$0	$0	0.0%
Judicial Branch / Supreme Court	$143,885,508	$21,029	$0	$21,029	0.0%
Lava Hot Springs Foundation	$19,261,830	$0	$0	$0	0.0%
Legislative House	$2,767,029	$0	$0	$0	0.0%
Legislative Senate	$2,767,029	$0	$0	$0	0.0%
Legislative Services	$5,534,058	$0	$0	$0	0.0%
Lewis-Clark State College	$295,427,089	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$0	$0	0.0%
Lottery Commission	$38,750,553	$0	$0	$0	0.0%
Office of Administrative Hearings	$5,534,058	$0	$0	$0	0.0%
Office of Drug Policy	$2,767,029	$0	$0	$0	0.0%
Office of Performance Evaluations	$2,767,029	$0	$0	$0	0.0%
Office of Species Conservation	$16,602,174	$553	$1,107	$1,660	0.0%
Office of the State Controller	$11,068,116	$0	$0	$0	0.0%
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$0	$0	0.0%
Public Employee Retirement System of Idaho	$22,324,940	$0	$0	$0	0.0%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$1	$0	$1	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$3,265	$830	$4,095	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$12	$4,981	$4,992	0.0%
Public Health Dist. 7 (Eastern)	$18,747,629	$190	$41,229	$41,418	0.2%
Public Safety Communications	$5,534,058	$25	$0	$25	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$0	$0	0.0%
State Appellate Public Defender	$5,534,058	$0	$0	$0	0.0%
State Board of Education	$98,757,000	$44	$0	$44	0.0%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$0	$0	$0	0.0%
State Public Defense Commission	$5,534,058	$0	$0	$0	0.0%
State Treasurer	$5,534,058	$0	$0	$0	0.0%
STEM Action Center	$2,777,667	$0	$0	$0	0.0%
University of Idaho	$2,035,323,146	$1,414	$14,965	$16,379	0.0%
Veteran's Cemetery - Blackfoot	$2,532,000	$109	$0	$109	0.0%
Veterans State Cemetery Boise	$10,965,477	$1	$0	$1	0.0%
Workforce Development Council	$2,767,029	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$3,634,598**	**$2,672,361**	**$6,306,959**	**0.0%**

Earthquake Loss Estimates: Borah Peak Scenario—Average % of Structure Value to Critical Facilities

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		0.0	0.0		0.0	0.0	0.0	0.0
Adams		0.0	0.0		0.0	0.0	0.0	0.0
Bannock		0.0	0.2		0.0	0.0	0.0	0.0
Bear Lake		0.0	0.0		0.0	0.0	0.0	0.0
Benewah		0.0	0.0		0.0	0.0	0.0	0.0
Bingham		0.1	0.3		0.0	0.0	0.0	0.0
Blaine		2.0	2.9		0.2	0.2	0.0	0.9
Boise		0.0	0.0		0.0	0.0	0.0	0.0
Bonner		0.0	0.0		0.0	0.0	0.0	0.0
Bonneville		0.0	0.1		0.0	0.0	0.0	0.0
Boundary		0.0	0.0		0.0	0.0	0.0	0.0
Butte		0.9	0.0		0.1	0.1	0.0	0.6
Camas		0.7	0.0		0.0	0.1	0.0	0.1
Canyon		0.0	0.0		0.0	0.0	0.0	0.0
Caribou		0.0	0.0		0.0	0.0	0.0	0.0
Cassia		0.2	0.0		0.0	0.0	0.0	0.1
Clark		0.3	0.0		0.0	0.0	0.0	0.1
Clearwater		0.0	0.0		0.0	0.0	0.0	0.0
Custer		3.6	0.0		0.0	3.7	0.0	3.5
Elmore		0.1	0.0		0.0	0.0	0.0	0.0
Franklin		0.0	0.0		0.0	0.0	0.0	0.0
Fremont		0.0	0.0		0.0	0.0	0.0	0.0
Gem		0.0	0.0		0.0	0.0	0.0	0.0
Gooding		0.2	0.5		0.0	0.0	0.0	0.1
Idaho		0.0	0.0		0.0	0.0	0.0	0.0
Jefferson		0.1	0.0		0.0	0.0	0.0	0.0
Jerome		0.3	0.5		0.0	0.0	0.0	0.2
Kootenai		0.0	0.0		0.0	0.0	0.0	0.0
Latah		0.0	0.0		0.0	0.0	0.0	0.0
Lemhi		0.5	0.0		0.0	0.1	0.0	0.2
Lewis		0.0	0.0		0.0	0.0	0.0	0.0
Lincoln		0.6	0.0		0.0	0.0	0.0	0.3
Madison		0.0	0.0		0.0	0.0	0.0	0.0
Minidoka		0.3	0.0		0.0	0.0	0.0	0.1
Nez Perce		0.0	0.0		0.0	0.0	0.0	0.0
Oneida		0.0	0.0		0.0	0.0	0.0	0.0
Owyhee		0.0	0.0		0.0	0.0	0.0	0.0
Payette		0.0	0.0		0.0	0.0	0.0	0.0
Power		0.1	0.0		0.0	0.0	0.0	0.1
Shoshone		0.0	0.0		0.0	0.0	0.0	0.0
Teton		0.0	0.0		0.0	0.0	0.0	0.0
Twin Falls		0.2	0.4		0.0	0.0	0.0	0.1
Valley		0.0	0.0		0.0	0.0	0.0	0.0
Washington		0.0	0.0		0.0	0.0	0.0	0.0
Total		**0.2**	**0.5**		**0.0**	**0.0**	**0.0**	**0.1**

Earthquake Loss Estimates: Eastern Bear Lake Scenario—State Facilities by County					
		Loss			
County	Total Value	State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$0	$0	$0	0.0%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$241,179	$114,161	$355,340	0.0%
Bear Lake	$118,567,794	$29,450,875	$5,731,907	$35,182,782	29.7%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$47,682	$33,023	$80,705	0.0%
Blaine	$73,361,974	$0	$0	$0	0.0%
Boise	$52,698,341	$0	$0	$0	0.0%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$98,186	$71,717	$169,903	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$32	$0	$32	0.0%
Camas	$16,931,555	$0	$0	$0	0.0%
Canyon	$338,752,262	$0	$0	$0	0.0%
Caribou	$41,741,085	$526,591	$461,209	$987,800	2.4%
Cassia	$136,212,673	$493	$0	$493	0.0%
Clark	$19,628,056	$20	$0	$21	0.0%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$3	$0	$3	0.0%
Elmore	$121,672,934	$0	$0	$0	0.0%
Franklin	$45,988,200	$127,458	$321,805	$449,263	1.0%
Fremont	$318,769,649	$1,844	$1,107	$2,951	0.0%
Gem	$32,328,886	$0	$0	$0	0.0%
Gooding	$204,224,556	$0	$0	$0	0.0%
Idaho	$117,609,627	$0	$0	$0	0.0%
Jefferson	$39,939,738	$3,995	$1,661	$5,656	0.0%
Jerome	$47,654,413	$0	$0	$0	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$0	$0	$0	0.0%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$0	$0	$0	0.0%
Madison	$37,896,876	$372	$2,767	$3,139	0.0%
Minidoka	$91,606,782	$717	$0	$717	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$28,208	$13,835	$42,043	0.2%
Owyhee	$124,432,815	$0	$0	$0	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$11,123	$4,336	$15,459	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$3,390	$2,214	$5,603	0.0%
Twin Falls	$237,242,142	$0	$0	$0	0.0%
Valley	$343,883,798	$0	$0	$0	0.0%
Washington	$24,170,129	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$30,542,168**	**$6,759,742**	**$37,301,910**	**0.3%**

Earthquake Loss Estimates: Eastern Bear Lake Scenario—State Facilities by Agency

Agency	Total Value	Loss: State-Owned Facilities	Loss: State-Leased Facilities	Loss: Total	Loss: % of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$0	$0	0.0%
Bean Commission	$8,301,087	$0	$0	$0	0.0%
Board of Tax Appeals	$5,534,058	$0	$0	$0	0.0%
Boise State University	$2,246,961,513	$0	$2,490	$2,490	0.0%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$0	$5,534	$5,534	0.0%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$553	$553	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$6,453	$2,767	$9,221	0.0%
Dept. of Agriculture	$97,806,722	$0	$9,408	$9,408	0.0%
Dept. of Commerce	$11,068,116	$5,257	$0	$5,257	0.0%
Dept. of Correction	$864,744,339	$7,236	$90,759	$97,995	0.0%
Dept. of Education	$2,767,029	$0	$0	$0	0.0%
Dept. of Environmental Quality	$168,788,769	$0	$96,846	$96,846	0.1%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$217,955	$32,919	$250,874	0.1%
Dept. of Health and Welfare	$215,154,580	$1,933	$35,695	$37,628	0.0%
Dept. of Insurance	$19,369,203	$0	$5,534	$5,534	0.0%
Dept. of Juvenile Corrections	$114,560,510	$848	$1,107	$1,954	0.0%
Dept. of Lands	$102,437,415	$3,796	$170	$3,966	0.0%
Dept. of Parks and Recreation	$1,954,405,534	$23,581,147	$0	$23,581,147	1.2%
Dept. of Transportation	$308,229,590	$206,515	$0	$206,515	0.1%
Dept. of Transportation-Aeronautics	$7,908,250	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$2,442	$0	$2,442	0.4%
Dept. of Transportation-Dist. 6	$2,199,267	$43	$0	$43	0.0%
Dept. of Water Resources	$49,955,576	$553	$28,777	$29,331	0.1%
Div. of Financial Management	$2,767,029	$0	$0	$0	0.0%
Div. of Human Resources	$2,767,029	$0	$0	$0	0.0%
Div. of Military	$910,834,534	$862,414	$458,419	$1,320,833	0.1%
Div. of Occupational and Professional Licenses	$42,040,410	$287	$0	$287	0.0%
Div. of Veterans Services	$26,236,632	$0	$1,384	$1,384	0.0%
Div. of Vocational Rehabilitation	$88,544,928	$0	$66,962	$66,962	0.1%
Educational Services for the Deaf and the Blind	$73,782,544	$0	$3,044	$3,044	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$0	$0	0.0%
Forest Products Commission	$11,068,116	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$0	$0	0.0%
Idaho Barley Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$0	$0	0.0%
Idaho Commission for Libraries	$2,767,029	$0	$0	$0	0.0%
Idaho Crop Improvement Association	$7,437,949	$223	$0	$223	0.0%
Idaho Dept. of Labor	$73,269,804	$3,188	$2,767	$5,955	0.0%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$3,874	$3,874	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$0	$0	0.0%
Idaho Potato Commission	$5,534,058	$0	$1,384	$1,384	0.0%
Idaho Public Television	$156,044,267	$2,172,840	$30,567	$2,203,407	1.4%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$83,288	$83,288	0.2%
Idaho State Bar	$5,534,058	$0	$0	$0	0.0%
Idaho State Historical Society	$63,895,732	$14,171	$0	$14,171	0.0%
Idaho State Liquor Div.	$676,566,597	$0	$2,456,292	$2,456,292	0.4%
Idaho State Police	$94,954,955	$8,314	$1,660	$9,975	0.0%
Idaho State University	$1,474,436,327	$2,031,078	$31,821	$2,062,899	0.1%
Idaho Tax Commission	$24,903,261	$2,767	$1,384	$4,151	0.0%
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$31,887	$0	$31,887	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$1,107	$1,107	0.0%
ISP - Racing Commission	$5,534,058	$0	$1,384	$1,384	0.0%
ISP ΓÇô State Brand Board	$13,835,145	$0	$1,384	$1,384	0.0%
Judicial Branch / Supreme Court	$143,885,508	$1,283,348	$0	$1,283,348	0.9%
Lava Hot Springs Foundation	$19,261,830	$33,115	$4,381	$37,496	0.2%
Legislative House	$2,767,029	$0	$0	$0	0.0%
Legislative Senate	$2,767,029	$0	$0	$0	0.0%
Legislative Services	$5,534,058	$0	$0	$0	0.0%
Lewis-Clark State College	$295,427,089	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$0	$0	0.0%
Lottery Commission	$38,750,553	$0	$4,981	$4,981	0.0%
Office of Administrative Hearings	$5,534,058	$0	$0	$0	0.0%
Office of Drug Policy	$2,767,029	$0	$0	$0	0.0%
Office of Performance Evaluations	$2,767,029	$0	$0	$0	0.0%
Office of Species Conservation	$16,602,174	$0	$0	$0	0.0%
Office of the State Controller	$11,068,116	$0	$0	$0	0.0%
Pocatello Veteran's Home	$13,450,568	$751	$0	$751	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$0	$0	0.0%
Public Employee Retirement System of Idaho	$22,324,940	$0	$2,767	$2,767	0.0%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$0	$0	$0	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$7	$0	$7	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$3,060	$1,687,058	$1,690,118	7.4%
Public Health Dist. 7 (Eastern)	$18,747,629	$3,872	$0	$3,872	0.0%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$0	$0	0.0%
State Appellate Public Defender	$5,534,058	$0	$0	$0	0.0%
State Board of Education	$98,757,000	$51,451	$0	$51,451	0.1%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$0	$0	$0	0.0%
State Public Defense Commission	$5,534,058	$0	$0	$0	0.0%
State Treasurer	$5,534,058	$0	$0	$0	0.0%
STEM Action Center	$2,777,667	$0	$0	$0	0.0%
University of Idaho	$2,035,323,146	$3,852	$1,601,280	$1,605,132	0.1%
Veteran's Cemetery - Blackfoot	$2,532,000	$1,363	$0	$1,363	0.1%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$2,767,029	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$30,542,168**	**$6,759,742**	**$37,301,910**	**0.3%**

Earthquake Loss Estimates: Eastern Bear Lake Scenario—Average % of Structure Value to Critical Facilities

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		0.0	0.0		0.0	0.0	0.0	**0.0**
Adams		0.0	0.0		0.0	0.0	0.0	**0.0**
Bannock		0.1	0.1		0.0	0.1	0.0	**0.1**
Bear Lake		46.3	0.0		34.6	53.4	6.7	**35.3**
Benewah		0.0	0.0		0.0	0.0	0.0	**0.0**
Bingham		0.0	0.1		0.0	0.0	0.0	**0.0**
Blaine		0.0	0.0		0.0	0.0	0.0	**0.0**
Boise		0.0	0.0		0.0	0.0	0.0	**0.0**
Bonner		0.0	0.0		0.0	0.0	0.0	**0.0**
Bonneville		0.0	0.1		0.0	0.0	0.0	**0.0**
Boundary		0.0	0.0		0.0	0.0	0.0	**0.0**
Butte		0.0	0.0		0.0	0.0	0.0	**0.0**
Camas		0.0	0.0		0.0	0.0	0.0	**0.0**
Canyon		0.0	0.0		0.0	0.0	0.0	**0.0**
Caribou		2.6	16.6		2.3	2.0	0.2	**2.3**
Cassia		0.0	0.0		0.0	0.0	0.0	**0.0**
Clark		0.0	0.0		0.0	0.0	0.0	**0.0**
Clearwater		0.0	0.0		0.0	0.0	0.0	**0.0**
Custer		0.0	0.0		0.0	0.0	0.0	**0.0**
Elmore		0.0	0.0		0.0	0.0	0.0	**0.0**
Franklin		1.2	5.3		0.8	0.7	0.0	**0.8**
Fremont		0.0	0.0		0.0	0.0	0.0	**0.0**
Gem		0.0	0.0		0.0	0.0	0.0	**0.0**
Gooding		0.0	0.0		0.0	0.0	0.0	**0.0**
Idaho		0.0	0.0		0.0	0.0	0.0	**0.0**
Jefferson		0.0	0.0		0.0	0.0	0.0	**0.0**
Jerome		0.0	0.0		0.0	0.0	0.0	**0.0**
Kootenai		0.0	0.0		0.0	0.0	0.0	**0.0**
Latah		0.0	0.0		0.0	0.0	0.0	**0.0**
Lemhi		0.0	0.0		0.0	0.0	0.0	**0.0**
Lewis		0.0	0.0		0.0	0.0	0.0	**0.0**
Lincoln		0.0	0.0		0.0	0.0	0.0	**0.0**
Madison		0.0	0.0		0.0	0.0	0.0	**0.0**
Minidoka		0.0	0.0		0.0	0.0	0.0	**0.0**
Nez Perce		0.0	0.0		0.0	0.0	0.0	**0.0**
Oneida		0.0	0.0		0.2	0.1	0.0	**0.1**
Owyhee		0.0	0.0		0.0	0.0	0.0	**0.0**
Payette		0.0	0.0		0.0	0.0	0.0	**0.0**
Power		0.0	0.0		0.0	0.0	0.0	**0.0**
Shoshone		0.0	0.0		0.0	0.0	0.0	**0.0**
Teton		0.0	0.0		0.0	0.0	0.0	**0.0**
Twin Falls		0.0	0.0		0.0	0.0	0.0	**0.0**
Valley		0.0	0.0		0.0	0.0	0.0	**0.0**
Washington		0.0	0.0		0.0	0.0	0.0	**0.0**
Total		**0.5**	**0.9**		**0.3**	**0.8**	**0.2**	**0.6**

Earthquake Loss Estimates: Lemhi Scenario—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$1	$0	$1	0.0%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$68,653	$25,098	$93,750	0.0%
Bear Lake	$118,567,794	$1	$0	$1	0.0%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$178,522	$54,330	$232,852	0.1%
Blaine	$73,361,974	$4,942	$9,432	$14,374	0.0%
Boise	$52,698,341	$10	$0	$10	0.0%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$206,298	$164,633	$370,931	0.1%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$71,303	$105,147	$176,450	0.7%
Camas	$16,931,555	$1,430	$1,148	$2,578	0.0%
Canyon	$338,752,262	$0	$0	$0	0.0%
Caribou	$41,741,085	$16	$0	$16	0.0%
Cassia	$136,212,673	$477	$0	$477	0.0%
Clark	$19,628,056	$8,801	$9,802	$18,603	0.1%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$1,040,238	$1,406,680	$2,446,919	2.4%
Elmore	$121,672,934	$18	$0	$18	0.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$57,002	$3,874	$60,876	0.0%
Gem	$32,328,886	$0	$0	$0	0.0%
Gooding	$204,224,556	$146	$0	$146	0.0%
Idaho	$117,609,627	$27	$0	$27	0.0%
Jefferson	$39,939,738	$70,666	$8,584	$79,250	0.2%
Jerome	$47,654,413	$39	$14	$53	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$1,382,598	$1,616,542	$2,999,140	3.9%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$3,105	$1,937	$5,042	0.0%
Madison	$37,896,876	$2,305	$11,254	$13,558	0.0%
Minidoka	$91,606,782	$9,328	$4,427	$13,755	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$0	$0	$0	0.0%
Owyhee	$124,432,815	$1	$0	$1	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$4,954	$3,320	$8,274	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$983	$0	$983	0.0%
Twin Falls	$237,242,142	$122	$1	$122	0.0%
Valley	$343,883,798	$13	$7	$20	0.0%
Washington	$24,170,129	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$3,111,998**	**$3,426,227**	**$6,538,225**	**0.0%**

Earthquake Loss Estimates: Lemhi Scenario—State Facilities by Agency

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$0	$0	0.0%
Bean Commission	$8,301,087	$0	$0	$0	0.0%
Board of Tax Appeals	$5,534,058	$0	$0	$0	0.0%
Boise State University	$2,246,961,513	$0	$4,981	$4,981	0.0%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$0	$6,641	$6,641	0.0%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$12,506	$1,107	$13,613	0.0%
Dept. of Agriculture	$97,806,722	$18	$21,583	$21,601	0.0%
Dept. of Commerce	$11,068,116	$0	$0	$0	0.0%
Dept. of Correction	$864,744,339	$9,692	$16,049	$25,741	0.0%
Dept. of Education	$2,767,029	$0	$0	$0	0.0%
Dept. of Environmental Quality	$168,788,769	$0	$14,389	$14,389	0.0%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$1,045,280	$1,336,675	$2,381,955	0.6%
Dept. of Health and Welfare	$215,154,580	$3,224	$24,073	$27,297	0.0%
Dept. of Insurance	$19,369,203	$0	$6,641	$6,641	0.0%
Dept. of Juvenile Corrections	$114,560,510	$20,392	$1,107	$21,499	0.0%
Dept. of Lands	$102,437,415	$9,315	$0	$9,316	0.0%
Dept. of Parks and Recreation	$1,954,405,534	$504,629	$0	$504,629	0.0%
Dept. of Transportation	$308,229,590	$125,943	$0	$125,943	0.0%
Dept. of Transportation-Aeronautics	$7,908,250	$86	$0	$86	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$5	$0	$5	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$4	$0	$4	0.1%
Dept. of Transportation-Dist. 5	$611,399	$2	$0	$2	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$334	$0	$334	0.0%
Dept. of Water Resources	$49,955,576	$6,087	$3,244	$9,331	0.0%
Div. of Financial Management	$2,767,029	$0	$0	$0	0.0%
Div. of Human Resources	$2,767,029	$0	$0	$0	0.0%
Div. of Military	$910,834,534	$939,937	$323,981	$1,263,918	0.1%
Div. of Occupational and Professional Licenses	$42,040,410	$556	$0	$556	0.0%
Div. of Veterans Services	$26,236,632	$0	$553	$553	0.0%
Div. of Vocational Rehabilitation	$88,544,928	$0	$18,816	$18,816	0.0%
Educational Services for the Deaf and the Blind	$73,782,544	$98	$5,534	$5,632	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$0	$0	0.0%
Forest Products Commission	$11,068,116	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$0	$0	0.0%
Idaho Barley Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$0	$0	0.0%
Idaho Commission for Libraries	$2,767,029	$0	$0	$0	0.0%
Idaho Crop Improvement Association	$7,437,949	$1,397	$1	$1,397	0.0%
Idaho Dept. of Labor	$73,269,804	$3,846	$5,534	$9,381	0.0%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$6,641	$6,641	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$0	$0	0.0%
Idaho Potato Commission	$5,534,058	$0	$1,384	$1,384	0.0%
Idaho Public Television	$156,044,267	$3,233	$1,174,737	$1,177,970	0.8%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$5,534	$5,534	0.0%
Idaho State Bar	$5,534,058	$0	$0	$0	0.0%
Idaho State Historical Society	$63,895,732	$3	$0	$3	0.0%
Idaho State Liquor Div.	$676,566,597	$0	$168,512	$168,512	0.0%
Idaho State Police	$94,954,955	$3,005	$5,534	$8,539	0.0%
Idaho State University	$1,474,436,327	$153,761	$42,889	$196,649	0.0%
Idaho Tax Commission	$24,903,261	$553	$2,767	$3,320	0.0%
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$66,374	$0	$66,374	0.1%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$5,534	$5,534	0.0%
ISP - Racing Commission	$5,534,058	$0	$2,767	$2,767	0.1%
ISP ΓÇô State Brand Board	$13,835,145	$0	$2,767	$2,767	0.0%
Judicial Branch / Supreme Court	$143,885,508	$81,074	$0	$81,074	0.1%
Lava Hot Springs Foundation	$19,261,830	$56	$9	$65	0.0%
Legislative House	$2,767,029	$0	$0	$0	0.0%
Legislative Senate	$2,767,029	$0	$0	$0	0.0%
Legislative Services	$5,534,058	$0	$0	$0	0.0%
Lewis-Clark State College	$295,427,089	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$0	$0	0.0%
Lottery Commission	$38,750,553	$0	$6,364	$6,364	0.0%
Office of Administrative Hearings	$5,534,058	$0	$0	$0	0.0%
Office of Drug Policy	$2,767,029	$0	$0	$0	0.0%
Office of Performance Evaluations	$2,767,029	$0	$0	$0	0.0%
Office of Species Conservation	$16,602,174	$2,767	$5,534	$8,301	0.1%
Office of the State Controller	$11,068,116	$0	$0	$0	0.0%
Pocatello Veteran's Home	$13,450,568	$112	$0	$112	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$0	$0	0.0%
Public Employee Retirement System of Idaho	$22,324,940	$0	$1,107	$1,107	0.0%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$5	$0	$5	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$562	$553	$1,115	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$774	$21,029	$21,804	0.1%
Public Health Dist. 7 (Eastern)	$18,747,629	$8,803	$97,953	$106,755	0.6%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$0	$0	0.0%
State Appellate Public Defender	$5,534,058	$0	$0	$0	0.0%
State Board of Education	$98,757,000	$99,705	$0	$99,705	0.1%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$0	$0	$0	0.0%
State Public Defense Commission	$5,534,058	$0	$0	$0	0.0%
State Treasurer	$5,534,058	$0	$0	$0	0.0%
STEM Action Center	$2,777,667	$0	$0	$0	0.0%
University of Idaho	$2,035,323,146	$5,128	$83,705	$88,833	0.0%
Veteran's Cemetery - Blackfoot	$2,532,000	$2,730	$0	$2,730	0.1%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$2,767,029	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$3,111,998**	**$3,426,227**	**$6,538,225**	**0.0%**

Earthquake Loss Estimates: Lemhi Scenario—Average % of Structure Value to Critical Facilities								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		0.0	0.0		0.0	0.0	0.0	0.0
Adams		0.0	0.0		0.0	0.0	0.0	0.0
Bannock		0.0	0.0		0.0	0.0	0.0	0.0
Bear Lake		0.0	0.0		0.0	0.0	0.0	0.0
Benewah		0.0	0.0		0.0	0.0	0.0	0.0
Bingham		0.2	0.2		0.1	0.1	0.0	0.1
Blaine		0.0	0.0		0.0	0.0	0.0	0.0
Boise		0.0	0.0		0.0	0.0	0.0	0.0
Bonner		0.0	0.0		0.0	0.0	0.0	0.0
Bonneville		0.1	0.3		0.1	0.1	0.0	0.1
Boundary		0.0	0.0		0.0	0.0	0.0	0.0
Butte		14.9	0.0		0.4	4.8	0.4	11.5
Camas		0.0	0.0		0.0	0.0	0.0	0.0
Canyon		0.0	0.0		0.0	0.0	0.0	0.0
Caribou		0.0	0.0		0.0	0.0	0.0	0.0
Cassia		0.0	0.0		0.0	0.0	0.0	0.0
Clark		2.2	0.0		0.0	0.1	0.0	0.8
Clearwater		0.0	0.0		0.0	0.0	0.0	0.0
Custer		1.6	0.0		0.0	1.1	0.0	1.2
Elmore		0.0	0.0		0.0	0.0	0.0	0.0
Franklin		0.0	0.0		0.0	0.0	0.0	0.0
Fremont		0.0	0.0		0.0	0.0	0.0	0.0
Gem		0.0	0.0		0.0	0.0	0.0	0.0
Gooding		0.0	0.0		0.0	0.0	0.0	0.0
Idaho		0.0	0.0		0.0	0.0	0.0	0.0
Jefferson		0.6	0.0		0.1	0.3	0.0	0.3
Jerome		0.0	0.0		0.0	0.0	0.0	0.0
Kootenai		0.0	0.0		0.0	0.0	0.0	0.0
Latah		0.0	0.0		0.0	0.0	0.0	0.0
Lemhi		0.1	0.0		0.2	3.2	0.0	1.7
Lewis		0.0	0.0		0.0	0.0	0.0	0.0
Lincoln		0.0	0.0		0.0	0.0	0.0	0.0
Madison		0.0	0.1		0.0	0.0	0.0	0.0
Minidoka		0.0	0.0		0.0	0.0	0.0	0.0
Nez Perce		0.0	0.0		0.0	0.0	0.0	0.0
Oneida		0.0	0.0		0.0	0.0	0.0	0.0
Owyhee		0.0	0.0		0.0	0.0	0.0	0.0
Payette		0.0	0.0		0.0	0.0	0.0	0.0
Power		0.0	0.0		0.0	0.0	0.0	0.0
Shoshone		0.0	0.0		0.0	0.0	0.0	0.0
Teton		0.0	0.0		0.0	0.0	0.0	0.0
Twin Falls		0.0	0.0		0.0	0.0	0.0	0.0
Valley		0.0	0.0		0.0	0.0	0.0	0.0
Washington		0.0	0.0		0.0	0.0	0.0	0.0
Total		**0.4**	**0.0**		**0.0**	**0.1**	**0.0**	**0.2**

Earthquake Loss Estimates: Squaw Creek Scenario—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$84,449,860	$18,304,941	$102,754,801	1.8%
Adams	$22,806,853	$17,033	$26,907	$43,940	0.2%
Bannock	$1,529,920,984	$0	$0	$0	0.0%
Bear Lake	$118,567,794	$0	$0	$0	0.0%
Benewah	$219,193,230	$0	$0	$0	0.0%
Bingham	$199,556,620	$0	$0	$0	0.0%
Blaine	$73,361,974	$81	$0	$81	0.0%
Boise	$52,698,341	$93,596	$567,404	$661,000	1.3%
Bonner	$299,113,273	$0	$0	$0	0.0%
Bonneville	$444,169,706	$0	$0	$0	0.0%
Boundary	$46,863,026	$0	$0	$0	0.0%
Butte	$24,458,189	$0	$0	$0	0.0%
Camas	$16,931,555	$1,534	$1,108	$2,641	0.0%
Canyon	$338,752,262	$945,740	$1,917,067	$2,862,807	0.8%
Caribou	$41,741,085	$0	$0	$0	0.0%
Cassia	$136,212,673	$0	$0	$0	0.0%
Clark	$19,628,056	$0	$0	$0	0.0%
Clearwater	$313,437,230	$0	$0	$0	0.0%
Custer	$100,729,289	$952	$553	$1,505	0.0%
Elmore	$121,672,934	$9,943	$12,452	$22,395	0.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$0	$0	$0	0.0%
Gem	$32,328,886	$875,925	$4,678,618	$5,554,543	17.2%
Gooding	$204,224,556	$146	$0	$146	0.0%
Idaho	$117,609,627	$12	$0	$12	0.0%
Jefferson	$39,939,738	$0	$0	$0	0.0%
Jerome	$47,654,413	$39	$14	$53	0.0%
Kootenai	$551,436,146	$0	$0	$0	0.0%
Latah	$1,696,574,346	$0	$0	$0	0.0%
Lemhi	$77,783,151	$1	$0	$1	0.0%
Lewis	$87,555,673	$0	$0	$0	0.0%
Lincoln	$32,750,412	$27	$0	$27	0.0%
Madison	$37,896,876	$0	$0	$0	0.0%
Minidoka	$91,606,782	$0	$0	$0	0.0%
Nez Perce	$550,872,519	$0	$0	$0	0.0%
Oneida	$27,757,343	$0	$0	$0	0.0%
Owyhee	$124,432,815	$20,256	$53,042	$73,298	0.1%
Payette	$53,021,557	$80,304	$131,835	$212,139	0.4%
Power	$103,363,563	$0	$0	$0	0.0%
Shoshone	$100,429,189	$0	$0	$0	0.0%
Teton	$44,922,291	$0	$0	$0	0.0%
Twin Falls	$237,242,142	$122	$1	$122	0.0%
Valley	$343,883,798	$935,307	$657,948	$1,593,255	0.5%
Washington	$24,170,129	$235,319	$59,498	$294,816	1.2%
Total	**$14,773,166,388**	**$87,666,195**	**$26,411,386**	**$114,077,582**	**0.8%**

Earthquake Loss Estimates: Squaw Creek Scenario—State Facilities by Agency

Agency	Total Value	Loss: State-Owned Facilities	Loss: State-Leased Facilities	Loss: Total	Loss: % of Total Value
Arts Commission	$5,534,058	$0	$40,952	$40,952	0.7%
Attorney General's Office	$11,068,116	$0	$81,904	$81,904	0.7%
Bean Commission	$8,301,087	$20,476	$40,952	$61,428	0.7%
Board of Tax Appeals	$5,534,058	$0	$208,081	$208,081	3.8%
Boise State University	$2,246,961,513	$61,802,487	$5,246,210	$67,048,697	3.0%
Boise Veteran's Home	$35,319,288	$101,691	$0	$101,691	0.3%
Commission for the Blind and Visually Impaired	$38,133,556	$75,340	$0	$75,340	0.2%
Commission on Aging	$2,767,029	$0	$15,772	$15,772	0.6%
Commission on Hispanic Affairs	$5,534,058	$0	$22,136	$22,136	0.4%
Commission on Pardons and Paroles	$8,301,087	$0	$33,204	$33,204	0.4%
Correctional Industries	$23,384,895	$35,628	$57,001	$92,629	0.4%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$20,476	$20,476	0.7%
Dairy Products Commission	$4,869,667	$36,011	$0	$36,011	0.7%
Dept. of Administration	$980,470,596	$9,008,576	$208,081	$9,216,656	0.9%
Dept. of Agriculture	$97,806,722	$275,317	$230,217	$505,534	0.5%
Dept. of Commerce	$11,068,116	$31,544	$0	$31,544	0.3%
Dept. of Correction	$864,744,339	$1,493,918	$1,598,560	$3,092,478	0.4%
Dept. of Education	$2,767,029	$0	$20,476	$20,476	0.7%
Dept. of Environmental Quality	$168,788,769	$0	$600,999	$600,999	0.4%
Dept. of Finance	$2,767,029	$28,224	$0	$28,224	1.0%
Dept. of Fish and Game	$397,174,125	$1,177,520	$394,113	$1,571,633	0.4%
Dept. of Health and Welfare	$215,154,580	$14	$723,301	$723,315	0.3%
Dept. of Insurance	$19,369,203	$0	$20,476	$20,476	0.1%
Dept. of Juvenile Corrections	$114,560,510	$84,571	$52,020	$136,591	0.1%
Dept. of Lands	$102,437,415	$145,620	$64,380	$210,000	0.2%
Dept. of Parks and Recreation	$1,954,405,534	$5,143,662	$0	$5,143,662	0.3%
Dept. of Transportation	$308,229,590	$2,343,453	$0	$2,343,453	0.8%
Dept. of Transportation-Aeronautics	$7,908,250	$15,891	$11,068	$26,959	0.3%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$1,371	$0	$1,371	0.2%
Dept. of Transportation-Dist. 3	$996,275	$7,101	$0	$7,101	0.7%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$49,955,576	$553	$127,017	$127,570	0.3%
Div. of Financial Management	$2,767,029	$0	$20,476	$20,476	0.7%
Div. of Human Resources	$2,767,029	$0	$20,476	$20,476	0.7%
Div. of Military	$910,834,534	$2,238,082	$381,403	$2,619,485	0.3%
Div. of Occupational and Professional Licenses	$42,040,410	$28,224	$425,016	$453,239	1.1%
Div. of Veterans Services	$26,236,632	$5,325	$67,516	$72,841	0.3%
Div. of Vocational Rehabilitation	$88,544,928	$0	$159,104	$159,104	0.2%
Educational Services for the Deaf and the Blind	$73,782,544	$98	$101,273	$101,371	0.1%
Endowment Fund Investment Board	$5,534,058	$0	$40,952	$40,952	0.7%
Forest Products Commission	$11,068,116	$0	$78,584	$78,584	0.7%

Agency	Total Value	Loss: State-Owned Facilities	Loss: State-Leased Facilities	Loss: Total	Loss: % of Total Value
Governor's Office	$5,534,058	$0	$30,714	$30,714	0.6%
Idaho Barley Commission	$2,767,029	$0	$20,476	$20,476	0.7%
Idaho Beef Council	$2,767,029	$0	$11,068	$11,068	0.4%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$20,476	$20,476	0.7%
Idaho Commission for Libraries	$2,767,029	$0	$15,772	$15,772	0.6%
Idaho Crop Improvement Association	$7,437,949	$2,492	$26,564	$29,056	0.4%
Idaho Dept. of Labor	$73,269,804	$207,813	$132,817	$340,630	0.5%
Idaho Digital Learning Alliance	$2,767,029	$0	$11,068	$11,068	0.4%
Idaho Industrial Commission	$52,573,551	$0	$132,264	$132,264	0.3%
Idaho Office of Energy Resources	$2,767,029	$0	$20,476	$20,476	0.7%
Idaho Potato Commission	$5,534,058	$0	$120,366	$120,366	2.2%
Idaho Public Television	$156,044,267	$224,809	$2,381,635	$2,606,445	1.7%
Idaho Rangeland Resources Commission	$2,767,029	$0	$315,165	$315,165	11.4%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$464,584	$464,584	1.2%
Idaho State Bar	$5,534,058	$0	$40,952	$40,952	0.7%
Idaho State Historical Society	$63,895,732	$856,430	$140,288	$996,718	1.6%
Idaho State Liquor Div.	$676,566,597	$50,772	$4,618,448	$4,669,220	0.7%
Idaho State Police	$94,954,955	$370,812	$0	$370,812	0.4%
Idaho State University	$1,474,436,327	$38,739	$318,208	$356,947	0.0%
Idaho Tax Commission	$24,903,261	$0	$43,719	$43,719	0.2%
Idaho Wheat Commission	$1,073,655	$7,933	$0	$7,933	0.7%
IDHW - Bureau of Laboratories	$12,451,087	$35,093	$0	$35,093	0.3%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$0	$0	$0	0.0%
IDHW - State Hospital West	$13,587,753	$84,066	$0	$84,066	0.6%
IDHW Southwest Idaho Treatment Center	$42,533,281	$159,849	$0	$159,849	0.4%
Information Technology Services	$71,942,754	$0	$563,921	$563,921	0.8%
ISP - Racing Commission	$5,534,058	$27,670	$0	$27,670	0.5%
ISP ΓÇô State Brand Board	$13,835,145	$0	$47,039	$47,039	0.3%
Judicial Branch / Supreme Court	$143,885,508	$807,972	$73,603	$881,575	0.6%
Lava Hot Springs Foundation	$19,261,830	$0	$0	$0	0.0%
Legislative House	$2,767,029	$0	$20,476	$20,476	0.7%
Legislative Senate	$2,767,029	$0	$11,068	$11,068	0.4%
Legislative Services	$5,534,058	$0	$40,952	$40,952	0.7%
Lewis-Clark State College	$295,427,089	$0	$102,380	$102,380	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$20,476	$20,476	0.7%
Lottery Commission	$38,750,553	$121,473	$219,197	$340,670	0.9%
Office of Administrative Hearings	$5,534,058	$0	$40,952	$40,952	0.7%
Office of Drug Policy	$2,767,029	$0	$20,476	$20,476	0.7%
Office of Performance Evaluations	$2,767,029	$0	$20,476	$20,476	0.7%
Office of Species Conservation	$16,602,174	$0	$20,476	$20,476	0.1%
Office of the State Controller	$11,068,116	$0	$92,695	$92,695	0.8%
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$20,476	$20,476	0.7%
Public Employee Retirement System of Idaho	$22,324,940	$103,646	$0	$103,646	0.5%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$0	$0	$0	0.0%
Public Health Dist. 3 (Southwest)	$14,164,252	$102,937	$8,024	$110,961	0.8%
Public Health Dist. 4 (Central)	$35,493,623	$66,052	$270,615	$336,667	0.9%
Public Health Dist. 5 (South Central)	$11,806,174	$29	$0	$29	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$0	$0	$0	0.0%
Public Health Dist. 7 (Eastern)	$18,747,629	$0	$0	$0	0.0%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$28,224	$28,224	1.0%
Secretary of State	$5,534,058	$0	$36,248	$36,248	0.7%
State Appellate Public Defender	$5,534,058	$0	$208,081	$208,081	3.8%
State Board of Education	$98,757,000	$0	$20,476	$20,476	0.0%
State Independent Living Council	$2,767,029	$0	$20,476	$20,476	0.7%
State Insurance Fund	$20,275,425	$122,107	$20,476	$142,583	0.7%
State Public Defense Commission	$5,534,058	$0	$40,952	$40,952	0.7%
State Treasurer	$5,534,058	$0	$40,952	$40,952	0.7%
STEM Action Center	$2,777,667	$0	$20,555	$20,555	0.7%
University of Idaho	$2,035,323,146	$79,593	$4,383,911	$4,463,504	0.2%
Veteran's Cemetery - Blackfoot	$2,532,000	$0	$0	$0	0.0%
Veterans State Cemetery Boise	$10,965,477	$95,212	$0	$95,212	0.9%
Workforce Development Council	$2,767,029	$0	$20,476	$20,476	0.7%
Total	**$14,773,166,388**	**$87,666,195**	**$26,411,386**	**$114,077,582**	**0.8%**

Earthquake Loss Estimates: Squaw Creek Scenario—Average % of Structure Value to Critical Facilities

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		1.2	7.2		1.0	0.8	0.0	0.9
Adams		0.1	0.0		0.0	0.5	0.0	0.1
Bannock		0.0	0.0		0.0	0.0	0.0	0.0
Bear Lake		0.0	0.0		0.0	0.0	0.0	0.0
Benewah		0.0	0.0		0.0	0.0	0.0	0.0
Bingham		0.0	0.0		0.0	0.0	0.0	0.0
Blaine		0.0	0.0		0.0	0.0	0.0	0.0
Boise		11.0	0.0		0.0	1.5	0.3	2.6
Bonner		0.0	0.0		0.0	0.0	0.0	0.0
Bonneville		0.0	0.0		0.0	0.0	0.0	0.0
Boundary		0.0	0.0		0.0	0.0	0.0	0.0
Butte		0.0	0.0		0.0	0.0	0.0	0.0
Camas		0.0	0.0		0.0	0.0	0.0	0.0
Canyon		1.3	3.1		0.4	0.7	0.1	0.7
Caribou		0.0	0.0		0.0	0.0	0.0	0.0
Cassia		0.0	0.0		0.0	0.0	0.0	0.0
Clark		0.0	0.0		0.0	0.0	0.0	0.0
Clearwater		0.0	0.0		0.0	0.0	0.0	0.0
Custer		0.0	0.0		0.0	0.0	0.0	0.0
Elmore		0.0	0.0		0.0	0.0	0.0	0.0
Franklin		0.0	0.0		0.0	0.0	0.0	0.0
Fremont		0.0	0.0		0.0	0.0	0.0	0.0
Gem		40.8	0.0		10.1	23.1	2.8	21.2
Gooding		0.0	0.0		0.0	0.0	0.0	0.0
Idaho		0.0	0.0		0.0	0.0	0.0	0.0
Jefferson		0.0	0.0		0.0	0.0	0.0	0.0
Jerome		0.0	0.0		0.0	0.0	0.0	0.0
Kootenai		0.0	0.0		0.0	0.0	0.0	0.0
Latah		0.0	0.0		0.0	0.0	0.0	0.0
Lemhi		0.0	0.0		0.0	0.0	0.0	0.0
Lewis		0.0	0.0		0.0	0.0	0.0	0.0
Lincoln		0.0	0.0		0.0	0.0	0.0	0.0
Madison		0.0	0.0		0.0	0.0	0.0	0.0
Minidoka		0.0	0.0		0.0	0.0	0.0	0.0
Nez Perce		0.0	0.0		0.0	0.0	0.0	0.0
Oneida		0.0	0.0		0.0	0.0	0.0	0.0
Owyhee		0.0	0.0		0.0	0.1	0.0	0.1
Payette		1.8	1.7		0.6	0.5	0.1	0.6
Power		0.0	0.0		0.0	0.0	0.0	0.0
Shoshone		0.0	0.0		0.0	0.0	0.0	0.0
Teton		0.0	0.0		0.0	0.0	0.0	0.0
Twin Falls		0.0	0.0		0.0	0.0	0.0	0.0
Valley		4.7	0.3		0.3	1.7	0.2	2.5
Washington		0.7	0.0		0.2	0.4	0.0	0.4
Total		**0.7**	**0.9**		**0.4**	**0.5**	**0.1**	0.5

FLOOD EXPOSURE

Flood Exposure: 1% Annual Chance Flood—Hazard Area			
County	**Total Area (acres)**	**Hazard Area (acres)**	**% of Total**
Ada	678,323	21,788	3.2%
Adams	876,653	17,864	2.0%
Bannock	734,679	19,283	2.6%
Bear Lake	671,942	0	0.0%
Benewah	502,829	18,983	3.8%
Bingham	1,355,409	68,172	5.0%
Blaine	1,697,810	16,199	1.0%
Boise	1,220,249	10,137	0.8%
Bonner	1,227,895	99,044	8.1%
Bonneville	1,215,994	62,744	5.2%
Boundary	818,171	19,185	2.3%
Butte	1,430,996	19,830	1.4%
Camas	688,595	172	0.0%
Canyon	386,679	32,662	8.4%
Caribou	1,152,858	189	0.0%
Cassia	1,647,932	28,248	1.7%
Clark	1,129,342	19,029	1.7%
Clearwater	1,592,096	22,820	1.4%
Custer	3,157,650	606	0.0%
Elmore	1,984,649	48,310	2.4%
Franklin	427,606	12,000	2.8%
Fremont	1,214,126	46,495	3.8%
Gem	361,377	10,031	2.8%
Gooding	469,999	14,848	3.2%
Idaho	5,437,849	15,622	0.3%
Jefferson	706,807	18,527	2.6%
Jerome	384,815	797	0.2%
Kootenai	837,917	61,526	7.3%
Latah	689,079	20,097	2.9%
Lemhi	2,922,688	25,629	0.9%
Lewis	307,464	887	0.3%
Lincoln	770,948	13,405	1.7%
Madison	302,988	31,652	10.4%
Minidoka	489,621	2,307	0.5%
Nez Perce	547,446	9,343	1.7%
Oneida	768,447	29	0.0%
Owyhee	4,924,940	2,095	0.0%
Payette	262,660	17,709	6.7%
Power	921,773	36	0.0%
Shoshone	1,690,870	13,010	0.8%
Teton	287,946	21,467	7.5%
Twin Falls	1,232,970	3,716	0.3%
Valley	2,389,820	45,284	1.9%
Washington	943,451	30,688	3.3%
Total	**53,464,358**	**942,464**	**1.8%**

Flood Exposure: 1% Annual Chance Flood—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	1,239	14,649	8.5%
Adams	-	270	0.0%
Bannock	25	1,450	1.7%
Bear Lake	-	-	0.0%
Benewah	884	884	100.0%
Bingham	1,439	4,318	33.3%
Blaine	241	1,198	20.1%
Boise	-	396	0.0%
Bonner	140	1,839	7.6%
Bonneville	48	2,217	2.2%
Boundary	-	368	0.0%
Butte	-	362	0.0%
Camas	-	-	0.0%
Canyon	3,569	7,407	48.2%
Caribou	-	-	0.0%
Cassia	139	630	22.1%
Clark	95	95	100.0%
Clearwater	423	521	81.1%
Custer	-	1	0.0%
Elmore	1,270	1,461	86.9%
Franklin	-	333	0.0%
Fremont	261	462	56.6%
Gem	224	335	66.9%
Gooding	2,206	2,507	88.0%
Idaho	110	874	12.6%
Jefferson	91	1,031	8.8%
Jerome	0	17	0.2%
Kootenai	307	2,120	14.5%
Latah	-	953	0.0%
Lemhi	370	875	42.3%
Lewis	204	285	71.7%
Lincoln	369	369	100.0%
Madison	-	4,611	0.0%
Minidoka	42	42	100.0%
Nez Perce	370	616	60.1%
Oneida	-	13	0.0%
Owyhee	-	2	0.0%
Payette	887	1,023	86.7%
Power	-	-	0.0%
Shoshone	2,315	3,382	68.5%
Teton	-	599	0.0%
Twin Falls	23	1,113	2.0%
Valley	-	132	0.0%
Washington	713	892	79.9%
Total	**18,006**	**60,650**	**29.7%**

Flood Exposure: 1% Annual Chance Flood—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	61	$87,008,916	10	$27,670,290	71	$114,679,206
Adams	2	$311,028	0	$0	2	$311,028
Bannock	4	$10,668,082	2	$4,968,633	6	$15,636,715
Bear Lake	0	$0	0	$0	0	$0
Benewah	16	$41,523,816	0	$0	16	$41,523,816
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	1	$553,487	5	$11,090,255	6	$11,643,743
Bonner	12	$7,144,189	1	$2,767,029	13	$9,911,218
Bonneville	1	$2,767,029	1	$2,767,029	2	$5,534,058
Boundary	4	$3,542,951	0	$0	4	$3,542,951
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	9	$668,138	0	$0	9	$668,138
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	2	$2,956,029	2	$2,956,029
Clearwater	11	$9,363,845	9	$24,903,261	20	$34,267,106
Custer	0	$0	0	$0	0	$0
Elmore	4	$11,068,116	0	$0	4	$11,068,116
Franklin	0	$0	0	$0	0	$0
Fremont	14	$30,551,681	0	$0	14	$30,551,681
Gem	0	$0	0	$0	0	$0
Gooding	5	$13,835,145	3	$8,301,087	8	$22,136,232
Idaho	13	$7,055,717	5	$13,835,145	18	$20,890,862
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	6	$16,602,174	2	$5,534,058	8	$22,136,232
Latah	5	$1,275,056	2	$5,534,058	7	$6,809,114
Lemhi	4	$892,020	2	$5,534,058	6	$6,426,078
Lewis	3	$2,820,956	4	$11,068,116	7	$13,889,072
Lincoln	0	$0	0	$0	0	$0
Madison	1	$1,165,620	2	$5,534,058	3	$6,699,678
Minidoka	0	$0	0	$0	0	$0
Nez Perce	2	$15,557	0	$0	2	$15,557
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	1	$531,300	0	$0	1	$531,300
Power	0	$0	0	$0	0	$0
Shoshone	7	$16,639,229	11	$30,437,319	18	$47,076,548
Teton	2	$5,534,058	0	$0	2	$5,534,058
Twin Falls	5	$6,050,624	0	$0	5	$6,050,624
Valley	3	$2,818,346	0	$0	3	$2,818,346
Washington	0	$0	2	$5,534,058	2	$5,534,058
Total	**196**	**$280,407,081**	**63**	**$168,434,483**	**259**	**$448,841,564**

Flood Exposure: 1% Annual Chance Flood—State Facilities by Agency						
	State-Owned		State-Leased		State-Owned and -Leased	
Agency	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	5	$16,414,099	7	$19,369,203	12	$35,783,302
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	3	$8,301,087	3	$8,301,087
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	4	$11,068,116	4	$11,068,116
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	83	$33,774,571	3	$8,301,087	86	$42,075,658
Dept. of Health and Welfare	0	$0	6	$16,602,174	6	$16,602,174
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	1	$90,900	0	$0	1	$90,900
Dept. of Lands	2	$53,927	1	$2,767,029	3	$2,820,956
Dept. of Parks and Recreation	69	$190,925,001	0	$0	69	$190,925,001
Dept. of Transportation	17	$6,256,029	0	$0	17	$6,256,029
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	10	$12,140,704	5	$11,090,255	15	$23,230,959
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	2	$5,534,058	2	$5,534,058
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	1	$2,767,029	1	$2,767,029
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	2	$5,534,058	2	$5,534,058
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	1	$30,682	0	$0	1	$30,682
Idaho State Liquor Div.	0	$0	17	$47,039,493	17	$47,039,493
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	3	$8,301,087	0	$0	3	$8,301,087
Lava Hot Springs Foundation	3	$10,634,058	1	$2,201,604	4	$12,835,662
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	2	$5,534,058	2	$5,534,058
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	1	$2,767,029	1	$2,767,029
Public Health Dist. 2 (North Central)	1	$620,404	0	$0	1	$620,404
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	1	$2,767,029	1	$2,767,029
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	1	$1,165,620	0	$0	1	$1,165,620
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	6	$14,024,145	6	$14,024,145
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**196**	**$280,407,081**	**63**	**$168,434,483**	**259**	**$448,841,564**

Flood Exposure: 1% Annual Chance Flood—State Bridges

County	Number of Bridges
Ada	12
Adams	8
Bannock	12
Bear Lake	0
Benewah	7
Bingham	3
Blaine	9
Boise	15
Bonner	14
Bonneville	9
Boundary	2
Butte	5
Camas	0
Canyon	6
Caribou	0
Cassia	9
Clark	7
Clearwater	7
Custer	1
Elmore	11
Franklin	9
Fremont	11
Gem	1
Gooding	4
Idaho	13
Jefferson	5
Jerome	0
Kootenai	22
Latah	17
Lemhi	21
Lewis	1
Lincoln	3
Madison	9
Minidoka	0
Nez Perce	5
Oneida	0
Owyhee	0
Payette	3
Power	1
Shoshone	30
Teton	5
Twin Falls	3
Valley	4
Washington	9
Total	**313**

Flood Exposure: 1% Annual Chance Flood—State Highways	
County	Miles of Highway
Ada	5.4
Adams	11.9
Bannock	7.4
Bear Lake	0.0
Benewah	8.5
Bingham	5.2
Blaine	3.1
Boise	16.0
Bonner	9.9
Bonneville	3.5
Boundary	0.7
Butte	3.5
Camas	0.0
Canyon	4.9
Caribou	0.0
Cassia	3.0
Clark	3.5
Clearwater	9.9
Custer	0.0
Elmore	4.1
Franklin	2.5
Fremont	4.1
Gem	0.5
Gooding	1.5
Idaho	39.1
Jefferson	1.1
Jerome	0.3
Kootenai	14.0
Latah	16.7
Lemhi	33.4
Lewis	1.0
Lincoln	1.5
Madison	10.6
Minidoka	0.8
Nez Perce	12.8
Oneida	0.0
Owyhee	0.1
Payette	6.5
Power	0.0
Shoshone	17.3
Teton	2.5
Twin Falls	0.5
Valley	1.5
Washington	3.8
Total	**273.0**

Flood Exposure: 1% Annual Chance Flood—State Dams	
County	Number of State-Regulated Dams
Ada	7
Adams	1
Bannock	2
Bear Lake	0
Benewah	0
Bingham	2
Blaine	3
Boise	1
Bonner	5
Bonneville	6
Boundary	1
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	2
Clark	0
Clearwater	1
Custer	0
Elmore	11
Franklin	4
Fremont	11
Gem	0
Gooding	4
Idaho	0
Jefferson	0
Jerome	4
Kootenai	6
Latah	1
Lemhi	0
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	1
Payette	1
Power	0
Shoshone	2
Teton	0
Twin Falls	1
Valley	4
Washington	3
Total	**84**

Flood Exposure: 1% Annual Chance Flood—Canals	
County	Miles of Canal
Ada	22.6
Adams	0.9
Bannock	5.9
Bear Lake	0.0
Benewah	5.3
Bingham	68.4
Blaine	15.4
Boise	1.1
Bonner	0.0
Bonneville	14.8
Boundary	13.6
Butte	18.2
Camas	0.0
Canyon	48.3
Caribou	0.0
Cassia	22.9
Clark	8.9
Clearwater	0.0
Custer	0.1
Elmore	4.7
Franklin	3.7
Fremont	29.5
Gem	2.3
Gooding	20.6
Idaho	0.1
Jefferson	12.8
Jerome	1.2
Kootenai	1.7
Latah	0.0
Lemhi	4.3
Lewis	0.0
Lincoln	4.5
Madison	41.4
Minidoka	0.3
Nez Perce	0.0
Oneida	0.0
Owyhee	0.1
Payette	11.1
Power	0.0
Shoshone	0.0
Teton	7.4
Twin Falls	2.5
Valley	1.2
Washington	5.0
Total	**400.9**

Flood Exposure: 1% Annual Chance Flood—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	1,378	50,150	2.7%	1,523	54,705	2.8%
Adams	1,143	8,605	13.3%	1,143	8,605	13.3%
Bannock	341	21,368	1.6%	368	22,966	1.6%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	930	16,128	5.8%	930	16,128	5.8%
Bingham	1,397	7,906	17.7%	1,391	9,016	15.4%
Blaine	320	8,562	3.7%	322	9,426	3.4%
Boise	615	10,697	5.7%	516	9,037	5.7%
Bonner	3,329	102,182	3.3%	3,329	102,184	3.3%
Bonneville	264	12,203	2.2%	218	13,253	1.6%
Boundary	477	26,841	1.8%	477	26,841	1.8%
Butte	705	2,211	31.9%	705	2,218	31.8%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	1,248	31,858	3.9%	1,261	32,126	3.9%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	79	6,296	1.3%	96	7,518	1.3%
Clark	42	482	8.7%	35	694	5.0%
Clearwater	190	4,621	4.1%	190	4,621	4.1%
Custer	18	5,190	0.3%	18	5,190	0.3%
Elmore	719	13,858	5.2%	769	15,500	5.0%
Franklin	267	8,751	3.1%	262	10,275	2.5%
Fremont	220	7,431	3.0%	200	9,135	2.2%
Gem	235	5,105	4.6%	233	5,440	4.3%
Gooding	693	8,160	8.5%	680	8,839	7.7%
Idaho	459	12,729	3.6%	459	12,729	3.6%
Jefferson	132	3,652	3.6%	132	3,460	3.8%
Jerome	18	11,005	0.2%	16	10,428	0.2%
Kootenai	1,795	121,486	1.5%	1,809	122,582	1.5%
Latah	696	11,845	5.9%	705	13,579	5.2%
Lemhi	1,754	11,637	15.1%	1,754	11,637	15.1%
Lewis	36	408	8.8%	36	408	8.8%
Lincoln	234	2,398	9.7%	356	2,958	12.0%
Madison	938	4,371	21.5%	895	4,978	18.0%
Minidoka	12	4,518	0.3%	14	4,363	0.3%
Nez Perce	165	9,844	1.7%	141	10,762	1.3%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	16	4,922	0.3%	16	4,820	0.3%
Payette	153	6,285	2.4%	151	5,915	2.6%
Power	3	4,381	0.1%	3	7,288	<0.1%
Shoshone	1,070	6,724	15.9%	1,070	6,724	15.9%
Teton	537	5,545	9.7%	553	5,465	10.1%
Twin Falls	312	19,689	1.6%	327	22,871	1.4%
Valley	993	20,975	4.7%	993	20,975	4.7%
Washington	299	2,985	10.0%	294	3,023	9.7%
Total	**24,228**	**636,309**	**3.8%**	**24,387**	**661,537**	**3.7%**

Flood Exposure: 1% Annual Chance Flood—Number of Critical Facilities in Hazard Area								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	4	0	0	2	2	8	**16**
Adams	0	1	0	0	0	0	22	**23**
Bannock	0	1	0	0	0	1	14	**16**
Bear Lake	0	0	0	0	0	0	0	**0**
Benewah	0	2	0	0	0	0	7	**9**
Bingham	0	6	1	0	0	4	5	**16**
Blaine	0	2	0	0	0	1	0	**3**
Boise	0	3	0	0	0	4	5	**12**
Bonner	0	2	0	0	0	1	24	**27**
Bonneville	0	3	0	0	0	4	3	**10**
Boundary	0	1	0	0	0	0	12	**13**
Butte	0	0	0	0	0	0	0	**0**
Camas	0	0	0	0	0	0	0	**0**
Canyon	0	1	0	0	0	1	12	**14**
Caribou	0	0	0	0	0	0	0	**0**
Cassia	0	0	0	0	0	1	1	**2**
Clark	0	0	0	0	0	0	7	**7**
Clearwater	0	2	1	0	0	2	5	**10**
Custer	0	0	0	0	0	0	0	**0**
Elmore	0	6	0	0	0	2	7	**15**
Franklin	0	1	0	0	0	0	2	**3**
Fremont	0	5	0	0	0	0	1	**6**
Gem	0	1	0	0	0	0	4	**5**
Gooding	0	7	0	0	0	1	3	**11**
Idaho	0	0	0	0	0	2	3	**5**
Jefferson	0	0	0	0	0	0	5	**5**
Jerome	0	1	0	0	0	0	0	**1**
Kootenai	0	1	0	0	0	1	4	**6**
Latah	0	4	0	0	0	1	13	**18**
Lemhi	0	1	0	0	0	6	0	**7**
Lewis	0	0	0	0	0	4	2	**6**
Lincoln	0	2	0	0	0	0	1	**3**
Madison	0	3	1	0	0	5	5	**14**
Minidoka	0	0	0	0	0	0	0	**0**
Nez Perce	0	1	0	0	0	0	4	**5**
Oneida	0	0	0	0	0	0	0	**0**
Owyhee	0	0	0	0	0	0	0	**0**
Payette	0	0	0	0	0	0	4	**4**
Power	0	0	0	0	0	0	0	**0**
Shoshone	0	4	0	0	0	7	9	**20**
Teton	0	3	0	0	0	0	0	**3**
Twin Falls	0	3	0	0	0	0	3	**6**
Valley	0	0	0	0	0	0	1	**1**
Washington	0	2	0	0	2	2	4	**10**
Total	**0**	**73**	**3**	**0**	**4**	**52**	**200**	**332**

Flood Exposure: 1% Annual Chance Flood—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	1.5	1.7	0.2	1.6	1.8	0.2	3.5	3.2	-0.3	16.6	16.4	-0.2	3.4	3.5	0.1	7.5	7.5	0.0
Adams	0.0	0.0	0.0	0.1	0.1	0.0	2.0	2.0	0.0	22.3	22.3	0.0	0.3	0.3	0.0	3.3	3.3	0.0
Bannock	0.2	0.2	0.1	0.3	0.4	0.1	1.2	1.3	0.1	22.5	22.3	-0.2	0.7	0.7	0.0	5.2	5.2	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.2	0.2	0.0	2.1	2.1	0.0	10.4	10.4	0.0	0.3	0.3	0.0	16.6	16.6	0.0
Bingham	0.1	0.1	0.0	0.4	0.4	0.0	4.5	4.5	0.0	64.3	64.3	-0.1	0.6	0.6	0.0	36.3	36.3	0.0
Blaine	0.2	0.2	0.0	0.3	0.3	0.0	0.9	1.0	0.0	12.7	12.7	-0.1	0.3	0.3	0.0	10.9	10.9	0.0
Boise	0.0	0.0	0.0	0.2	0.2	0.0	1.9	2.0	0.1	9.3	9.2	-0.1	0.5	0.5	0.0	4.0	4.0	0.0
Bonner	0.1	0.1	0.0	0.7	0.7	0.0	7.1	7.1	0.0	14.3	14.3	0.0	0.7	0.7	0.0	132.1	132.1	0.0
Bonneville	0.1	0.1	0.0	0.2	0.3	0.1	1.9	1.9	0.0	18.9	18.7	-0.1	0.6	0.6	0.0	76.0	76.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	16.4	16.4	0.0	0.1	0.1	0.0	12.6	12.6	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.3	0.0	27.6	27.6	0.0	0.5	0.5	0.0	1.6	1.6	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Canyon	0.5	0.6	0.1	0.7	0.8	0.1	4.5	4.4	0.0	37.0	36.8	-0.2	1.2	1.2	0.0	7.2	7.2	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Cassia	0.0	0.0	0.0	0.1	0.1	0.0	0.8	0.8	0.0	39.6	39.6	0.0	0.3	0.3	0.0	3.2	3.2	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	22.3	22.3	0.0	0.5	0.5	0.0	6.7	6.7	0.0
Clearwater	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.4	0.0	12.9	12.9	0.0	1.7	1.7	0.0	20.4	20.4	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0	0.1	0.1	0.0	0.2	0.2	0.0
Elmore	0.3	0.3	0.0	0.2	0.2	0.0	1.1	1.1	0.0	48.6	48.5	-0.1	0.3	0.3	0.0	24.9	24.9	0.0
Franklin	0.0	0.0	0.0	0.1	0.1	0.0	0.9	0.9	0.0	10.1	10.0	0.0	0.2	0.2	0.0	7.4	7.4	0.0
Fremont	0.0	0.0	0.0	0.1	0.1	0.0	0.7	0.7	0.0	25.9	25.9	0.0	0.2	0.2	0.0	45.5	45.5	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0	11.7	11.7	0.0	0.1	0.1	0.0	3.1	3.1	0.0
Gooding	0.4	0.4	0.0	0.2	0.2	0.0	1.0	1.0	0.0	18.4	18.4	0.0	0.1	0.1	0.0	3.0	3.0	0.0
Idaho	0.1	0.1	0.0	0.2	0.2	0.0	1.2	1.2	0.0	12.7	12.7	0.0	1.1	1.1	0.0	8.8	8.8	0.0
Jefferson	0.0	0.0	0.0	0.1	0.1	0.0	0.8	0.8	0.0	10.0	10.0	0.0	0.2	0.2	0.0	17.8	17.8	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.8	0.8	0.0
Kootenai	0.2	0.3	0.0	0.8	0.8	0.0	3.5	3.5	0.0	14.9	14.8	0.0	0.8	0.9	0.0	76.0	75.9	0.0
Latah	0.1	0.1	0.0	0.3	0.3	0.0	1.4	1.4	0.0	27.2	27.1	-0.1	0.6	0.6	0.0	1.9	1.9	0.0
Lemhi	0.1	0.1	0.0	0.2	0.2	0.0	3.1	3.1	0.0	26.3	26.3	0.0	1.0	1.0	0.0	9.3	9.3	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.7	0.7	0.0	0.1	0.1	0.0	0.3	0.3	0.0
Lincoln	0.1	0.1	0.0	0.1	0.0	0.0	0.4	0.6	0.2	17.2	17.0	-0.2	0.2	0.2	0.0	3.0	3.0	0.0
Madison	0.2	0.4	0.1	0.6	1.0	0.3	4.2	4.0	-0.2	23.1	22.8	-0.4	0.9	1.0	0.1	20.1	20.1	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	3.0	3.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.1	0.1	0.5	0.5	0.1	7.6	7.5	-0.1	0.6	0.6	0.0	5.6	5.6	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	3.0	3.0	0.0
Payette	0.0	0.0	0.0	0.1	0.1	0.0	0.9	0.8	0.0	22.5	22.5	0.0	0.3	0.3	0.0	3.7	3.7	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.5	0.5	0.0	0.6	0.6	0.0	2.1	2.1	0.0	8.3	8.3	0.0	1.1	1.1	0.0	7.6	7.6	0.0
Teton	0.0	0.1	0.0	0.2	0.2	0.0	1.3	1.4	0.0	12.6	12.6	-0.1	0.1	0.1	0.0	19.1	19.1	0.0
Twin Falls	0.2	0.3	0.0	0.1	0.1	0.0	0.4	0.4	0.0	2.3	2.3	0.0	0.4	0.4	0.0	2.2	2.2	0.0
Valley	0.1	0.1	0.0	0.2	0.2	0.0	1.9	1.9	0.0	11.3	11.3	0.0	0.4	0.4	0.0	57.0	57.0	0.0
Washington	0.1	0.1	0.0	0.1	0.1	0.0	0.7	0.7	0.0	30.5	30.4	0.0	0.4	0.4	0.0	15.7	15.7	0.0
Total	**5.4**	**6.2**	**0.8**	**9.1**	**10.1**	**1.0**	**60.2**	**60.2**	**0.0**	**690.6**	**688.6**	**-2.0**	**20.7**	**20.9**	**0.3**	**682.8**	**682.8**	**0.0**

Flood Exposure: Levee-Protected Area—Hazard Area

County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	0	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	90	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	252	0.1%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	0	0.0%
Boise	1,220,249	0	0.0%
Bonner	1,227,895	602	0.0%
Bonneville	1,215,994	0	0.0%
Boundary	818,171	0	0.0%
Butte	1,430,996	0	0.0%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	0	0.0%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	0	0.0%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	0	0.0%
Elmore	1,984,649	0	0.0%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	0	0.0%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	108	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	0	0.0%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	0	0.0%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	0	0.0%
Twin Falls	1,232,970	0	0.0%
Valley	2,389,820	0	0.0%
Washington	943,451	0	0.0%
Total	**53,464,358**	**1,052**	**0.0%**

Flood Exposure: Levee-Protected Area—Population

County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	1	299	0.3%
Bear Lake	0	0	0.0%
Benewah	203	203	100.0%
Bingham	0	0	0.0%
Blaine	0	0	0.0%
Boise	0	0	0.0%
Bonner	0	274	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	0	0.0%
Cassia	0	0	0.0%
Clark	0	0	0.0%
Clearwater	0	0	0.0%
Custer	0	0	0.0%
Elmore	0	0	0.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	0	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	97	485	20.0%
Latah	0	0	0.0%
Lemhi	0	0	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	0	0.0%
Twin Falls	0	0	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**301**	**1,261**	**23.9%**

Flood Exposure: Levee-Protected Area—State Facilities by County						
	State-Owned		State-Leased		State-Owned and -Leased	
County	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	7	$2,056,889	0	$0	7	$2,056,889
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	1	$42,504	1	$2,767,029	2	$2,809,533
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	0	$0	0	$0
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	0	$0	0	$0	0	$0
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	0	$0	0	$0	0	$0
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	3	$8,301,087	3	$8,301,087
Latah	0	$0	0	$0	0	$0
Lemhi	0	$0	0	$0	0	$0
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**8**	**$2,099,393**	**4**	**$11,068,116**	**12**	**$13,167,509**

Flood Exposure: Levee-Protected Area—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	1	$42,504	0	$0	1	$42,504
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	7	$2,056,889	0	$0	7	$2,056,889
Dept. of Parks and Recreation	0	$0	0	$0	0	$0
Dept. of Transportation	0	$0	0	$0	0	$0
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	0	$0	0	$0	0	$0
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	0	$0	0	$0	0	$0
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	1	$2,767,029	1	$2,767,029
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	2	$5,534,058	2	$5,534,058
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**8**	**$2,099,393**	**4**	**$11,068,116**	**12**	**$13,167,509**

Flood Exposure: Levee-Protected Area—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.3
Bingham	0.0
Blaine	0.0
Boise	0.0
Bonner	0.7
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**1.0**

Flood Exposure: Levee-Protected Area—Land Use						
County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	14	21,368	0.1%	16	22,966	0.1%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	21	16,128	0.1%	21	16,128	0.1%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	0	8,562	0.0%	0	9,426	0.0%
Boise	0	10,697	0.0%	0	9,037	0.0%
Bonner	113	102,182	0.1%	113	102,184	0.1%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	0	4,115	0.0%	0	4,115	0.0%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	0	482	0.0%	0	694	0.0%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	0	5,190	0.0%	0	5,190	0.0%
Elmore	0	13,858	0.0%	0	15,500	0.0%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	0	12,729	0.0%	0	12,729	0.0%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	33	121,486	<0.1%	44	122,582	<0.1%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	0	11,637	0.0%	0	11,637	0.0%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	0	5,545	0.0%	0	5,465	0.0%
Twin Falls	0	19,689	0.0%	0	22,871	0.0%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**180**	**636,309**	**<0.1%**	**194**	**661,537**	**<0.1%**

Flood Exposure: Levee-Protected Area—Number of Critical Facilities in Hazard Area								
County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	1	0	1
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	1	0	1
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	2	0	0	0	2	0	4
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	0	0	0	0	0	0	0
Elmore	0	0	0	0	0	0	0	0
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	0	0	0
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	1	0	0	2	0	3
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	0	0	0
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	0	0	0	0	0	0	0
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	0	2	1	0	0	6	0	9

Flood Exposure: Levee-Protected Area—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonner	0.1	0.1	0.0	0.2	0.2	0.0	0.3	0.3	0.0	0.2	0.2	0.0	0.1	0.1	0.0	0.1	0.1	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Elmore	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.2**	**0.2**	**0.0**	**0.3**	**0.2**	**0.0**	**0.4**	**0.4**	**0.0**	**0.3**	**0.3**	**0.0**	**0.3**	**0.4**	**0.0**	**0.1**	**0.1**	**0.0**

FLOOD LOSS ESTIMATE

Flood Loss Estimates: 1% Annual Chance Flood—State Facilities by County

County	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Ada	$5,661,137,513	$1,526,914	$143,480	$1,670,394	0.0%
Adams	$22,806,853	$0	$0	$0	0.0%
Bannock	$1,529,920,984	$3,505	$315,434	$318,939	0.0%
Bear Lake	$118,567,794	$0	$0	$0	0.0%
Benewah	$219,193,230	$19,222,798	$0	$19,222,798	8.8%
Bingham	$199,556,620	$0	$0	$0	0.0%
Blaine	$73,361,974	$0	$0	$0	0.0%
Boise	$52,698,341	$0	$4,274,497	$4,274,497	8.1%
Bonner	$299,113,273	$749,646	$297,192	$1,046,838	0.3%
Bonneville	$444,169,706	$0	$0	$0	0.0%
Boundary	$46,863,026	$14,571	$0	$14,571	0.0%
Butte	$24,458,189	$0	$0	$0	0.0%
Camas	$16,931,555	$0	$0	$0	0.0%
Canyon	$338,752,262	$0	$0	$0	0.0%
Caribou	$41,741,085	$0	$0	$0	0.0%
Cassia	$136,212,673	$83,023	$0	$83,023	0.1%
Clark	$19,628,056	$0	$0	$0	0.0%
Clearwater	$313,437,230	$1,152,476	$131,662	$1,284,138	0.4%
Custer	$100,729,289	$0	$0	$0	0.0%
Elmore	$121,672,934	$2,459,803	$0	$2,459,803	2.0%
Franklin	$45,988,200	$0	$0	$0	0.0%
Fremont	$318,769,649	$3,384,523	$0	$3,384,523	1.1%
Gem	$32,328,886	$0	$0	$0	0.0%
Gooding	$204,224,556	$0	$0	$0	0.0%
Idaho	$117,609,627	$5,164,257	$103,011	$5,267,268	4.5%
Jefferson	$39,939,738	$0	$0	$0	0.0%
Jerome	$47,654,413	$0	$0	$0	0.0%
Kootenai	$551,436,146	$1,836,344	$0	$1,836,344	0.3%
Latah	$1,696,574,346	$14	$137,912	$137,926	0.0%
Lemhi	$77,783,151	$9,691	$100,190	$109,881	0.1%
Lewis	$87,555,673	$1,938	$0	$1,938	0.0%
Lincoln	$32,750,412	$0	$0	$0	0.0%
Madison	$37,896,876	$82,109	$427,829	$509,938	1.3%
Minidoka	$91,606,782	$0	$0	$0	0.0%
Nez Perce	$550,872,519	$1,541	$0	$1,541	0.0%
Oneida	$27,757,343	$0	$0	$0	0.0%
Owyhee	$124,432,815	$0	$0	$0	0.0%
Payette	$53,021,557	$0	$0	$0	0.0%
Power	$103,363,563	$0	$0	$0	0.0%
Shoshone	$100,429,189	$62,123	$38,021	$100,143	0.1%
Teton	$44,922,291	$69,176	$0	$69,176	0.2%
Twin Falls	$237,242,142	$1,371	$0	$1,371	0.0%
Valley	$343,883,798	$73,626	$0	$73,626	0.0%
Washington	$24,170,129	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$35,899,448**	**$5,969,228**	**$41,868,676**	**0.3%**

Flood Loss Estimates: 1% Annual Chance Flood—State Facilities by Agency

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Arts Commission	$5,534,058	$0	$0	$0	0.0%
Attorney General's Office	$11,068,116	$0	$0	$0	0.0%
Bean Commission	$8,301,087	$0	$0	$0	0.0%
Board of Tax Appeals	$5,534,058	$0	$0	$0	0.0%
Boise State University	$2,246,961,513	$580,636	$143,480	$724,116	0.0%
Boise Veteran's Home	$35,319,288	$0	$0	$0	0.0%
Commission for the Blind and Visually Impaired	$38,133,556	$0	$0	$0	0.0%
Commission on Aging	$2,767,029	$0	$0	$0	0.0%
Commission on Hispanic Affairs	$5,534,058	$0	$0	$0	0.0%
Commission on Pardons and Paroles	$8,301,087	$0	$0	$0	0.0%
Correctional Industries	$23,384,895	$0	$0	$0	0.0%
Council for Deaf and Hard of Hearing	$2,767,029	$0	$0	$0	0.0%
Dairy Products Commission	$4,869,667	$0	$0	$0	0.0%
Dept. of Administration	$980,470,596	$0	$0	$0	0.0%
Dept. of Agriculture	$97,806,722	$0	$0	$0	0.0%
Dept. of Commerce	$11,068,116	$0	$0	$0	0.0%
Dept. of Correction	$864,744,339	$0	$131,662	$131,662	0.0%
Dept. of Education	$2,767,029	$0	$0	$0	0.0%
Dept. of Environmental Quality	$168,788,769	$0	$2,705,059	$2,705,059	1.6%
Dept. of Finance	$2,767,029	$0	$0	$0	0.0%
Dept. of Fish and Game	$397,174,125	$5,483,500	$0	$5,483,500	1.4%
Dept. of Health and Welfare	$215,154,580	$0	$427,829	$427,829	0.2%
Dept. of Insurance	$19,369,203	$0	$0	$0	0.0%
Dept. of Juvenile Corrections	$114,560,510	$6,539	$0	$6,539	0.0%
Dept. of Lands	$102,437,415	$1,938	$297,192	$299,130	0.3%
Dept. of Parks and Recreation	$1,954,405,534	$28,801,371	$0	$28,801,371	1.5%
Dept. of Transportation	$308,229,590	$769,218	$0	$769,218	0.2%
Dept. of Transportation-Aeronautics	$7,908,250	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 1	$1,077,192	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 2	$896,492	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 3	$996,275	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 4	$7,000	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 5	$611,399	$0	$0	$0	0.0%
Dept. of Transportation-Dist. 6	$2,199,267	$0	$0	$0	0.0%
Dept. of Water Resources	$49,955,576	$0	$0	$0	0.0%
Div. of Financial Management	$2,767,029	$0	$0	$0	0.0%
Div. of Human Resources	$2,767,029	$0	$0	$0	0.0%
Div. of Military	$910,834,534	$92,714	$1,985,062	$2,077,776	0.2%
Div. of Occupational and Professional Licenses	$42,040,410	$0	$0	$0	0.0%
Div. of Veterans Services	$26,236,632	$0	$0	$0	0.0%
Div. of Vocational Rehabilitation	$88,544,928	$0	$0	$0	0.0%
Educational Services for the Deaf and the Blind	$73,782,544	$0	$0	$0	0.0%
Endowment Fund Investment Board	$5,534,058	$0	$0	$0	0.0%
Forest Products Commission	$11,068,116	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Governor's Office	$5,534,058	$0	$0	$0	0.0%
Idaho Barley Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Beef Council	$2,767,029	$0	$0	$0	0.0%
Idaho Career & Technical Ed (Voc Ed)	$2,767,029	$0	$0	$0	0.0%
Idaho Commission for Libraries	$2,767,029	$0	$0	$0	0.0%
Idaho Crop Improvement Association	$7,437,949	$0	$0	$0	0.0%
Idaho Dept. of Labor	$73,269,804	$0	$0	$0	0.0%
Idaho Digital Learning Alliance	$2,767,029	$0	$0	$0	0.0%
Idaho Industrial Commission	$52,573,551	$0	$0	$0	0.0%
Idaho Office of Energy Resources	$2,767,029	$0	$0	$0	0.0%
Idaho Potato Commission	$5,534,058	$0	$0	$0	0.0%
Idaho Public Television	$156,044,267	$0	$0	$0	0.0%
Idaho Rangeland Resources Commission	$2,767,029	$0	$0	$0	0.0%
Idaho Soil and Water Conservation Commission	$38,738,406	$0	$0	$0	0.0%
Idaho State Bar	$5,534,058	$0	$0	$0	0.0%
Idaho State Historical Society	$63,895,732	$1,371	$0	$1,371	0.0%
Idaho State Liquor Div.	$676,566,597	$0	$278,944	$278,944	0.0%
Idaho State Police	$94,954,955	$0	$0	$0	0.0%
Idaho State University	$1,474,436,327	$0	$0	$0	0.0%
Idaho Tax Commission	$24,903,261	$0	$0	$0	0.0%
Idaho Wheat Commission	$1,073,655	$0	$0	$0	0.0%
IDHW - Bureau of Laboratories	$12,451,087	$0	$0	$0	0.0%
IDHW - State Hospital North	$20,272,004	$0	$0	$0	0.0%
IDHW - State Hospital South	$83,696,995	$0	$0	$0	0.0%
IDHW - State Hospital West	$13,587,753	$0	$0	$0	0.0%
IDHW Southwest Idaho Treatment Center	$42,533,281	$0	$0	$0	0.0%
Information Technology Services	$71,942,754	$0	$0	$0	0.0%
ISP - Racing Commission	$5,534,058	$0	$0	$0	0.0%
ISP ΓÇô State Brand Board	$13,835,145	$0	$0	$0	0.0%
Judicial Branch / Supreme Court	$143,885,508	$0	$0	$0	0.0%
Lava Hot Springs Foundation	$19,261,830	$0	$0	$0	0.0%
Legislative House	$2,767,029	$0	$0	$0	0.0%
Legislative Senate	$2,767,029	$0	$0	$0	0.0%
Legislative Services	$5,534,058	$0	$0	$0	0.0%
Lewis-Clark State College	$295,427,089	$0	$0	$0	0.0%
Lewiston Veteran's Home	$13,797,210	$0	$0	$0	0.0%
Lieutenant Governor	$2,767,029	$0	$0	$0	0.0%
Lottery Commission	$38,750,553	$0	$0	$0	0.0%
Office of Administrative Hearings	$5,534,058	$0	$0	$0	0.0%
Office of Drug Policy	$2,767,029	$0	$0	$0	0.0%
Office of Performance Evaluations	$2,767,029	$0	$0	$0	0.0%
Office of Species Conservation	$16,602,174	$0	$0	$0	0.0%
Office of the State Controller	$11,068,116	$0	$0	$0	0.0%
Pocatello Veteran's Home	$13,450,568	$0	$0	$0	0.0%

Agency	Total Value	Loss			
		State-Owned Facilities	State-Leased Facilities	Total	% of Total Value
Post Falls Veteran's Home	$2,767,029	$0	$0	$0	0.0%
Public Charter School Commission	$2,767,029	$0	$0	$0	0.0%
Public Employee Retirement System of Idaho	$22,324,940	$0	$0	$0	0.0%
Public Health Dist. 1 (Panhandle)	$18,589,242	$0	$0	$0	0.0%
Public Health Dist. 2 (North Central)	$10,718,676	$80,052	$0	$80,052	0.7%
Public Health Dist. 3 (Southwest)	$14,164,252	$0	$0	$0	0.0%
Public Health Dist. 4 (Central)	$35,493,623	$0	$0	$0	0.0%
Public Health Dist. 5 (South Central)	$11,806,174	$0	$0	$0	0.0%
Public Health Dist. 6 (South Eastern)	$22,874,705	$0	$0	$0	0.0%
Public Health Dist. 7 (Eastern)	$18,747,629	$82,109	$0	$82,109	0.4%
Public Safety Communications	$5,534,058	$0	$0	$0	0.0%
Public Utilities Commission	$2,767,029	$0	$0	$0	0.0%
Secretary of State	$5,534,058	$0	$0	$0	0.0%
State Appellate Public Defender	$5,534,058	$0	$0	$0	0.0%
State Board of Education	$98,757,000	$0	$0	$0	0.0%
State Independent Living Council	$2,767,029	$0	$0	$0	0.0%
State Insurance Fund	$20,275,425	$0	$0	$0	0.0%
State Public Defense Commission	$5,534,058	$0	$0	$0	0.0%
State Treasurer	$5,534,058	$0	$0	$0	0.0%
STEM Action Center	$2,777,667	$0	$0	$0	0.0%
University of Idaho	$2,035,323,146	$0	$0	$0	0.0%
Veteran's Cemetery - Blackfoot	$2,532,000	$0	$0	$0	0.0%
Veterans State Cemetery Boise	$10,965,477	$0	$0	$0	0.0%
Workforce Development Council	$2,767,029	$0	$0	$0	0.0%
Total	**$14,773,166,388**	**$35,899,448**	**$5,969,228**	**$41,868,676**	**0.3%**

Flood Loss Estimates: 1% Annual Chance Flood—Average % of Structure Value to Critical Facilities

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada		11.3	0.0		0.0	0.0	0.0	**6.3**
Adams		24.9	0.0		0.0	0.0	0.0	**24.9**
Bannock		4.8	0.0		0.0	5.9	0.0	**5.3**
Bear Lake		0.0	0.0		0.0	0.0	0.0	**0.0**
Benewah		0.2	0.0		0.0	0.0	0.0	**0.2**
Bingham		2.1	1.0		0.0	0.0	0.0	**1.2**
Blaine		3.6	0.0		0.0	0.0	0.0	**2.4**
Boise		61.7	0.0		0.0	31.0	0.0	**44.2**
Bonner		32.5	0.0		0.0	0.0	0.0	**21.7**
Bonneville		20.7	0.0		0.0	1.3	0.0	**9.6**
Boundary		0.0	0.0		0.0	0.0	0.0	**0.0**
Butte		0.0	0.0		0.0	0.0	0.0	**0.0**
Camas		0.0	0.0		0.0	0.0	0.0	**0.0**
Canyon		0.0	0.0		0.0	0.0	0.0	**0.0**
Caribou		0.0	0.0		0.0	0.0	0.0	**0.0**
Cassia		0.0	0.0		0.0	0.0	0.0	**0.0**
Clark		0.0	0.0		0.0	0.0	0.0	**0.0**
Clearwater		1.5	0.0		0.0	21.1	0.0	**9.0**
Custer		0.0	0.0		0.0	0.0	0.0	**0.0**
Elmore		17.7	0.0		0.0	0.0	0.0	**11.8**
Franklin		1.8	0.0		0.0	0.0	0.0	**1.8**
Fremont		19.5	0.0		0.0	0.0	0.0	**19.5**
Gem		14.7	0.0		0.0	0.0	0.0	**14.7**
Gooding		6.0	0.0		0.0	0.0	0.0	**5.3**
Idaho		0.0	0.0		0.0	0.0	0.0	**0.0**
Jefferson		0.0	0.0		0.0	0.0	0.0	**0.0**
Jerome		0.0	0.0		0.0	0.0	0.0	**0.0**
Kootenai		9.8	0.0		0.0	35.3	0.0	**22.6**
Latah		36.9	0.0		0.0	0.0	0.0	**29.5**
Lemhi		0.5	0.0		0.0	1.6	0.0	**1.4**
Lewis			0.0		0.0	0.0	0.0	**0.0**
Lincoln		13.6	0.0		0.0	0.0	0.0	**13.6**
Madison		0.9	0.0		0.0	0.0	0.0	**0.3**
Minidoka		0.0	0.0		0.0	0.0	0.0	**0.0**
Nez Perce		0.0	0.0		0.0	0.0	0.0	**0.0**
Oneida		0.0	0.0		0.0	0.0	0.0	**0.0**
Owyhee		0.0	0.0		0.0	0.0	0.0	**0.0**
Payette		0.0	0.0		0.0	0.0	0.0	**0.0**
Power		0.0	0.0		0.0	0.0	0.0	**0.0**
Shoshone		28.2	0.0		0.0	3.3	0.0	**15.8**
Teton		39.8	0.0		0.0	0.0	0.0	**39.8**
Twin Falls		32.5	0.0		0.0	0.0	0.0	**32.5**
Valley		0.0	0.0		0.0	0.0	0.0	**0.0**
Washington		13.7	0.0		5.5	0.0	0.0	**7.7**
Total		**16.8**	**0.3**		**2.8**	**4.9**	**0.0**	**11.4**

LANDSLIDE EXPOSURE

Landslide Exposure—Hazard Area			
County	Total Area (acres)	Hazard Area (acres)	% of Total
Ada	678,323	262	0.0%
Adams	876,653	0	0.0%
Bannock	734,679	0	0.0%
Bear Lake	671,942	0	0.0%
Benewah	502,829	0	0.0%
Bingham	1,355,409	0	0.0%
Blaine	1,697,810	8,740	0.5%
Boise	1,220,249	37,165	3.0%
Bonner	1,227,895	0	0.0%
Bonneville	1,215,994	4,263	0.4%
Boundary	818,171	0	0.0%
Butte	1,430,996	10,062	0.7%
Camas	688,595	0	0.0%
Canyon	386,679	0	0.0%
Caribou	1,152,858	22,109	1.9%
Cassia	1,647,932	0	0.0%
Clark	1,129,342	105,413	9.3%
Clearwater	1,592,096	0	0.0%
Custer	3,157,650	422,191	13.4%
Elmore	1,984,649	18,828	0.9%
Franklin	427,606	0	0.0%
Fremont	1,214,126	0	0.0%
Gem	361,377	0	0.0%
Gooding	469,999	0	0.0%
Idaho	5,437,849	13,348	0.2%
Jefferson	706,807	0	0.0%
Jerome	384,815	0	0.0%
Kootenai	837,917	0	0.0%
Latah	689,079	0	0.0%
Lemhi	2,922,688	329,471	11.3%
Lewis	307,464	0	0.0%
Lincoln	770,948	0	0.0%
Madison	302,988	0	0.0%
Minidoka	489,621	0	0.0%
Nez Perce	547,446	0	0.0%
Oneida	768,447	0	0.0%
Owyhee	4,924,940	4,713	0.1%
Payette	262,660	0	0.0%
Power	921,773	0	0.0%
Shoshone	1,690,870	0	0.0%
Teton	287,946	19,059	6.6%
Twin Falls	1,232,970	14,789	1.2%
Valley	2,389,820	7,260	0.3%
Washington	943,451	0	0.0%
Total	**53,464,358**	**1,017,674**	**1.9%**

Landslide Exposure—Population			
County	Highly Vulnerable Population	Population	% Population Highly Vulnerable
Ada	0	0	0.0%
Adams	0	0	0.0%
Bannock	0	0	0.0%
Bear Lake	0	0	0.0%
Benewah	0	0	0.0%
Bingham	0	0	0.0%
Blaine	0	17	0.0%
Boise	0	63	0.0%
Bonner	0	0	0.0%
Bonneville	0	0	0.0%
Boundary	0	0	0.0%
Butte	0	0	0.0%
Camas	0	0	0.0%
Canyon	0	0	0.0%
Caribou	0	80	0.0%
Cassia	0	0	0.0%
Clark	96	96	100.0%
Clearwater	0	0	0.0%
Custer	0	1,569	0.0%
Elmore	133	133	100.0%
Franklin	0	0	0.0%
Fremont	0	0	0.0%
Gem	0	0	0.0%
Gooding	0	0	0.0%
Idaho	0	92	0.0%
Jefferson	0	0	0.0%
Jerome	0	0	0.0%
Kootenai	0	0	0.0%
Latah	0	0	0.0%
Lemhi	0	441	0.0%
Lewis	0	0	0.0%
Lincoln	0	0	0.0%
Madison	0	0	0.0%
Minidoka	0	0	0.0%
Nez Perce	0	0	0.0%
Oneida	0	0	0.0%
Owyhee	0	0	0.0%
Payette	0	0	0.0%
Power	0	0	0.0%
Shoshone	0	0	0.0%
Teton	0	1,635	0.0%
Twin Falls	0	770	0.0%
Valley	0	0	0.0%
Washington	0	0	0.0%
Total	**229**	**4,895**	**4.7%**

Landslide Exposure—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	0	$0	0	$0	0	$0
Adams	0	$0	0	$0	0	$0
Bannock	0	$0	0	$0	0	$0
Bear Lake	0	$0	0	$0	0	$0
Benewah	0	$0	0	$0	0	$0
Bingham	0	$0	0	$0	0	$0
Blaine	0	$0	0	$0	0	$0
Boise	0	$0	0	$0	0	$0
Bonner	0	$0	0	$0	0	$0
Bonneville	0	$0	0	$0	0	$0
Boundary	0	$0	0	$0	0	$0
Butte	0	$0	0	$0	0	$0
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	0	$0	1	$2,767,029	1	$2,767,029
Cassia	0	$0	0	$0	0	$0
Clark	0	$0	0	$0	0	$0
Clearwater	0	$0	0	$0	0	$0
Custer	14	$26,435,235	4	$11,068,116	18	$37,503,351
Elmore	0	$0	0	$0	0	$0
Franklin	0	$0	0	$0	0	$0
Fremont	0	$0	0	$0	0	$0
Gem	0	$0	0	$0	0	$0
Gooding	0	$0	0	$0	0	$0
Idaho	3	$1,482,539	0	$0	3	$1,482,539
Jefferson	0	$0	0	$0	0	$0
Jerome	0	$0	0	$0	0	$0
Kootenai	0	$0	0	$0	0	$0
Latah	0	$0	0	$0	0	$0
Lemhi	5	$2,892,167	2	$5,534,058	7	$8,426,225
Lewis	0	$0	0	$0	0	$0
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	0	$0	0	$0	0	$0
Nez Perce	0	$0	0	$0	0	$0
Oneida	0	$0	0	$0	0	$0
Owyhee	0	$0	0	$0	0	$0
Payette	0	$0	0	$0	0	$0
Power	0	$0	0	$0	0	$0
Shoshone	0	$0	0	$0	0	$0
Teton	0	$0	0	$0	0	$0
Twin Falls	0	$0	0	$0	0	$0
Valley	0	$0	0	$0	0	$0
Washington	0	$0	0	$0	0	$0
Total	**22**	**$30,809,941**	**7**	**$19,369,203**	**29**	**$50,179,144**

Landslide Exposure—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	0	$0	0	$0
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	0	$0	0	$0	0	$0
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	0	$0	0	$0
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	7	$5,674,419	1	$2,767,029	8	$8,441,448
Dept. of Health and Welfare	0	$0	0	$0	0	$0
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	0	$0	0	$0	0	$0
Dept. of Parks and Recreation	7	$19,369,203	0	$0	7	$19,369,203
Dept. of Transportation	5	$1,295,234	0	$0	5	$1,295,234
Dept. of Transportation-Aeronautics	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	0	$0	0	$0	0	$0
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	2	$1,704,056	3	$8,301,087	5	$10,005,143
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	0	$0	0	$0
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	0	$0	0	$0	0	$0
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	0	$0	0	$0	0	$0
Idaho Rangeland Resources Commission	0	$0	0	$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	0	$0	0	$0
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	0	$0	0	$0
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	0	$0	0	$0	0	$0
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	0	$0	0	$0
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	1	$2,767,029	0	$0	1	$2,767,029
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	0	$0	0	$0
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	0	$0	0	$0	0	$0
Public Health Dist. 2 (North Central)	0	$0	0	$0	0	$0
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	1	$2,767,029	1	$2,767,029
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	0	$0	1	$2,767,029	1	$2,767,029
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**22**	**$30,809,941**	**7**	**$19,369,203**	**29**	**$50,179,144**

Landslide Exposure—State Bridges	
County	Number of Bridges
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	2
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	2
Clearwater	0
Custer	18
Elmore	0
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	1
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	2
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	4
Twin Falls	0
Valley	0
Washington	0
Total	29

Landslide Exposure—State Highways	
County	Miles of Highway
Ada	0.0
Adams	0.0
Bannock	0.0
Bear Lake	0.0
Benewah	0.0
Bingham	0.0
Blaine	2.7
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	4.3
Clearwater	0.0
Custer	38.1
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	9.8
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	22.6
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	8.2
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**85.9**

Landslide Exposure—State Dams

County	Number of State-Regulated Dams
Ada	0
Adams	0
Bannock	0
Bear Lake	0
Benewah	0
Bingham	0
Blaine	0
Boise	0
Bonner	0
Bonneville	0
Boundary	0
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	0
Custer	2
Elmore	2
Franklin	0
Fremont	0
Gem	0
Gooding	0
Idaho	0
Jefferson	0
Jerome	0
Kootenai	0
Latah	0
Lemhi	2
Lewis	0
Lincoln	0
Madison	0
Minidoka	0
Nez Perce	0
Oneida	0
Owyhee	0
Payette	0
Power	0
Shoshone	0
Teton	0
Twin Falls	0
Valley	0
Washington	0
Total	**6**

Landslide Exposure—Canals

County	Miles of Canal
Ada	23.4
Adams	15.5
Bannock	15.0
Bear Lake	7.7
Benewah	4.2
Bingham	0.9
Blaine	0.8
Boise	0.0
Bonner	0.0
Bonneville	0.0
Boundary	0.0
Butte	0.0
Camas	0.0
Canyon	0.0
Caribou	0.0
Cassia	0.0
Clark	0.0
Clearwater	0.0
Custer	0.0
Elmore	0.0
Franklin	0.0
Fremont	0.0
Gem	0.0
Gooding	0.0
Idaho	0.0
Jefferson	0.0
Jerome	0.0
Kootenai	0.0
Latah	0.0
Lemhi	0.0
Lewis	0.0
Lincoln	0.0
Madison	0.0
Minidoka	0.0
Nez Perce	0.0
Oneida	0.0
Owyhee	0.0
Payette	0.0
Power	0.0
Shoshone	0.0
Teton	0.0
Twin Falls	0.0
Valley	0.0
Washington	0.0
Total	**67.6**

Landslide Exposure—Land Use

County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	0	50,150	0.0%	0	54,705	0.0%
Adams	0	8,605	0.0%	0	8,605	0.0%
Bannock	0	21,368	0.0%	0	22,966	0.0%
Bear Lake	0	5,493	0.0%	0	5,488	0.0%
Benewah	0	16,128	0.0%	0	16,128	0.0%
Bingham	0	7,906	0.0%	0	9,016	0.0%
Blaine	4	8,562	<0.1%	4	9,426	<0.1%
Boise	8	10,697	0.1%	8	9,037	0.1%
Bonner	0	102,182	0.0%	0	102,184	0.0%
Bonneville	0	12,203	0.0%	0	13,253	0.0%
Boundary	0	26,841	0.0%	0	26,841	0.0%
Butte	0	2,211	0.0%	0	2,218	0.0%
Camas	0	1,615	0.0%	0	2,172	0.0%
Canyon	0	31,858	0.0%	0	32,126	0.0%
Caribou	19	4,115	0.5%	19	4,115	0.5%
Cassia	0	6,296	0.0%	0	7,518	0.0%
Clark	1	482	0.3%	1	694	0.2%
Clearwater	0	4,621	0.0%	0	4,621	0.0%
Custer	2,931	5,190	56.5%	2,931	5,190	56.5%
Elmore	118	13,858	0.9%	118	15,500	0.8%
Franklin	0	8,751	0.0%	0	10,275	0.0%
Fremont	0	7,431	0.0%	0	9,135	0.0%
Gem	0	5,105	0.0%	0	5,440	0.0%
Gooding	0	8,160	0.0%	0	8,839	0.0%
Idaho	309	12,729	2.4%	309	12,729	2.4%
Jefferson	0	3,652	0.0%	0	3,460	0.0%
Jerome	0	11,005	0.0%	0	10,428	0.0%
Kootenai	0	121,486	0.0%	0	122,582	0.0%
Latah	0	11,845	0.0%	0	13,579	0.0%
Lemhi	221	11,637	1.9%	221	11,637	1.9%
Lewis	0	408	0.0%	0	408	0.0%
Lincoln	0	2,398	0.0%	0	2,958	0.0%
Madison	0	4,371	0.0%	0	4,978	0.0%
Minidoka	0	4,518	0.0%	0	4,363	0.0%
Nez Perce	0	9,844	0.0%	0	10,762	0.0%
Oneida	0	1,084	0.0%	0	1,084	0.0%
Owyhee	0	4,922	0.0%	0	4,820	0.0%
Payette	0	6,285	0.0%	0	5,915	0.0%
Power	0	4,381	0.0%	0	7,288	0.0%
Shoshone	0	6,724	0.0%	0	6,724	0.0%
Teton	600	5,545	10.8%	571	5,465	10.5%
Twin Falls	72	19,689	0.4%	72	22,871	0.3%
Valley	0	20,975	0.0%	0	20,975	0.0%
Washington	0	2,985	0.0%	0	3,023	0.0%
Total	**4,285**	**636,309**	**0.7%**	**4,255**	**661,537**	**0.6%**

Landslide Exposure—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	0	0	0	0	0	0	0
Adams	0	0	0	0	0	0	0	0
Bannock	0	0	0	0	0	0	0	0
Bear Lake	0	0	0	0	0	0	0	0
Benewah	0	0	0	0	0	0	0	0
Bingham	0	0	0	0	0	0	0	0
Blaine	0	0	0	0	0	0	0	0
Boise	0	0	0	0	0	0	0	0
Bonner	0	0	0	0	0	0	0	0
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	0	0	0	0	0	0	0
Butte	0	0	0	0	0	0	0	0
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	0	0	0	0	0	0	0
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	0	0
Clearwater	0	0	0	0	0	0	0	0
Custer	0	3	0	0	0	6	0	9
Elmore	0	0	0	0	0	0	2	2
Franklin	0	0	0	0	0	0	0	0
Fremont	0	0	0	0	0	0	0	0
Gem	0	0	0	0	0	0	0	0
Gooding	0	0	0	0	0	0	0	0
Idaho	0	0	0	0	0	1	0	1
Jefferson	0	0	0	0	0	0	0	0
Jerome	0	0	0	0	0	0	0	0
Kootenai	0	0	0	0	0	0	0	0
Latah	0	0	0	0	0	0	0	0
Lemhi	0	0	0	0	0	3	0	3
Lewis	0	0	0	0	0	0	0	0
Lincoln	0	0	0	0	0	0	0	0
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	0	0	0	0	0	0	0
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	0	0	0
Payette	0	0	0	0	0	0	0	0
Power	0	0	0	0	0	0	0	0
Shoshone	0	0	0	0	0	0	0	0
Teton	0	1	0	0	0	0	0	1
Twin Falls	0	0	0	0	0	0	0	0
Valley	0	0	0	0	0	0	0	0
Washington	0	0	0	0	0	0	0	0
Total	**0**	**4**	**0**	**0**	**0**	**10**	**2**	**16**

Landslide Exposure—ICLUS

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adams	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bannock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bear Lake	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Benewah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Blaine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.2	13.2	0.0	0.0	0.0	0.0	0.4	0.4	0.0
Boise	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	57.1	57.1	0.0	0.0	0.0	0.0	1.0	1.0	0.0
Bonner	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Bonneville	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	6.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Boundary	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.5	15.5	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.7	33.7	0.0	0.0	0.0	0.0	0.7	0.7	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clark	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	164.4	164.4	0.0	0.1	0.1	0.0	0.2	0.2	0.0
Clearwater	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Custer	0.2	0.2	0.0	0.7	0.7	0.0	6.3	6.3	0.0	553.6	553.6	0.0	1.7	1.7	0.0	97.2	97.2	0.0
Elmore	0.0	0.0	0.0	0.1	0.1	0.0	0.2	0.2	0.0	28.5	28.5	0.0	0.0	0.0	0.0	0.6	0.6	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Fremont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Idaho	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	18.9	18.9	0.0	0.2	0.2	0.0	1.2	1.2	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenai	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Latah	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lemhi	0.0	0.0	0.0	0.1	0.1	0.0	0.6	0.6	0.0	398.0	398.0	0.0	0.5	0.5	0.0	115.5	115.5	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Nez Perce	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Shoshone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Teton	0.0	0.0	0.0	0.6	0.8	0.2	2.8	2.7	-0.1	24.9	24.8	-0.1	0.2	0.2	0.0	1.1	1.1	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	22.9	22.9	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Valley	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.3	11.3	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	**0.2**	**0.3**	**0.0**	**1.5**	**1.7**	**0.2**	**10.8**	**10.7**	**-0.1**	**1,345.1**	**1,345.0**	**-0.1**	**2.7**	**2.8**	**0.0**	**229.5**	**229.5**	**0.0**

WILDFIRE EXPOSURE

Wildfire Exposure—Hazard Area			
County	**Total Area (acres)**	**Hazard Area (acres)**	**% of Total**
Ada	678,323	258,078	38.0%
Adams	876,653	515,824	58.8%
Bannock	734,679	250,523	34.1%
Bear Lake	671,942	113,207	16.8%
Benewah	502,829	334,356	66.5%
Bingham	1,355,409	74,501	5.5%
Blaine	1,697,810	413,617	24.4%
Boise	1,220,249	643,369	52.7%
Bonner	1,227,895	921,121	75.0%
Bonneville	1,215,994	205,442	16.9%
Boundary	818,171	569,889	69.7%
Butte	1,430,996	154,845	10.8%
Camas	688,595	138,914	20.2%
Canyon	386,679	8,616	2.2%
Caribou	1,152,858	243,110	21.1%
Cassia	1,647,932	271,858	16.5%
Clark	1,129,342	165,466	14.7%
Clearwater	1,592,096	1,304,113	81.9%
Custer	3,157,650	1,538,768	48.7%
Elmore	1,984,649	528,265	26.6%
Franklin	427,606	71,444	16.7%
Fremont	1,214,126	219,182	18.1%
Gem	361,377	128,070	35.4%
Gooding	469,999	51,291	10.9%
Idaho	5,437,849	3,736,671	68.7%
Jefferson	706,807	13,520	1.9%
Jerome	384,815	33,799	8.8%
Kootenai	837,917	617,768	73.7%
Latah	689,079	308,044	44.7%
Lemhi	2,922,688	1,567,478	53.6%
Lewis	307,464	91,569	29.8%
Lincoln	770,948	104,750	13.6%
Madison	302,988	21,050	6.9%
Minidoka	489,621	2,549	0.5%
Nez Perce	547,446	192,930	35.2%
Oneida	768,447	154,458	20.1%
Owyhee	4,924,940	358,536	7.3%
Payette	262,660	34,842	13.3%
Power	921,773	121,340	13.2%
Shoshone	1,690,870	1,426,842	84.4%
Teton	287,946	62,825	21.8%
Twin Falls	1,232,970	101,986	8.3%
Valley	2,389,820	1,203,967	50.4%
Washington	943,451	228,488	24.2%
Total	**53,464,358**	**19,507,279**	**36.5%**

Wildfire Exposure—Population			
County	**Highly Vulnerable Population**	**Population**	**% Population Highly Vulnerable**
Ada	0	4,481	0.0%
Adams	0	1,003	0.0%
Bannock	536	3,429	15.6%
Bear Lake	0	232	0.0%
Benewah	3,487	3,487	100.0%
Bingham	41	110	37.4%
Blaine	353	2,537	13.9%
Boise	0	2,288	0.0%
Bonner	1,122	20,249	5.5%
Bonneville	5	578	0.9%
Boundary	0	4,535	0.0%
Butte	0	39	0.0%
Camas	0	73	0.0%
Canyon	7	183	3.9%
Caribou	0	257	0.0%
Cassia	31	92	33.7%
Clark	24	24	100.0%
Clearwater	1,746	4,644	37.6%
Custer	0	452	0.0%
Elmore	438	1,437	30.5%
Franklin	0	143	0.0%
Fremont	152	556	27.4%
Gem	53	317	16.7%
Gooding	38	151	25.2%
Idaho	737	4,537	16.2%
Jefferson	7	59	12.3%
Jerome	17	129	13.5%
Kootenai	2,919	39,670	7.4%
Latah	0	3,253	0.0%
Lemhi	232	892	26.0%
Lewis	308	458	67.2%
Lincoln	136	136	100.0%
Madison	0	106	0.0%
Minidoka	4	10	41.2%
Nez Perce	1,778	2,531	70.3%
Oneida	0	71	0.0%
Owyhee	11	221	4.8%
Payette	70	120	58.4%
Power	83	83	100.0%
Shoshone	2,294	4,042	56.8%
Teton	0	583	0.0%
Twin Falls	0	594	0.1%
Valley	0	5,033	0.0%
Washington	66	163	40.5%
Total	**16,697**	**113,990**	**14.6%**

Wildfire Exposure—State Facilities by County

County	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Ada	51	$120,586,078	1	$2,767,029	52	$123,353,107
Adams	0	$0	2	$5,534,058	2	$5,534,058
Bannock	2	$30,475	5	$11,110,587	7	$11,141,062
Bear Lake	10	$27,670,290	0	$0	10	$27,670,290
Benewah	38	$105,147,102	0	$0	38	$105,147,102
Bingham	0	$0	0	$0	0	$0
Blaine	1	$47,250	4	$133,393	5	$180,643
Boise	18	$7,755,373	2	$75,274	20	$7,830,647
Bonner	106	$174,920,624	3	$5,540,700	109	$180,461,324
Bonneville	1	$13,750	2	$5,534,058	3	$5,547,808
Boundary	1	$2,767,029	0	$0	1	$2,767,029
Butte	0	$0	1	$2,767,029	1	$2,767,029
Camas	0	$0	0	$0	0	$0
Canyon	0	$0	0	$0	0	$0
Caribou	6	$164,816	0	$0	6	$164,816
Cassia	0	$0	1	$8,856	1	$8,856
Clark	0	$0	0	$0	0	$0
Clearwater	69	$183,496,694	7	$19,369,203	76	$202,865,897
Custer	3	$5,550,978	1	$2,767,029	4	$8,318,007
Elmore	4	$3,039,978	0	$0	4	$3,039,978
Franklin	0	$0	0	$0	0	$0
Fremont	22	$31,775,202	0	$0	22	$31,775,202
Gem	0	$0	0	$0	0	$0
Gooding	20	$10,361,274	0	$0	20	$10,361,274
Idaho	25	$18,670,938	4	$11,068,116	29	$29,739,054
Jefferson	0	$0	0	$0	0	$0
Jerome	1	$2,767,029	1	$2,767,029	2	$5,534,058
Kootenai	61	$135,709,253	7	$16,602,175	68	$152,311,429
Latah	2	$49,513	0	$0	2	$49,513
Lemhi	3	$360,459	5	$11,085,828	8	$11,446,287
Lewis	13	$33,740,705	0	$0	13	$33,740,705
Lincoln	0	$0	0	$0	0	$0
Madison	0	$0	0	$0	0	$0
Minidoka	9	$24,903,261	0	$0	9	$24,903,261
Nez Perce	10	$8,477,900	0	$0	10	$8,477,900
Oneida	0	$0	0	$0	0	$0
Owyhee	2	$5,534,058	1	$2,767,029	3	$8,301,087
Payette	0	$0	0	$0	0	$0
Power	7	$19,369,203	0	$0	7	$19,369,203
Shoshone	7	$16,638,200	2	$5,534,058	9	$22,172,258
Teton	0	$0	0	$0	0	$0
Twin Falls	2	$5,534,058	0	$0	2	$5,534,058
Valley	79	$152,378,209	2	$2,873,289	81	$155,251,498
Washington	0	$0	1	$17,712	1	$17,712
Total	**573**	**$1,097,459,699**	**52**	**$108,322,452**	**625**	**$1,205,782,151**

Wildfire Exposure—State Facilities by Agency

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Arts Commission	0	$0	0	$0	0	$0
Attorney General's Office	0	$0	0	$0	0	$0
Bean Commission	0	$0	0	$0	0	$0
Board of Tax Appeals	0	$0	0	$0	0	$0
Boise State University	0	$0	0	$0	0	$0
Boise Veteran's Home	0	$0	0	$0	0	$0
Commission for the Blind and Visually Impaired	0	$0	0	$0	0	$0
Commission on Aging	0	$0	0	$0	0	$0
Commission on Hispanic Affairs	0	$0	0	$0	0	$0
Commission on Pardons and Paroles	0	$0	0	$0	0	$0
Correctional Industries	0	$0	0	$0	0	$0
Council for Deaf and Hard of Hearing	0	$0	0	$0	0	$0
Dairy Products Commission	0	$0	0	$0	0	$0
Dept. of Administration	0	$0	0	$0	0	$0
Dept. of Agriculture	0	$0	2	$2,767,030	2	$2,767,030
Dept. of Commerce	0	$0	0	$0	0	$0
Dept. of Correction	3	$62,755,492	0	$0	3	$62,755,492
Dept. of Education	0	$0	0	$0	0	$0
Dept. of Environmental Quality	0	$0	2	$5,534,058	2	$5,534,058
Dept. of Finance	0	$0	0	$0	0	$0
Dept. of Fish and Game	134	$74,013,162	2	$2,873,289	136	$76,886,451
Dept. of Health and Welfare	0	$0	2	$5,534,058	2	$5,534,058
Dept. of Insurance	0	$0	0	$0	0	$0
Dept. of Juvenile Corrections	0	$0	0	$0	0	$0
Dept. of Lands	25	$13,554,121	1	$42,471	26	$13,596,592
Dept. of Parks and Recreation	272	$737,259,369	0	$0	272	$737,259,369
Dept. of Transportation	25	$6,865,724	0	$0	25	$6,865,724
Dept. of Transportation-Aeronautics	13	$709,810	0	$0	13	$709,810
Dept. of Transportation-Dist. 1	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 2	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 3	1	$276,770	0	$0	1	$276,770
Dept. of Transportation-Dist. 4	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 5	0	$0	0	$0	0	$0
Dept. of Transportation-Dist. 6	0	$0	0	$0	0	$0
Dept. of Water Resources	1	$10,987,086	0	$0	1	$10,987,086
Div. of Financial Management	0	$0	0	$0	0	$0
Div. of Human Resources	0	$0	0	$0	0	$0
Div. of Military	44	$109,487,029	14	$16,844,601	58	$126,331,631
Div. of Occupational and Professional Licenses	0	$0	0	$0	0	$0
Div. of Veterans Services	0	$0	0	$0	0	$0
Div. of Vocational Rehabilitation	0	$0	2	$5,534,058	2	$5,534,058
Educational Services for the Deaf and the Blind	0	$0	0	$0	0	$0
Endowment Fund Investment Board	0	$0	0	$0	0	$0
Forest Products Commission	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Governor's Office	0	$0	0	$0	0	$0
Idaho Barley Commission	0	$0	0	$0	0	$0
Idaho Beef Council	0	$0	0	$0	0	$0
Idaho Career & Technical Ed (Voc Ed)	0	$0	0	$0	0	$0
Idaho Commission for Libraries	0	$0	0	$0	0	$0
Idaho Crop Improvement Association	0	$0	0	$0	0	$0
Idaho Dept. of Labor	1	$3,677,625	1	$2,767,029	2	$6,444,654
Idaho Digital Learning Alliance	0	$0	0	$0	0	$0
Idaho Industrial Commission	0	$0	0	$0	0	$0
Idaho Office of Energy Resources	0	$0	0	$0	0	$0
Idaho Potato Commission	0	$0	0	$0	0	$0
Idaho Public Television	8	$19,438,797	10	$27,670,290	18	$47,109,087
Idaho Rangeland Resources Commission	0	$0		$0	0	$0
Idaho Soil and Water Conservation Commission	0	$0	1	$2,767,029	1	$2,767,029
Idaho State Bar	0	$0	0	$0	0	$0
Idaho State Historical Society	0	$0	0	$0	0	$0
Idaho State Liquor Div.	0	$0	7	$19,369,203	7	$19,369,203
Idaho State Police	0	$0	0	$0	0	$0
Idaho State University	0	$0	3	$8,301,087	3	$8,301,087
Idaho Tax Commission	0	$0	0	$0	0	$0
Idaho Wheat Commission	0	$0	0	$0	0	$0
IDHW - Bureau of Laboratories	0	$0	0	$0	0	$0
IDHW - State Hospital North	8	$19,147,644	0	$0	8	$19,147,644
IDHW - State Hospital South	0	$0	0	$0	0	$0
IDHW - State Hospital West	0	$0	0	$0	0	$0
IDHW Southwest Idaho Treatment Center	0	$0	0	$0	0	$0
Information Technology Services	0	$0	1	$2,767,029	1	$2,767,029
ISP - Racing Commission	0	$0	0	$0	0	$0
ISP ΓÇô State Brand Board	0	$0	0	$0	0	$0
Judicial Branch / Supreme Court	1	$2,767,029	0	$0	1	$2,767,029
Lava Hot Springs Foundation	0	$0	0	$0	0	$0
Legislative House	0	$0	0	$0	0	$0
Legislative Senate	0	$0	0	$0	0	$0
Legislative Services	0	$0	0	$0	0	$0
Lewis-Clark State College	0	$0	2	$5,534,058	2	$5,534,058
Lewiston Veteran's Home	0	$0	0	$0	0	$0
Lieutenant Governor	0	$0	0	$0	0	$0
Lottery Commission	0	$0	0	$0	0	$0
Office of Administrative Hearings	0	$0	0	$0	0	$0
Office of Drug Policy	0	$0	0	$0	0	$0
Office of Performance Evaluations	0	$0	0	$0	0	$0
Office of Species Conservation	0	$0	0	$0	0	$0
Office of the State Controller	0	$0	0	$0	0	$0
Pocatello Veteran's Home	0	$0	0	$0	0	$0

Agency	State-Owned		State-Leased		State-Owned and -Leased	
	Number of Structures	Structure RCV	Number of Structures	Structure RCV	Number of Structures	Structure RCV
Post Falls Veteran's Home	0	$0	0	$0	0	$0
Public Charter School Commission	0	$0	0	$0	0	$0
Public Employee Retirement System of Idaho	0	$0	0	$0	0	$0
Public Health Dist. 1 (Panhandle)	1	$36,026	0	$0	1	$36,026
Public Health Dist. 2 (North Central)	1	$536,357	0	$0	1	$536,357
Public Health Dist. 3 (Southwest)	0	$0	0	$0	0	$0
Public Health Dist. 4 (Central)	0	$0	0	$0	0	$0
Public Health Dist. 5 (South Central)	0	$0	0	$0	0	$0
Public Health Dist. 6 (South Eastern)	0	$0	0	$0	0	$0
Public Health Dist. 7 (Eastern)	0	$0	0	$0	0	$0
Public Safety Communications	0	$0	0	$0	0	$0
Public Utilities Commission	0	$0	0	$0	0	$0
Secretary of State	0	$0	0	$0	0	$0
State Appellate Public Defender	0	$0	0	$0	0	$0
State Board of Education	0	$0	0	$0	0	$0
State Independent Living Council	0	$0	0	$0	0	$0
State Insurance Fund	0	$0	0	$0	0	$0
State Public Defense Commission	0	$0	0	$0	0	$0
State Treasurer	0	$0	0	$0	0	$0
STEM Action Center	0	$0	0	$0	0	$0
University of Idaho	35	$35,947,656	2	$17,161	37	$35,964,817
Veteran's Cemetery - Blackfoot	0	$0	0	$0	0	$0
Veterans State Cemetery Boise	0	$0	0	$0	0	$0
Workforce Development Council	0	$0	0	$0	0	$0
Total	**573**	**$1,097,459,699**	**52**	**$108,322,452**	**625**	**$1,205,782,151**

Wildfire Exposure—State Bridges

County	Number of Bridges
Ada	2
Adams	1
Bannock	0
Bear Lake	2
Benewah	1
Bingham	0
Blaine	1
Boise	3
Bonner	7
Bonneville	0
Boundary	3
Butte	0
Camas	0
Canyon	0
Caribou	0
Cassia	0
Clark	0
Clearwater	2
Custer	1
Elmore	1
Franklin	0
Fremont	1
Gem	0
Gooding	3
Idaho	8
Jefferson	0
Jerome	0
Kootenai	15
Latah	1
Lemhi	3
Lewis	8
Lincoln	1
Madison	0
Minidoka	0
Nez Perce	4
Oneida	0
Owyhee	0
Payette	0
Power	1
Shoshone	3
Teton	0
Twin Falls	0
Valley	1
Washington	0
Total	**73**

Wildfire Exposure—State Highways	
County	**Miles of Highway**
Ada	8.4
Adams	2.7
Bannock	1.9
Bear Lake	1.1
Benewah	5.3
Bingham	0.5
Blaine	2.6
Boise	13.6
Bonner	36.0
Bonneville	5.0
Boundary	5.7
Butte	0.0
Camas	0.3
Canyon	1.0
Caribou	4.2
Cassia	2.5
Clark	0.5
Clearwater	29.7
Custer	7.2
Elmore	6.5
Franklin	1.5
Fremont	8.5
Gem	2.2
Gooding	4.3
Idaho	54.5
Jefferson	0.2
Jerome	3.8
Kootenai	49.6
Latah	8.6
Lemhi	13.5
Lewis	10.5
Lincoln	2.6
Madison	0.0
Minidoka	0.2
Nez Perce	7.4
Oneida	1.5
Owyhee	1.6
Payette	0.1
Power	1.0
Shoshone	6.1
Teton	1.1
Twin Falls	0.1
Valley	4.5
Washington	3.4
Total	**321.4**

Wildfire Exposure—Canals	
County	**Miles of Canal**
Ada	12.1
Adams	14.9
Bannock	8.8
Bear Lake	7.8
Benewah	0.9
Bingham	10.7
Blaine	8.9
Boise	3.5
Bonner	0.5
Bonneville	1.0
Boundary	3.1
Butte	6.9
Camas	0.1
Canyon	10.7
Caribou	12.8
Cassia	3.2
Clark	6.8
Clearwater	0.0
Custer	9.7
Elmore	36.3
Franklin	10.4
Fremont	17.9
Gem	17.6
Gooding	26.0
Idaho	12.9
Jefferson	2.6
Jerome	20.4
Kootenai	11.7
Latah	0.0
Lemhi	27.3
Lewis	0.0
Lincoln	39.7
Madison	4.2
Minidoka	1.3
Nez Perce	3.1
Oneida	2.9
Owyhee	13.1
Payette	10.4
Power	3.1
Shoshone	0.0
Teton	5.2
Twin Falls	16.9
Valley	22.9
Washington	2.7
Total	**431.0**

Wildfire Exposure—Land Use

County	Acres of 2020 Buildable Lands in Hazard Area	Total Acres of 2020 Buildable Lands	% of 2020 Buildable Lands in Hazard Area	Acres of 2030 Buildable Lands in Hazard Area	Total Acres of 2030 Buildable Lands	% of 2030 Buildable Lands in Hazard Area
Ada	4,187	50,150	8.3%	5,119	54,705	9.4%
Adams	2,767	8,605	32.2%	2,767	8,605	32.2%
Bannock	7,160	21,368	33.5%	7,614	22,966	33.2%
Bear Lake	483	5,493	8.8%	483	5,488	8.8%
Benewah	12,209	16,128	75.7%	12,209	16,128	75.7%
Bingham	228	7,906	2.9%	298	9,016	3.3%
Blaine	1,862	8,562	21.7%	1,935	9,426	20.5%
Boise	4,428	10,697	41.4%	3,783	9,037	41.9%
Bonner	74,229	102,182	72.6%	74,231	102,184	72.6%
Bonneville	451	12,203	3.7%	509	13,253	3.8%
Boundary	18,437	26,841	68.7%	18,437	26,841	68.7%
Butte	141	2,211	6.4%	141	2,218	6.3%
Camas	118	1,615	7.3%	206	2,172	9.5%
Canyon	385	31,858	1.2%	361	32,126	1.1%
Caribou	560	4,115	13.6%	560	4,115	13.6%
Cassia	234	6,296	3.7%	605	7,518	8.1%
Clark	48	482	10.0%	93	694	13.4%
Clearwater	3,565	4,621	77.2%	3,565	4,621	77.2%
Custer	247	5,190	4.8%	247	5,190	4.8%
Elmore	2,692	13,858	19.4%	3,209	15,500	20.7%
Franklin	818	8,751	9.3%	936	10,275	9.1%
Fremont	862	7,431	11.6%	1,022	9,135	11.2%
Gem	954	5,105	18.7%	1,257	5,440	23.1%
Gooding	850	8,160	10.4%	992	8,839	11.2%
Idaho	8,273	12,729	65.0%	8,273	12,729	65.0%
Jefferson	5	3,652	0.1%	5	3,460	0.2%
Jerome	127	11,005	1.2%	163	10,428	1.6%
Kootenai	87,364	121,486	71.9%	87,170	122,582	71.1%
Latah	5,060	11,845	42.7%	6,277	13,579	46.2%
Lemhi	911	11,637	7.8%	911	11,637	7.8%
Lewis	127	408	31.1%	127	408	31.1%
Lincoln	322	2,398	13.4%	518	2,958	17.5%
Madison	84	4,371	1.9%	108	4,978	2.2%
Minidoka	8	4,518	0.2%	8	4,363	0.2%
Nez Perce	2,360	9,844	24.0%	2,224	10,762	20.7%
Oneida	81	1,084	7.4%	81	1,084	7.4%
Owyhee	94	4,922	1.9%	94	4,820	2.0%
Payette	161	6,285	2.6%	146	5,915	2.5%
Power	1,128	4,381	25.7%	1,476	7,288	20.3%
Shoshone	4,610	6,724	68.6%	4,610	6,724	68.6%
Teton	871	5,545	15.7%	835	5,465	15.3%
Twin Falls	1,170	19,689	5.9%	1,536	22,871	6.7%
Valley	10,698	20,975	51.0%	10,698	20,975	51.0%
Washington	71	2,985	2.4%	80	3,023	2.6%
Total	**261,440**	**636,309**	**41.1%**	**265,920**	**661,537**	**40.2%**

Wildfire Exposure—Number of Critical Facilities in Hazard Area

County	Communications	Energy	Food, Water, Shelter	Hazardous Material	Health & Medical	Safety & Security	Transportation	Total
Ada	0	6	0	0	0	0	0	6
Adams	0	2	0	0	0	1	14	17
Bannock	0	1	0	0	0	2	0	3
Bear Lake	0	4	0	0	0	0	1	5
Benewah	0	1	0	0	0	1	6	8
Bingham	0	0	0	0	0	0	0	0
Blaine	0	4	1	0	0	0	0	5
Boise	0	2	0	0	0	5	2	9
Bonner	0	3	0	0	1	13	9	26
Bonneville	0	0	0	0	0	0	0	0
Boundary	0	5	0	0	0	4	8	17
Butte	0	2	0	0	0	0	0	2
Camas	0	0	0	0	0	0	0	0
Canyon	0	0	0	0	0	0	0	0
Caribou	0	4	0	0	0	0	0	4
Cassia	0	0	0	0	0	0	0	0
Clark	0	0	0	0	0	0	5	5
Clearwater	0	4	0	0	2	2	4	12
Custer	0	3	0	0	0	1	0	4
Elmore	0	11	0	0	0	0	1	12
Franklin	0	1	0	0	0	0	0	1
Fremont	0	2	0	0	0	0	1	3
Gem	0	1	0	0	0	0	0	1
Gooding	0	11	1	0	0	0	0	12
Idaho	0	0	0	0	0	3	2	5
Jefferson	0	0	0	0	0	0	1	1
Jerome	0	10	0	0	0	0	1	11
Kootenai	0	6	0	0	0	21	5	32
Latah	0	2	0	0	0	0	7	9
Lemhi	0	3	0	0	0	1	0	4
Lewis	0	0	0	0	0	0	2	2
Lincoln	0	3	0	0	0	0	0	3
Madison	0	0	0	0	0	0	0	0
Minidoka	0	0	0	0	0	0	0	0
Nez Perce	0	2	0	0	0	0	9	11
Oneida	0	0	0	0	0	0	0	0
Owyhee	0	0	0	0	0	1	0	1
Payette	0	0	0	0	0	0	0	0
Power	0	1	0	0	0	0	1	2
Shoshone	0	2	0	0	0	0	4	6
Teton	0	2	0	0	0	0	0	2
Twin Falls	0	9	0	0	0	0	0	9
Valley	0	6	0	0	0	3	4	13
Washington	0	2	0	0	0	0	0	2
Total	**0**	**115**	**2**	**0**	**3**	**58**	**87**	**265**

Wildfire Exposure—ICLUS																		
	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Ada	0.1	0.2	0.0	0.9	0.9	0.0	12.0	14.6	2.6	337.9	335.2	-2.6	2.0	2.1	0.0	50.3	50.3	0.0
Adams	0.0	0.0	0.0	0.1	0.1	0.0	4.8	4.8	0.0	703.2	703.2	0.0	0.3	0.3	0.0	97.6	97.6	0.0
Bannock	0.7	1.2	0.5	1.4	1.9	0.4	14.8	16.4	1.7	351.0	348.3	-2.6	1.9	2.0	0.1	21.7	21.7	0.0
Bear Lake	0.0	0.0	0.0	0.1	0.1	0.0	0.9	0.9	0.0	170.0	170.0	0.0	0.1	0.1	0.0	5.7	5.7	0.0
Benewah	0.0	0.0	0.0	0.2	0.2	0.0	20.5	20.5	0.0	463.3	463.3	0.0	0.6	0.6	0.0	37.7	37.7	0.0
Bingham	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	0.1	110.8	110.7	-0.1	2.3	2.3	0.0	2.8	2.8	0.0
Blaine	0.1	0.1	0.0	0.6	0.8	0.1	8.5	8.9	0.4	540.5	539.9	-0.6	0.8	0.8	0.0	95.9	95.9	0.0
Boise	0.2	0.2	0.0	0.8	0.8	0.0	11.9	12.9	1.0	960.1	959.1	-1.0	1.0	1.0	0.0	31.3	31.2	0.0
Bonner	0.3	0.3	0.0	2.7	2.7	0.0	135.2	135.2	0.0	1,242.7	1,242.7	0.0	1.9	1.9	0.0	56.3	56.3	0.0
Bonneville	0.0	0.0	0.0	0.1	0.1	0.0	1.7	2.3	0.6	266.4	265.8	-0.6	1.5	1.5	0.0	51.3	51.3	0.0
Boundary	0.0	0.0	0.0	0.4	0.4	0.0	32.2	32.2	0.0	796.2	796.2	0.0	0.5	0.5	0.0	61.2	61.2	0.0
Butte	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	203.5	203.5	0.0	10.3	10.3	0.0	27.8	27.8	0.0
Camas	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.1	213.5	213.4	-0.1	0.0	0.0	0.0	3.3	3.3	0.0
Canyon	0.0	0.0	0.0	0.0	0.0	0.0	0.9	0.9	0.0	11.4	11.4	0.0	0.1	0.1	0.0	1.0	1.0	0.0
Caribou	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.2	0.0	371.5	371.5	0.0	0.6	0.6	0.0	6.6	6.6	0.0
Cassia	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.1	0.6	417.6	417.0	-0.6	0.2	0.2	0.0	6.4	6.4	0.0
Clark	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.4	0.1	255.9	255.7	-0.2	0.1	0.1	0.0	2.3	2.3	0.0
Clearwater	0.1	0.1	0.0	0.6	0.6	0.0	7.0	7.0	0.0	1,987.9	1,987.9	0.0	24.6	24.6	0.0	17.5	17.5	0.0
Custer	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7	0.0	1,567.9	1,567.9	0.0	1.8	1.8	0.0	833.8	833.8	0.0
Elmore	0.0	0.0	0.0	0.2	0.2	0.0	5.0	6.0	1.0	766.5	765.5	-1.0	1.1	1.1	0.0	52.6	52.6	0.0
Franklin	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.7	1.0	108.4	107.4	-1.0	0.1	0.1	0.0	1.4	1.4	0.0
Fremont	0.1	0.1	0.0	0.5	0.5	0.0	2.9	3.4	0.5	303.5	302.9	-0.6	0.8	0.8	0.0	34.7	34.7	0.0
Gem	0.0	0.0	0.0	0.0	0.0	0.0	1.8	2.3	0.6	195.3	194.7	-0.6	0.1	0.1	0.0	3.0	3.0	0.0
Gooding	0.0	0.0	0.0	0.0	0.0	0.0	1.4	1.7	0.2	71.7	71.5	-0.2	0.2	0.2	0.0	6.8	6.8	0.0
Idaho	0.0	0.0	0.0	0.2	0.2	0.0	14.3	14.3	0.0	3,233.8	3,233.8	0.0	1.5	1.5	0.0	2,588.5	2,588.5	0.0
Jefferson	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.4	12.4	0.0	2.3	2.3	0.0	6.4	6.4	0.0
Jerome	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.4	0.3	50.9	50.6	-0.3	0.3	0.3	0.0	0.5	0.5	0.0
Kootenai	1.9	2.2	0.3	7.7	8.6	0.8	160.6	163.2	2.6	769.2	765.4	-3.8	4.7	4.8	0.1	21.0	21.0	0.0
Latah	0.0	0.0	0.0	0.2	0.3	0.1	9.2	11.3	2.1	465.3	463.0	-2.3	0.7	0.7	0.0	5.9	5.9	0.0
Lemhi	0.0	0.0	0.0	0.1	0.1	0.0	1.8	1.8	0.0	2,093.3	2,093.3	0.0	0.4	0.4	0.0	353.4	353.4	0.0

	Total square miles of ICLUS Land Use Types Located in Hazard Area																	
	Urban			Suburban			Exurban			Rural			Commercial/Industrial/Other			Natural		
	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change	2020	2030	Change
Lewis	0.0	0.0	0.0	0.1	0.1	0.0	0.3	0.3	0.0	138.3	138.3	0.0	0.3	0.3	0.0	4.1	4.1	0.0
Lincoln	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2	0.4	129.6	129.2	-0.4	0.2	0.2	0.0	33.0	33.0	0.0
Madison	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.1	28.6	28.5	-0.1	0.0	0.0	0.0	4.1	4.1	0.0
Minidoka	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	3.7	0.0	0.0	0.0	0.0	0.2	0.2	0.0
Nez Perce	0.1	0.3	0.3	0.8	1.4	0.6	6.7	7.9	1.2	272.2	270.1	-2.1	1.4	1.4	0.0	20.3	20.3	0.0
Oneida	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	240.9	240.9	0.0	0.1	0.1	0.0	0.2	0.2	0.0
Owyhee	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.0	493.8	493.8	0.0	1.2	1.2	0.0	65.0	65.0	0.0
Payette	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3	0.0	54.0	54.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Power	0.0	0.0	0.0	0.0	0.0	0.0	1.9	2.8	0.9	182.6	181.6	-1.0	0.1	0.1	0.0	5.0	5.0	0.0
Shoshone	0.1	0.1	0.0	0.8	0.8	0.0	11.2	11.2	0.0	2,046.5	2,046.5	0.0	1.0	1.0	0.0	169.8	169.8	0.0
Teton	0.0	0.0	0.0	0.1	0.1	0.0	2.4	2.5	0.0	92.9	92.8	-0.1	0.0	0.0	0.0	2.8	2.8	0.0
Twin Falls	0.0	0.0	0.0	0.0	0.0	0.0	2.7	3.4	0.7	152.9	152.3	-0.7	0.3	0.3	0.0	3.3	3.3	0.0
Valley	0.3	0.3	0.0	3.0	3.0	0.0	26.7	26.7	0.0	911.6	911.6	0.0	1.4	1.4	0.0	938.2	938.2	0.0
Washington	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	339.7	339.6	0.0	0.1	0.1	0.0	17.1	17.1	0.0
Total	**4.2**	**5.3**	**1.1**	**21.8**	**24.0**	**2.2**	**507.2**	**526.2**	**18.9**	**24,129.0**	**24,106.4**	**-22.5**	**69.2**	**69.4**	**0.3**	**5,747.6**	**5,747.6**	**0.0**

Appendix F. Hazard Impact Rating

F. HAZARD IMPACT RATING

A hazard impact rating was performed for the hazards of concern described in this Plan following the fundamental definition of risk:

Probability x Impact = Risk

This impact rating assesses such factors as:

- **Probability** – The probability of each hazard's occurrence
- **Impact on Assets** – The likely impact on the State-owned and -leased assets which are critical lifelines to the state's capability to respond and recover from hazard events
- **Impact on People** – The population exposed (both total population and the population of equity priority communities)
- **Future Impacts** – The potential for the expansion of risk due to buildable lands and future impacts from the hazard due to climate change.

This impact rating was conducted using a combination of quantitative and qualitative data on each hazard for these selected metrics. Metrics are the quantifiable measures that is used to compare and assess the identified impacts of each hazard. The impacts to each hazard were rated as high, medium, or low. These impacts are then multiplied by the probability factor to generate the hazard impact rating for each hazard. The quantitative analysis aspect of this exercise was limited to hazards with a clearly defined extent and location. For other hazards that do not have a clearly defined extent and location, like cyber threats, a more qualitative approach was applied. In this case, rankings were assigned qualitatively based on assumptions on impacts the hazard might have on the metrics identified (State-owned and -leased facilities, lifelines, population, etc.)

The following categories were considered when evaluating the relative risk of each hazard:

Probability of Occurrence—The probability of occurrence of the scenario evaluated was estimated by examining the historic record and/or calculating the likelihood of annual occurrence. When no scenario was assessed, an examination of the historic record and judgment was used to estimate the probability of occurrence of an event that will impact the state.

Impact on State-Owned and -leased Assets—Values were assigned based on the percentage of the total replacement cost value (RCV) for state-owned and -leased assets exposed to the hazard. The basis for this value is a spatial evaluation of the RCV of assets exposed to each hazard compared to the total RCV of all assets. This assessment makes no determination of the importance of each asset. All assets have been weighted equally.

Impact on Community Lifelines—Values were assigned based on raw count of identified lifelines exposed to the hazard. The basis for this value is a spatial evaluation of the location of lifelines relative to the extent and location of the hazard. This assessment makes no determination of the importance of each category of lifeline. All lifelines have been weighted equally.

Impact on the Total Population—Values were assigned based on the percentage of the total population exposed to the hazard event in comparison to the entire population of the state. For those hazards that have a clearly defined extent and location (i.e., flood, dam failure, etc.), the population exposed is that population within the identified zone. The degree of impact on individuals will vary and is not accurately measurable. For simplicity and consistency, the calculation assumes that all people, because they live in a hazard zone, will be exposed to the hazard and will be equally impacted when a hazard event occurs.

Impact on the Socially Vulnerable Population—Values were assigned based on the percentage of the population that has been identified as a socially vulnerable population exposed to the hazard event. For those hazards that have a clearly defined extent and location (i.e., flood, dam failure, etc.), the population exposed is that population within the identified zone. The degree of impact on individuals will vary and is not accurately measurable. For simplicity and consistency, the calculation assumes that all people in the socially vulnerable population, because they live in a defined hazard zone, will be exposed to the hazard and will be equally impacted when a hazard event occurs.

Impact on Buildable Lands—This category considers how the risk from the hazard could increase because of future development. Values were assigned based on the percentage of the buildable lands within the hazard area compared to the total area of buildable lands within the state. For this SHMP planning effort and "buildable land" is any parcel that is currently undeveloped that could be developed in the future due to current land use regulations that apply to the parcel. This could be residential, commercial, or industrial zoning. Calculations were based on a spatial analysis of the intersection between lands identified as "buildable" and the extent and location of the hazard.

Climate Change Impacts—Using current data and projected models, the analysis for this category was based on the anticipated impacts that the changing climate will have on increasing the frequency, severity, and extent of each hazard assessed.

Table F-1 summarizes the categories and benchmark values used to calculate the impact factor for each hazard. As described above, probability is multiplied by the sum of the impact categories to determine relative risk.

Table F-2 lists the impact rating for natural hazards and Table F-3 lists the impact rating for other hazards of interest.

Table F-1. Summary of Hazard Impact Rating Approach and Associated Criteria

Category		Level	Degree of Risk/Benchmark Value	Numeric Value
Probability of Occurrence		No exposure	There is no probability of occurrence	0
		Low	Hazard event is not likely to occur within 100 years	1
		Medium	Hazard event likely to occur within 100 years	2
		High	Hazard event likely to occur within 25 years	3
Impact *(Sum of all 6)*	State-Owned and -leased Assets	No Impact	Hazard is not likely to impact State-owned and -leased facilities	0
		Low	≤14% of the total RCV for State-owned and -leased facilities exposed to a hazard	1
		Medium	15 – 29% of total RCV for State-owned and -leased facilities exposed to hazard	2
		High	≥30% of the total RCV for State-owned and- leased facilities exposed to a hazard	3
	Community Lifelines	No Impact	None of the Lifelines are exposed to a hazard	0
		Low	≤14% of the total Lifelines exposed to a hazard	1
		Medium	15 – 29% of total Lifelines exposed to hazard	2
		High	≥30% or more of total Lifelines exposed to a hazard	3
	Total Population	No Impact	None of the population is exposed to a hazard	0
		Low	≤25% of the population is exposed to a hazard	1
		Medium	25—49% of the population is exposed to hazard	2
		High	≥50% or more of the population is exposed to a hazard	3
	Socially Vulnerable Population	No Impact	None of the population is exposed to a hazard	0
		Low	≤14% of the population is exposed to a hazard	1
		Medium	15—29% of the population is exposed to hazard	2
		High	≥30% or more of the population is exposed to a hazard	3
	Buildable Lands	No Impact	None of the buildable land is exposed to a hazard	0
		Low	≤6% of the buildable land is exposed to a hazard	1
		Medium	7—14% of the buildable land is exposed to hazard	2
		High	≥15% or more of the buildable land is exposed to a hazard	3
	Climate Change	None	Climate change is not anticipated to have any impact on the hazard	0
		Low	Measurable impacts to frequency, severity and extent of the hazard are likely to increase in greater than 50 years.	1
		Medium	Measurable impacts to frequency, severity and extent of the hazard are likely to increase measurably in greater than 50 years	2
		High	Measurable impacts to frequency, severity and extent of the hazard are likely to increase measurably within the next 30 years	3

Table F-2. Impact Rating for Natural Hazards

Natural Hazard	Probability	Impact						Impact Rating
		State-Owned and -Leased Facilities	Community Lifelines	Total Population	Socially Vulnerable Population	Buildable Lands	Climate Change	
Avalanche	3	1	1	1	1	1	2	Medium 21.0
Drought	3	0	1	3	3	1	3	High 33.0
Earthquake	3	1	1	1	1	1	1	Medium 18.0
Flood	3	1	1	1	3	1	3	High 30.0
Landslide	3	1	1	1	1	1	3	Medium 24.0
Severe Weather	3	3	2	2	2	1	3	High 39.0
Volcanic Eruptions	2	1	1	1	1	1	0	Low 10.0
Wildfire	3	1	1	1	2	3	3	High 33.0

Table F-3. Impact Rating for Other Hazards of Interest

Natural Hazard	Probability	Impact						Impact Rating
		State-Owned and -Leased Facilities	Community Lifelines	Total Population	Socially Vulnerable Population	Buildable Lands	Climate Change	
Civil Disorder	2	1	1	2	2	1	0	Low 14.0
Cyber Threats	3	1	1	2	2	0	0	Medium 18.0
Hazardous Materials	3	1	1	1	1	0	0	Low 12.0
Pandemic	3	0	1	3	3	0	2	Medium 27.0
Radiological	1	0	0	2	2	0	0	Low 4.0

State of Idaho Hazard Mitigation Plan

Appendix G. Mitigation Strategy Supplement

G. Mitigation Strategy Supplement

STATUS OF ACTIONS FROM THE 2018 IDAHO SHMP

A comprehensive review and evaluation of the 2018 SHMP actions is presented in Table G-1. The table includes a comment describing the status of each action. Each action that was not completed or removed has been carried over to the 2023 SHMP action plan with the existing action number (see Section 24.2).

Table G-1. Status of Actions from the 2018 Idaho SHMP

Action Item from Previous Plan	Status
Action: 2020-01— Ensure downstream entities are made aware of HHPD risk status as it will impact their mission/operations.	
Comment: IDWR continues to work to educate multiple jurisdictions variously located downstream of high hazard dams about the need to carefully consider future development and how to mitigate the potential consequences that a dam failure, however unlikely, could render upon downstream life and property.	Ongoing
Action: 2020-02— Propose land use regulations, ordinances, and/or construction standards to protect life and property from eligible high hazard potential dams.	
Comment: IDWR does not have statutory authority to propose land use regulations and standards. However, IDWR Dam Safety program continues regulate design, construction, and operation of all hydraulic structures greater than or equal to ten feet dam height and 50 acre-feet reservoir storage for benefit of public safety in accordance with engineering design and operational standards of care.	Ongoing
Action: 2020-03— Rehabilitating and/or removing eligible high hazard potential dams.	
Comment: Oakley Dam and Mackay Dam started. IDWR continues to identify potential funding options for owners of high hazard dams that will assist with needed repair/ rehabilitation of outstanding deficiencies. Unfortunately, many of the funding opportunities currently available to dam owners include a cost-share component, interest-applied loan provision, and/or limit the amount of funding available to an individual project.	Ongoing
Action: 2020-04— Working with eligible dam owners to create/ update and share EAPs or dam incident annex to emergency operations plans (EOPs).	
Comment: The Emergency Action Plans for the state's high hazard dams are the responsibility and property of the dam owner. IDWR continues to work with dam owners to encourage them to prepare an EAP for (their) high hazard dams, and to work to ensure that the EAP is regularly updated on a 2-year interval or sooner as appropriate to reflect important revisions.	Ongoing
Action: 2018-01—Create State Cyber Incident Response plan and integrate planning through TWG.	
Comment: Continuing integration process. 2021 update scheduled. ITS working on this issue.	Ongoing
Action: 2018-02—Develop a self-assessment template for mitigation of Cyber Security risks.	
Comment: 2020- ITS put out an assessment for all state agencies, which will be updated as needed.	Ongoing
Action: 2018-03—Development of a Cyber Industry Control System for attack cycle understanding and penetration testing using artificial intelligence.	
Comment: This action is removed as written and combined with Action 2018-002 in the 2023 update.	Removed
Action: 2018-04—Display approved SHMP to public on story map (interactive web display platform).	
Comment: Started word press and development of new website in 2018; conducted story map training in 2019. This action is removed as written and combined with Action 2023-004.	Removed

Action Item from Previous Plan	Status
Action: 2018-05—Resilience modeling for system interdependency (4 systems – based on hazards). **Comment:** This action is removed as written and combined with Action 2023-002.	Removed
Action: 2018-06—Create all-hazards publications for public education. **Comment:** 2020- Received funding under Dr-5263 for educational video. Several education videos were completed.	Ongoing
Action: 2018-07—Produce digital inundation maps with depth grids for Hazus vulnerability and loss analysis for major dams within the state. **Comment:** IDWR Dam Safety continues to create downstream inundation maps using 2-D breach modeling software (DSS-WISE) provided through a beneficial collaboration with FEMA and the University of Mississippi. Based on the results of the breach analysis and inundation modeling, it may be possible to then transfer/ convert the inundation data to Hazus for additional evaluation, noting that IDWR typically does not perform this operation when making a hazard classification determination.	Ongoing
Action: 2018-08—Conduct engineering study to identify and replace undersized and damaged culverts and bridges throughout the state. **Comment:** Ongoing efforts during the previous planning cycle by IOEM and IDT	Ongoing
Action: 2018-09—Update Idaho Multi-Hazard Risk Portfolio. **Comment:** Completed during the 2018 planning cycle	Completed
Action: 2018-10—Flood Alert Monitor Network Stream gage Sensor Project. **Comment:** Ongoing action by USGS, ITD, IOEM, and IDWR	Ongoing
Action: 2018-11—Glenwood Bridge signage for public education and high-water marks. **Comment:** Completed by Silver Jackets in 2019.	Completed
Action: 2018-12—High water marks post-flood statewide. **Comment:** No progress due to lack of staffing and funding, but still a priority	No progress
Action: 2018-13—Boise River Balancer Game **Comment:** Silver Jackets not funded. Project no longer needed.	Removed
Action: 2018-14—FIRM digitization statewide. **Comment:** 2018- Completed by Silver Jackets / IDWR.	Completed
Action: 2018-15—Resilience Planning Assistance to incorporate in local HMPs. **Comment:** 2018- Custer Co. withdrawn. Gem Co. funded through Silver Jackets. This action is removed as written and combined with Action 2023-006	Removed
Action: 2018-16—Create statewide ice jam inventory. **Comment:** Ongoing post-event work.	Ongoing
Action: 2018-17—Create household hazardous waste collection sites in rural counties that are without a program. **Comment:** 2019 pilot program started	Ongoing
Action: 2018-18—Create program to go through all levels of educational institutions throughout the state and collect chemical/hazardous waste and provide ongoing education, outreach, guidance, and monitoring assistance. **Comment:** 2019 began pilot program with secondary schools	Ongoing
Action: 2018-19—Inventory landfills for hazardous waste disposal presence and capability. **Comment:** Ongoing efforts by DEQ	Ongoing
Action: 2018-20—Adult immunization clinics for vulnerable populations with limited access to healthcare (e.g., homeless persons, low-income, healthcare workers). **Comment:** 2018 started in Central Dist. Health and vaccine clinics for Hep A in panhandle.	Ongoing
Action: 2018-21— Update human illness, hospitalization, and death estimates by county and Public Health District for various severities of pandemic influenza, and to update pandemic economic loss estimations based on previously developed models. **Comment:** Completed in 2021 by Health and Welfare.	Completed
Action: 2018-22— Fund local veterinarians to educate local jurisdictions on passage of rabies control ordinances requiring rabies vaccination of dogs, cats, and ferrets. **Comment:** Still working to secure funding.	No progress

Action Item from Previous Plan	Status
Action: 2018-23— Purchase of mobile self-contained housing for Idaho Public Health Districts to borrow or use for isolation of infectious or exposed persons who do not require hospitalization and are not able to be isolated in other accommodations.	
Comment: Still working to secure funding; need to check HMA guidance to see if qualifies for funding.	No progress
Action: 2018-24— Create a revolving loan fund for start-up mosquito abatement districts to use prior to receipt of tax money and prior to a disaster declaration.	
Comment: Still working to secure funding.	No progress
Action: 2018-25— Exercise Earthquake Clearinghouse and Communications Plan.	
Comment: Ongoing efforts by EERI and IOEM	Ongoing
Action: 2018-26— Idaho Earthquake Fact Sheet.	
Comment: Completed in March 2018 by EERI and IOEM	Completed
Action: 2018-27— Exercise Rapid Visual Assessment Teams.	
Comment: Unable to complete in 2018 exercise will be done during 2023 exercise.	No progress
Action: 2018-28— Shakecast computer modeling after an earthquake event to determine highest likelihood of infrastructure that is damaged from the epicenter.	
Comment: Ongoing efforts by ITD, IGS, and IOEM	Ongoing
Action: 2018-29— Northern Idaho seismic assessment, outreach, and replacement to include: hazard analysis of rail shipping Crude Oil, Coal, and other Petroleum Products; property inventory and seismic inspection; update of building codes; earthquake awareness and education; development of multi-state groups, joint exercises between Washington/Idaho, and replacing/improving RR highway crossings, bridges, high risk areas.	
Comment: Started in 2018 and ongoing.	Ongoing
Action: 2018-30— Drills/training for major rail derailment/accident involving explosions, fires, spills.	
Comment: Ongoing efforts by DEQ, IOEM, IGS, ITD, IDHW	Ongoing
Action: 2018-31— Update state fault database from 2003 data, statewide fault mapping and paleo seismic trench study.	
Comment: Completed during the last planning cycle	Completed
Action: 2018-32— Create statewide landslide inventory.	
Comment: Started IGS and ITD working together.	Ongoing
Action: 2018-33— Post wildfire soil study using ubiquitous sensors for understanding landslide / mudslide hazard.	
Comment: 2018 post-event, but no progress due to lack of staff/funding	No progress
Action: 2018-34— Statewide hazard fuels reduction.	
Comment: Ongoing action by IDL	Ongoing
Action: 2013-01— Island Park Fire-adapted Community Demonstration Site	
Comment: Completed by FS, IOEM, Fremont County, IDL, BLM, State Parks, Greater Yellowstone Coalition, State Fire Marshal's Office, Farm Bureau Ins.	Completed
Action: 2013-02— Establishment of Rangeland Fire Protection Associations.	
Comment: Rangeland Fire Protection Associations continue to be added throughout the State.	Ongoing
Action: 2013-03— Guberif 5% Education Initiative	
Comment: Completed by Idaho Firewise, IOEM, IDL	Completed
Action: 2013-04— West Mountain Corridor Mitigation & Education Project.	
Comment: Ongoing action by IDL, ILRCC, Valley County, USFS, U of I, Local fire departments	Ongoing
Action: 2013-05— Clear Creek—Harpster Face Project	
Comment: Completed by ILRCC, Idaho County, Clearwater County, IDL, USFS, BLM, Local fire departments, Idaho Light and Power	Completed
Action: 2013-06— School Seismic Assessments—Coordinate with local school districts to assess possible structural and non-structural seismic mitigation projects	
Comment: Complete-Pilot project assessed 7 school districts. Part of 2019 NEHRP funding.	Completed

Action Item from Previous Plan	Status
Action: 2013-07— Annual ACT-20 and BCA training. **Comment:** Will expand outreach and continue video trainings.	Ongoing
Action: 2013-08— Develop a catalog of hazard threat planning scenarios **Comment:** Completed by IOEM, IDWR, IGS, IDL	Completed
Action: 2013-09— Annual review of policies and Executive Orders to promote mitigation activities. **Comment:** Develop review schedule and report at annual maintenance meeting.	Ongoing
Action: 2013-10— Rapid Visual Assessment of EOCs, Critical Infrastructure, Unreinforced Masonry Buildings, etc. **Comment:** Completed seismic for 13 E. Idaho counties. Continuing in 2023.	Ongoing
Action: 2013-11— Create a process to identify critical infrastructure and facilities and then perform assessments **Comment:** Completed assessments in 2017 and 2018	Completed
Action: 2013-12— Create a repository and clearing house of risk assessment data in accordance with ID Code 67-5745C (3). **Comment:** OEM Critical Infrastructure manager has been conducting these	Ongoing
Action: 2013-14— Soil Stabilization—Landslide protection to State Highway 52 **Comment:** Completed by ITD	Completed
Action: 2010-01— Establish communication and procedures with State Department of Administration related to cybersecurity, purchasing land/buildings in relation to natural hazards protection. **Comment:** Formed Cyber TWG sub-group Will continue to work with Dept. of Admin towards accomplishing this action.	Ongoing
Action: 2010-03— Create a working group to oversee data sharing, database construction, and maintenance (Hazus input datasets). **Comment:** State Hazard Data Group formed; verifying data sets.	Ongoing
Action: 2010-04— Develop and deliver 2 workshops every other year in different parts of the State for local officials on low impact development, No Adverse Impact, etc. and how to implement these activities. **Comment:** Workshops held in 2019 and 2023 at various areas around the s**tate**. Using Idaho Silver Jackets team to secure funding and provide future workshops.	Ongoing
Action: 2010-06— Expand statewide Flood Awareness Week to include school activities, promote community activities, and look at all flooding sources. **Comment:** Idaho Silver Jackets team annually participates in Flood Awareness Week with varying projects, social media, and Governor's Proclamation.	Ongoing
Action: 2010-07— Form a team of experts from appropriate Federal and State agencies to produce and conduct all hazard training for local governments (cycle it in preparation for update of local mitigation plan) **Comment:** Completed by Silver Jackets in 2023.	Completed
Action: 2010-08— In order to improve analysis of flood, landslide, seismic and wildfire hazards, obtain new or compile existing LIDAR data for populated areas of Idaho. **Comment:** Continued to track and support projects throughout the s**tate**. LiDAR data is being gathered around the state.	Ongoing
Action: 2010-09— Produce liquefaction susceptibility maps for populated areas. **Comment:** Completed Kootenai Co. Payette identified. Seeking funding to continue Liquefaction for Adams and Washington in coordination with **RiskMAP** ongoing. CTP in coordination with Marshall Rivers/FEMA.	Ongoing
Action: 2010-11— Develop and publish a Firewise guide specific to Idaho. **Comment:** Silver Jackets completed wildfire guides and applied to update in 2023.	Completed
Action: 2010-12— Seismic rehabilitation of vulnerable State facilities. **Comment:** This project was completed with 2019 NEHRP funding.	Completed
Action: 2010-13— Adopt and enforce statewide building codes. **Comment:** State adopted 2018 IBC. Need to do more outreach to help jurisdictions understand importance of adopting code (2023 NEHRP funding)	Ongoing
Action: 2010-14— Develop and maintain statewide inventory of State and county facilities and infrastructure with an isolated server **Comment:** Department of Administration has a list of State facilities and have completed a study on each	Completed

Action Item from Previous Plan	Status
Action: 2010-15— Working with the Industrial Commission under contract with Div. of Building Safety, develop legislation to annually inspect EOCs—Structural and non-structural retrofits for county EOCs for multiple hazards (floodplain, high and extreme seismic areas, WUI).	
Comment: Removed due to a change in priorities and jurisdiction of DOPL (formerly Div. of Building Safety)	Removed
Action: 2010-16— Conduct outreach activities and assessments of CIKR to better inform local jurisdictions regarding protection of critical infrastructure.	
Comment: Developed Dashboard and started gathering county data for state Infrastructure Protection Plan (IOEM position vacant – on hold).	Ongoing
Action: 2010-17— Standardized regulation of HVAC, plumbing, electrical, and life safety codes.	
Comment: Ongoing action by DOPL	Ongoing
Action: 2010-20— Increase capacity of State dam safety program directed at partnering with Federal agencies to fund & perform repair/rehabilitation of poor condition dams.	
Comment: Working with High Hazard Potential Dam program through IDWR.	Ongoing
Action: 2010-21— Increase participation in the National Levee Safety Program Database.	
Comment: Ongoing action by USACE, IOEM, and IDWR	Ongoing

2023 IDAHO SHMP MITIGATION ACTION PLAN PRIORITIZATION

As discussed in Section 24.3, all 2023 Idaho SHMP mitigation actions were prioritized using a new method. The prioritization scoring is summarized in Table G-2.

Table G-2. 2023 Idaho SHMP Action Plan Prioritization

	Criteria															
Action Number	Life Safety	Property Protection	Cost-effective	Technically Feasible	Climate Change	Legal Authority	Funding Available	Environmental Impact	Social Vulnerability	Administrative Capability	Multi-Hazard	Timeline	Agency Champion	Other Objectives or Policies	Total Score	Priority
2023-01	3	3	3	3	1	3	1	1	1	3	3	3	3	3	34	High
2023-02	3	3	3	3	3	3	1	1	3	1	3	3	3	3	36	High
2023-03	3	3	3	3	3	3	1	3	3	3	3	1	3	3	38	High
2023-04	1	1	3	3	0	3	3	1	1	3	3	3	3	3	31	High
2023-05	3	3	3	3	3	3	1	3	3	3	3	3	3	3	40	High
2023-06	3	3	3	3	3	3	1	3	3	3	3	1	3	3	38	High
2023-07	1	1	3	3	1	3	1	1	3	3	3	3	3	3	32	High
2023-08	0	0	1	3	3	3	1	1	1	3	3	1	3	0	23	Medium
2020-01	3	3	3	3	3	3	1	3	3	1	1	1	3	3	34	High
2020-02	3	3	3	1	3	3	1	3	3	1	1	1	3	1	30	Medium
2020-03	3	3	1	3	3	1	1	3	3	1	1	0	3	1	27	Medium
2020-04	3	3	3	1	3	3	1	3	3	1	1	1	3	1	30	Medium
2018-01	1	3	3	3	1	3	3	1	1	1	3	3	3	3	32	High
2018-02	1	3	3	3	1	3	1	1	1	3	3	3	1	3	30	Medium
2018-06	3	3	3	3	3	3	1	1	3	3	3	3	1	3	36	High
2018-07	3	3	3	1	1	3	1	3	3	3	3	1	3	3	34	High

Action Number	Criteria															Priority
	Life Safety	Property Protection	Cost-effective	Technically Feasible	Climate Change	Legal Authority	Funding Available	Environmental Impact	Social Vulnerability	Administrative Capability	Multi-Hazard	Timeline	Agency Champion	Other Objectives or Policies	Total Score	
2018-08	3	3	3	3	3	3	1	3	3	3	3	1	1	3	36	High
2018-10	3	3	3	3	3	3	1	3	3	3	3	1	3	3	38	High
2018-12	3	3	3	3	3	3	1	1	3	3	1	3	3	3	36	High
2018-16	3	3	3	1	3	3	1	1	1	3	1	3	1	3	30	Medium
2018-17	1	3	1	3	3	3	1	3	3	1	1	1	1	1	26	Medium
2018-18	3	3	3	3	1	3	1	3	3	1	1	1	1	3	30	Medium
2018-19	1	3	3	3	1	1	1	3	3	1	1	1	1	1	24	Medium
2018-20	3	0	3	3	0	3	1	0	3	1	1	1	1	1	21	Medium
2018-22	3	0	1	1	0	3	1	1	3	1	1	1	1	1	18	Medium
2018-23	3	1	1	1	0	3	1	0	3	1	1	1	1	1	18	Medium
2018-24	3	1	1	1	1	1	1	3	3	1	1	1	1	1	20	Medium
2018-25	3	3	3	3	1	3	3	0	3	3	3	3	3	3	37	High
2018-27	3	3	3	3	0	3	3	0	3	3	3	3	3	3	36	High
2018-28	3	3	3	3	0	3	3	0	1	1	3	3	1	3	30	Medium
2018-29	3	3	3	3	0	3	1	3	3	3	3	3	1	3	35	High
2018-30	3	3	3	3	1	3	3	3	3	3	3	3	1	3	38	High
2018-32	3	3	3	3	1	3	1	3	3	1	3	1	3	3	34	High
2018-33	3	3	3	3	3	3	1	3	3	1	3	3	1	3	36	High
2018-34	3	3	3	3	3	3	1	3	3	1	3	0	1	3	33	High
2013-02	3	3	3	3	3	3	1	3	3	3	3	3	3	3	40	High
2013-04	3	3	3	3	3	3	1	3	3	3	3	1	3	3	38	High
2013-07	1	3	3	3	1	3	3	1	1	3	3	3	3	3	34	High
2013-09	1	3	3	3	3	3	1	1	1	3	3	3	1	3	32	High
2013-10	3	3	3	3	1	3	3	1	3	3	3	3	3	3	38	High
2013-12	3	3	3	3	1	3	1	1	3	3	3	3	3	3	36	High
2010-01	3	3	3	3	1	3	1	1	1	3	3	3	1	3	32	High
2010-03	1	1	3	3	3	3	3	1	3	3	3	3	3	3	36	High
2010-04	1	3	3	3	0	3	3	1	1	3	3	3	3	3	33	High
2010-06	3	3	3	3	1	3	3	1	1	3	3	3	3	3	35	High
2010-08	3	3	3	3	3	3	1	1	1	3	3	3	3	3	36	High
2010-09	3	3	3	3	1	3	1	1	3	3	3	3	3	3	35	High
2010-13	3	3	3	3	3	3	1	1	3	3	3	3	1	3	36	High
2010-16	3	3	3	3	1	3	1	1	3	1	3	1	1	3	30	Medium
2010-17	3	3	3	3	1	3	3	1	3	3	3	1	1	3	34	High
2010-20	3	3	1	3	1	3	1	3	3	1	3	1	3	3	32	High
2010-21	3	3	3	3	1	1	1	3	3	1	3	1	1	3	30	Medium

State of Idaho Hazard Mitigation Plan

Appendix H. Capability Assessment

H. CAPABILITY ASSESSMENT

STATE CAPABILITIES

Table I-1 includes the detailed capability assessment. The goal of this assessment is not to identify all capabilities the State may have, but only those that are currently used or could be used to support mitigation efforts. Information is provided for each capability as appropriate:

- **Capability Description**—Lists a brief, succinct description of the capability
- **Type of Authority**—Indicates whether the capability is a:
  - Law
  - Regulation
  - Policy
  - Program
- **SHMP Goals**—Lists the mitigation plan goals the capability advances
- **Type of Hazard Management Capability**—Indicates whether the capability applies pre- or post-disaster
- **Effect on Loss Reduction**—Indicates if the capability supports (helps the implementation of mitigation actions), facilitates (makes implementing mitigation actions easier) or conflicts with hazard mitigation goals.
- **Funding**—Indicates if the capability provides funding for mitigation
- **Integration with Mitigation Plan**—Indicates how the capability can be a point of integration with the mitigation plan or data
- **Category**—Lists which capability category the capability best aligns with
  - Planning and Regulatory
  - Administrative and Technical
  - Capital Projects and Maintenance
  - Financial
  - Education, Outreach, and Capacity Building
  - Disaster Response/Recovery
- **Notable changes**—Description of any significant changes that have impacted the capability since the 2018 SHMP was developed. Changes include but are not limited to plan updates, changes in staff/resources, change in administrative rules or amendment to law, etc.
- **Challenges**—Describes any issues with implementing the capability, capability effectiveness or any aspects of the capability that conflict with hazard mitigation goals. Challenges include but are not limited to a lack of staffing or funding for implementation, outdated information or protocols, etc.
- **Opportunities**—Describes identified opportunities to address challenges, integrate mitigation goals, or otherwise enhance capabilities

- **Effect on Future Conditions**—Describes how the capability integrates future conditions (i.e., climate change)
- **Equitable Outcomes**—Describes how the capability helps advance equitable outcomes for socially vulnerable populations
- **Community Lifelines**—Lists which community lifeline the capability supports
  - Safety and Security
  - Food, Water, Shelter
  - Health and Medical
  - Energy
  - Communications
  - Transportation
  - Hazardous Materials
- **Hazards**—Lists the hazard of concern that the capability addresses

Table H-1. Summary of Laws, Regulations, Policies, Programs Related to Hazard Mitigation in Idaho

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
29 CFR § 1910.210 – Hazardous waste operations and emergency response	Regulation	1, 2, 4	◆	◆	◆			
Description:	This regulation is for hazardous waste and emergency response operations.							
Integration with Mitigation Plan:	Provides a clear definition of hazardous waste.							
Category:	Planning and Regulatory; Disaster Response/Recovery							
Notable Changes:	None identified—HazMat response plan is dated 2013.							
Challenges:	Cost of training and equipment at the local level for hazmat response teams.							
Opportunities:	Continue to reach out to the public							
Effect on Future Conditions:	Climate change impacts may increase the impact of hazmat facilities							
Equitable Outcomes:	As climate modeling improves, it could become a positive factor in ranking							
Community Lifelines:	Hazardous Materials; Communications							
Hazards:	Hazardous Materials Release, Radiological Accidents							
40 CFR § 261.33 – Discarded Commercial Chemical products, off-specification species, container residues, and spill residues thereof	Regulation	1, 2, 4	◆	◆	◆			
Description:	Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof. The following materials or items are hazardous wastes if and when they are discarded or intended to be discarded as described in § 261.2(a)(2)(i), when they are mixed with waste oil or used oil or other material and applied to the land for dust suppression or road treatment, when they are otherwise applied to the land in lieu of their original intended use or when they are contained in products that are applied to the land in lieu of their original intended use, or when, in lieu of their original intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel, or burned as a fuel.							
Integration with Mitigation Plan:	Gives guidelines for discarding commercial chemical products.							
Category:	Planning and Regulatory							
Notable Changes:	None identified—HazMat response plan is dated 2013							
Challenges:	Cost of training and equipment at the local level for hazmat response teams.							
Opportunities:	Continue to educate about proper disposal							
Effect on Future Conditions:	Climate change impacts may increase the impact of hazmat facilities							
Equitable Outcomes:	Continue providing awareness to socially vulnerable communities							
Community Lifelines:	Hazardous Materials; Energy							
Hazards:	Hazardous Materials Release, Radiological Accidents							

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
40 CFR § 302, Table 302.4 – Designation, Reportable Quantities, and Notification	Regulation	1, 2, 4	◆	◆	◆			
Description:	This regulation designates under section 102(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("the Act") those substances in the statutes referred to in section 101(14) of the Act, identifies reportable quantities for these substances, and sets forth the notification requirements for releases of these substances. This regulation also sets forth reportable quantities for hazardous substances designated under section 311(b)(2)(A) of the Clean Water Act							
Integration with Mitigation Plan:	Provide oversight and reporting of regulated quantities.							
Category:	Planning and Regulatory; Administrative and Technical							
Notable Changes:	None identified—HazMat response plan is dated 2013.							
Challenges:	Assuring accurate reporting							
Opportunities:	Be more aware of substances							
Effect on Future Conditions:	Provide oversight on the reporting of regulated quantities							
Equitable Outcomes:	None identified							
Community Lifelines:	Hazardous Materials; Communications							
Hazards:	Hazardous Materials Release, Radiological Accidents							
40 CFR § 355 – Emergency Planning and Notification	Regulation	1, 2, 3, 4, 5	◆	◆	◆			
Description:	This regulation establishes requirements for a facility to provide information necessary for developing and implementing State and local chemical emergency response plans, and requirements for emergency notification of chemical releases.							
Integration with Mitigation Plan:	Provides notification and information.							
Category:	Planning and Regulatory; Disaster Response/Recovery; Administrative and Technical							
Notable Changes:	Emergency management continues to improve plans by incorporating other plans							
Challenges:	Notifications getting to everyone							
Opportunities:	Continue to improve messaging outreach							
Effect on Future Conditions:	Better messaging will keep more people safe							
Equitable Outcomes:	Continue to improve how messaging gets out							
Community Lifelines:	Communications; Hazardous Materials							
Hazards:	Civil Disorder, Hazardous Materials Release, Radiological Accidents							

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
44 CFR § 60.3 – Flood plain management criteria for flood-prone areas	Regulation	1, 2, 4	◆	◆	◆			
Description:	The ordinance explains requirements for floodplain development permits, construction standards, and other pertinent information for floodplain management.							
Integration with Mitigation Plan:	Helps determine floodplain management.							
Category:	Planning and Regulatory; Administrative and Technical							
Notable Changes:	Asking for a set-back for all new development from a body of water consisting of a natural vegetative or contour strip							
Challenges:	Education to water users for proposed statute change, NFIP participation.							
Opportunities:	Work with stakeholders to educate & facilitate NFIP compliance.							
Effect on Future Conditions:	Severity could increase due to development and climate – more severe storms.							
Equitable Outcomes:	Floodplains play a vitally important role in supporting to broader ecological health of our watersheds in all communities.							
Community Lifelines:	Safety and Security							
Hazards:	Flood, Severe Weather							
49 CFR § 171- 177 – Hazardous Materials Regulations (DOT)	Regulation	1, 2, 3, 4	◆	◆	◆			
Description:	The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration regulates the transport of hazardous materials through Title 49 of the Code of Federal Regulations (49 CFR), Subchapter C, “Hazardous Materials Regulations.” Parts 171-177 provide general information on hazardous materials and for their packaging and their shipment by rail, air, vessel, and public highway.							
Integration with Mitigation Plan:	Provides regulation for the transport of hazardous materials.							
Category:	Planning and Regulatory; Disaster Response/ Recovery							
Notable Changes:	Title 49 last amended 6-1-2023							
Challenges:	Staying ahead with fines							
Opportunities:	Avoid fines by staying compliant.							
Effect on Future Conditions:	Continue to enforce regulations							
Equitable Outcomes:	Obey rules to avoid costly penalties							
Community Lifelines:	Hazardous Materials; Transportation							
Hazards:	Hazardous Materials Release, Radiological Accidents							

<table>
<tr><th colspan="2" rowspan="2">Capability</th><th rowspan="2">Type of Authority</th><th rowspan="2">SHMP Goals</th><th colspan="2">Type of Hazard Management Capability</th><th colspan="3">Effect on Loss Reduction</th><th rowspan="2">Provides Funding for Mitigation</th></tr>
<tr><th>Pre-Disaster</th><th>Post-Disaster</th><th>Support</th><th>Facilitate</th><th>Conflict</th></tr>
<tr><td colspan="2">Bonneville Power Administration (BPA): Integrated Fish and Wildlife Program</td><td>Program</td><td>2, 3, 4</td><td>◆</td><td>◆</td><td>◆</td><td></td><td></td><td>◆</td></tr>
<tr><td>Description:</td><td colspan="9">Environmental values are an important part of the Pacific Northwest heritage. So, too, is the low-cost and clean energy produced by Federal hydroelectric facilities located throughout the Columbia River Basin. BPA and its partners operating the Federal Columbia River Power System are working diligently to protect and enhance environmental, fish, and wildlife values, and ensure these qualities for future generations. BPA partners with the Northwest Power and Conservation Council, the Columbia Basin Fish and Wildlife Authority, Columbia Basin Tribes, and other Federal, State, and private organizations. BPA provides funding for conservation easements, habit acquisitions and protections, and other conservation and restoration projects.</td></tr>
<tr><td>Integration with Mitigation Plan:</td><td colspan="9">The BPA's program provides funding to acquire and restore land to its natural habitat. This could be helpful, since some mitigation projects involving flood hazards require land to be acquired and returned either to its natural state or as permanent open space.</td></tr>
<tr><td>Category:</td><td colspan="9">Administrative and Technical; Capital Projects and Maintenance; Financial</td></tr>
<tr><td>Notable Changes:</td><td colspan="9">Inflation</td></tr>
<tr><td>Challenges:</td><td colspan="9">Inflation, Future staffing and funding is limited</td></tr>
<tr><td>Opportunities:</td><td colspan="9">Integrate goals and expand partnerships with other agencies to enhance capabilities and shape the future of clean energy</td></tr>
<tr><td>Effect on Future Conditions:</td><td colspan="9">Shaping the future of clean energy. BPA delivers reliable, affordable and carbon-free hydropower produced in the Columbia River Bain to communities across the Northwest. Clean energy should help improve future conditions</td></tr>
<tr><td>Equitable Outcomes:</td><td colspan="9">Affordable energy will mutually benefit vulnerable populations</td></tr>
<tr><td>Community Lifelines:</td><td colspan="9">Energy</td></tr>
<tr><td>Hazards:</td><td colspan="9">Flood</td></tr>
<tr><td colspan="2">Community Development Block Grant (CDBG) Program</td><td>Program</td><td>1, 2, 4</td><td>◆</td><td>◆</td><td>◆</td><td></td><td></td><td>◆</td></tr>
<tr><td>Description:</td><td colspan="9">The CDBG program provides grants and technical assistance to federally designated and non-designated jurisdictions for any type of community development. An entitlement component provides funding for designated communities via a set formula. The Competitive component provides funding of up to $500,000 to non-federally designated communities. These grants may be used for infrastructure improvement, public services, or development and planning. At least 70% of the project must benefit low- and moderate-income people.</td></tr>
<tr><td>Integration with Mitigation Plan:</td><td colspan="9">CDBG money can be used as matching funds for the FEMA HMA grant programs.</td></tr>
<tr><td>Category:</td><td colspan="9">Planning and Regulatory; Capital Projects and Maintenance; Financial</td></tr>
<tr><td>Notable Changes:</td><td colspan="9">Project prices are going up due to inflation</td></tr>
<tr><td>Challenges:</td><td colspan="9">The state has not historically used the CDBG program due to staffing at the local level to develop and implement projects</td></tr>
<tr><td>Opportunities:</td><td colspan="9">Idaho Department of Commerce may be able to work more closely with local jurisdictions to implement this program more effectively</td></tr>
<tr><td>Effect on Future Conditions:</td><td colspan="9">Could open opportunities to implement mitigation actions that reduce the vulnerability from climate change</td></tr>
<tr><td>Equitable Outcomes:</td><td colspan="9">Filling in the gap for the funding match will help advance mitigation initiatives in socially vulnerable areas</td></tr>
<tr><td>Community Lifelines:</td><td colspan="9">Safety and Security; Communications</td></tr>
<tr><td>Hazards:</td><td colspan="9">Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire</td></tr>
</table>

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
Division of Occupational & Professional Licenses	Program	1, 2, 3, 4	◆	◆	◆			
Description:	The Building, Construction and Real Estate Bureau of DOPL administers and enforces building safety laws. By working with other State agencies, school districts, local jurisdictions, architects, engineers, and the manufactured building industry, they assist in making sure buildings are in compliance with Idaho adopted and amended codes.							
Integration with Mitigation Plan:	The Building Bureau has the ability to administer and enforce building safety laws. By working with other State agencies, school districts, local jurisdictions, architects, engineers, and the manufactured building industry, they can assist in making sure buildings are more resistant to earthquakes, flooding, wind, and snow load disasters.							
Category:	Planning and Regulatory; Administrative and Technical; Capital Projects and Maintenance							
Notable Changes:	Cost of licenses has gone up							
Challenges:	Funding							
Opportunities:	Working with other agencies to help enforce building safety laws.							
Effect on Future Conditions:	Better codes to enforce safety							
Equitable Outcomes:	Public safety improvements in all communities							
Community Lifelines:	Safety and Security							
Hazards:	Earthquake, Flood, Landslide, Severe Weather, Avalanche							
EPA's Smart Growth Implementation Assistance Program	Program	1, 2, 3, 4	◆		◆			◆
Description:	Provides technical assistance to communities to improve the local economy, the environment, and people's health. A range of development and conservation strategies intended to protect the natural environment while simultaneously making communities more attractive, economically stronger, and more socially diverse. Smart Growth encourages development that serves the economy, the community, and the environment. In direct response to the effects of urban sprawl, towns and cities across the country are using creative strategies to develop in ways that preserve natural lands and critical environmental areas, protect water and air quality, and reuse already-developed land. Smart Growth communities conserve resources by reinvesting in existing infrastructure, reclaiming historic buildings, and by designing neighborhoods that have shops, offices, schools, churches, parks, and other amenities within walking or biking-distance of residential areas. Through Smart Growth approaches that enhance neighborhoods and involve local residents in development decisions, these communities are creating vibrant places to live, work, and play. Green Infrastructure practices can play a role in Smart Growth development by providing communities with a variety of environmental and aesthetic benefits that are in line with Smart Growth principals.							
Integration with Mitigation Plan:	This funding could assist communities that experience stormwater flooding, need to develop planning principles, update building guidelines, or have climate change action items.							
Category:	Administrative and Technical; Education, Outreach, and Capacity Building							
Notable Changes:	Seeing more climate change actions.							
Challenges:	Financial							
Opportunities:	Work with industry to find solutions to air pollution problems will benefit human and environmental health, create consumer savings and are cost effective.							
Effect on Future Conditions:	Smart Growth development can provide communities with a variety of environmental and aesthetic benefits that are in line with Smart Growth principles.							
Equitable Outcomes:	Eligible applicants include nonprofit institutions							
Community Lifelines:	Communications; Transportation; Health and Medical							
Hazards:	Flood, Severe Weather							

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
IDAPA 02.04.03 "Rules Governing Animal Industry" Section 175	Law	1, 2, 4	◆	◆	◆			
Description:	Rules regarding vaccination of animals, section 175 is specific to rabies.							
Integration with Mitigation Plan:	Vaccination is a mitigation tool to prevent pandemics.							
Category:	Planning and Regulatory							
Notable Changes:	More public outreach							
Challenges:	Pet owners to make sure pets receive shots							
Opportunities:	Public outreach to encourage vaccination							
Effect on Future Conditions:	In order to provide for disease control of livestock and other animals into, within and out of the state, this rule governs procedures for the prevention, control and eradication of diseases among the animals in the state of Idaho and the declaration of an animal health emergency.							
Equitable Outcomes:	Eradication of diseases that would otherwise be very costly to treat							
Community Lifelines:	Health and Medical							
Hazards:	Pandemic							
IDAPA 16.02.10 "Idaho Reportable Diseases"	Law	1, 4	◆		◆			
Description:	Grants authority to the Board of Health and Welfare to adopt rules protecting the health of the people of Idaho.							
Integration with Mitigation Plan:	Provides awareness of reportable disease.							
Category:	Administrative and Technical							
Notable Changes:	More awareness of diseases							
Challenges:	None identified							
Opportunities:	None identified							
Effect on Future Conditions:	None identified							
Equitable Outcomes:	None identified							
Community Lifelines:	Health and Medical							
Hazards:	Pandemic							
IDAPA 16.02.11, Immunization Requirements for Children Attending Licensed Daycare Facilities	Law	1	◆	◆	◆			
Description:	These rules contain the legal requirements for the administration and enforcement of an immunization program for children who attend licensed day care facilities in Idaho.							
Integration with Mitigation Plan:	Vaccination is a mitigation tool to prevent pandemics.							
Category:	Planning and Regulatory; Administrative and Technical							
Notable Changes:	Continue to encourage vaccinations							
Challenges:	Enforcement							
Opportunities:	Education							
Effect on Future Conditions:	More vaccinations will decrease spread							
Equitable Outcomes:	Immunizations can help everyone be safer.							
Community Lifelines:	Health and Medical							
Hazards:	Pandemic							

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
IDAPA 16.02.15, Immunization Requirements for Idaho School Children	Law	1	◆		◆			
Description:	The Idaho Legislature has granted to the Board of Health and Welfare, in cooperation with the State Board of Education and the Idaho School Boards Association, the authority to adopt rules for the administration and enforcement of an immunization program for Idaho school children.							
Integration with Mitigation Plan:	Vaccination is a mitigation tool to prevent pandemics.							
Category:	Administrative and Technical							
Notable Changes:	Continue vaccinations							
Challenges:	Enforcement							
Opportunities:	Education							
Effect on Future Conditions:	None identified							
Equitable Outcomes:	Immunizations can help everyone be safer.							
Community Lifelines:	Health and Medical							
Hazards:	Pandemic							
Idaho Bureau of Land Management (BLM) – Communities at Risk and Partnership funds	Program	1	◆		◆			
Description:	Provides financial assistance to local jurisdictions in Idaho for efforts that support fire prevention activities. Funds may be used for planning efforts (including the use of GIS software and support), the hiring of countywide WUI coordinators, and education efforts such as FIREWISE. Funds may also be used to reduce hazardous fuels accumulations on non-Federal lands; however, use of funds for this purpose may require environmental clearance.							
Integration with Mitigation Plan:	The grant funding available with this program would assist in completing mitigation actions identified for wildland fire. Combing efforts with the State Fire Plan working group would ensure consistency and could potentially complete projects for both planning mechanisms.							
Category:	Planning and Regulatory; Financial; Capital Projects and Maintenance; Education, Outreach, and Capacity Building; Disaster Response/Recovery							
Notable Changes:	More funding being used for outreach about wildland fires							
Challenges:	People can be careless with fire							
Opportunities:	Continue to educate public on fire safety							
Effect on Future Conditions:	Funded projects may result in less wildfires							
Equitable Outcomes:	Public safety for all communities							
Community Lifelines:	Safety and Security; Communications; Hazardous Material							
Hazards:	Wildfire							

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Code Title 28 Chapter 51 Section 105-Commercial Transactions Code		Law	1, 2, 3, 4, 5	◆	◆	◆			◆
Description:	"Disclosure of breach of security of computerized personal information by an agency, individual or a commercial entity".								
Integration with Mitigation Plan:	Law doesn't provide information or receive information.								
Category:	Planning and Regulatory; Administrative and Technical; Disaster Response/Recovery								
Notable Changes:	More information being shared about identity theft.								
Challenges:	Criminals are creative at finding people's personal information								
Opportunities:	Education to know your surroundings								
Effect on Future Conditions:	Expect problem to only get worse so continue educating public on what to watch out for								
Equitable Outcomes:	All communities are affected by this law								
Community Lifelines:	Safety and Security; Communications								
Hazards:	Cyber Threats								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Code Title 31, Chapter 48, Section 1 – Emergency Communications Act, and Section 16 – Idaho Public Safety Communications Commission	Law	1, 2, 4	◆	◆	◆			

Description:	The legislature recognizes that providing consolidated emergency communications systems is vital in enhancing the public health, safety, and welfare of the residents of the State of Idaho. The legislature further finds that there is an obvious need for providing a means to finance the initiation, maintenance, operation, enhancement and governance of consolidated emergency communications systems. The Commission was formed to maintain operability, research, and evaluate possible upgrades in the communication system, seeking out funding for potential upgrades, and has the ability to contract out to experts, agents, employees, or consultants for the purposes of the chapter.
Integration with Mitigation Plan:	Funding for communications services and infrastructure comes from primarily three sources—Legislative, grant, and service/subscription fees. Idaho utilizes the Idaho Public Safety Communications Commission to provide statewide governance over the full spectrum of public safety and emergency communications. Supporting the Commission are six distinct District Interoperability Governance Boards who are tasked to address and develop solution sets for ongoing interoperability concerns as well as integration of new technology to increase the efficiency of communications statewide. Within the last several years, Idaho has been in the planning and preparation phase of three large scale initiatives. First, Idaho strives to upgrade all legacy Enhanced 911 systems to Next Generation 911 systems. Secondly, Idaho opted in to be an active participant in the development and integration of the first ever national public safety broadband network which is also referred to as FirstNet. Thirdly, Idaho has aggressively participated in development of broadband resources to greatly expand network connectivity across the state for both public and private entities.
Category:	Administrative and Technical; Capital Projects and Maintenance; Financial; Education, Outreach, and Capacity Building; Disaster Response and Recovery
Notable Changes:	Transition from E911 to NG911 affecting Idaho's Public Safety Answering Point (PSAP) community as well as First Response agencies. Integration of FirstNet, powered by a national level cellular service provider. Expansion of Idaho's fiber optic networks across the state.
Challenges:	Funding for implementation, education, and sustainment of resources and infrastructure remain continuous. Additionally, geographical limitations burden the coverage of many of these voice and data systems.
Opportunities:	New technologies with greater convergence and use in the First Responder community. Examples (not all inclusive) include LMR to LTE (radio to cellular) convergence, enhanced cellular networks such as 5G (5th Generation), mission critical push-to-talk solutions, text to 911, more accurate GIS addressing, greater voice and data streaming overall, more efficient community alerting methods, greater access to terrestrial and non-terrestrial based communications nodes and greater resilience overall in communications networks as a whole.
Effect on Future Conditions:	Ubiquitous communications with ever increasing data throughput rates and increased coverage will demand access to and integration of current and future technologies. Communications is not a static field and change will be an ongoing constant.
Equitable Outcomes:	The integration of enhanced and improved communications will benefit the full spectrum of public and private entities to include private citizens across Idaho. Federal and state level grants have been devised to improve both the urban and rural landscape.
Community Lifelines:	Safety and Security; Communications
Hazards:	Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire

<table>
<tr><th colspan="2" rowspan="2">Capability</th><th rowspan="2">Type of Authority</th><th rowspan="2">SHMP Goals</th><th colspan="2">Type of Hazard Management Capability</th><th colspan="3">Effect on Loss Reduction</th><th rowspan="2">Provides Funding for Mitigation</th></tr>
<tr><th>Pre-Disaster</th><th>Post-Disaster</th><th>Support</th><th>Facilitate</th><th>Conflict</th></tr>
<tr><td colspan="2">Idaho Code Title 42 Chapter 31</td><td>Law</td><td>1, 3, 5</td><td>◆</td><td>◆</td><td>◆</td><td></td><td></td><td>◆</td></tr>
<tr><td>Description:</td><td colspan="9">Describes the purpose, establishment, and authority of flood control districts. There are 13 active flood control districts in the state. Typically, Flood Control Districts complete channel maintenance, bank stabilization, and gravel removal.</td></tr>
<tr><td>Integration with Mitigation Plan:</td><td colspan="9">Flood control districts participate in the Silver Jackets working group and flood mitigation projects are jointly funded. Flood control district managers are part of the Technical Working Groups.</td></tr>
<tr><td>Category:</td><td colspan="9">Planning and Regulatory; Administrative and Technical</td></tr>
<tr><td>Notable Changes:</td><td colspan="9">13 active flood districts</td></tr>
<tr><td>Challenges:</td><td colspan="9">Disconnect in data sharing</td></tr>
<tr><td>Opportunities:</td><td colspan="9">Better coordination among districts is needed for comprehensive management</td></tr>
<tr><td>Effect on Future Conditions:</td><td colspan="9">Continued channel maintenance and bank stabilizations may reduce impact from climate change</td></tr>
<tr><td>Equitable Outcomes:</td><td colspan="9">Water safety for all communities</td></tr>
<tr><td>Community Lifelines:</td><td colspan="9">Safety and Security</td></tr>
<tr><td>Hazards:</td><td colspan="9">Flood</td></tr>
<tr><td colspan="2">Idaho Code Title 46, Chapter 10, Section 6 – Powers and Duties of Bureau Chief</td><td>Law</td><td>1, 2, 4</td><td>◆</td><td>◆</td><td>◆</td><td></td><td></td><td></td></tr>
<tr><td>Description:</td><td colspan="9">In all matters of disaster services, the adjutant general shall represent the Governor and shall, on behalf of the Governor, coordinate the activities of all State agencies in disaster services. IOEM shall have a coordinating officer and other professional, technical, secretarial and clerical employees necessary to perform its functions.</td></tr>
<tr><td>Integration with Mitigation Plan:</td><td colspan="9">Law doesn't provide information or receive information.</td></tr>
<tr><td>Category:</td><td colspan="9">Administrative and Technical; Disaster</td></tr>
<tr><td>Notable Changes:</td><td colspan="9">Have increased ways to share information like Facebook, Twitter, Instagram, Mail, Public Service, Blogs and Radio</td></tr>
<tr><td>Challenges:</td><td colspan="9">Staffing</td></tr>
<tr><td>Opportunities:</td><td colspan="9">Continue to work with the office of the Governor to make Idaho safer</td></tr>
<tr><td>Effect on Future Conditions:</td><td colspan="9">Continue close collaboration to make Idaho safer</td></tr>
<tr><td>Equitable Outcomes:</td><td colspan="9">All Idahoans should benefit</td></tr>
<tr><td>Community Lifelines:</td><td colspan="9">Safety and Security</td></tr>
<tr><td>Hazards:</td><td colspan="9">Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire</td></tr>
</table>

<table>
<tr><th colspan="2" rowspan="2">Capability</th><th rowspan="2">Type of Authority</th><th rowspan="2">SHMP Goals</th><th colspan="2">Type of Hazard Management Capability</th><th colspan="3">Effect on Loss Reduction</th><th rowspan="2">Provides Funding for Mitigation</th></tr>
<tr><th>Pre-Disaster</th><th>Post-Disaster</th><th>Support</th><th>Facilitate</th><th>Conflict</th></tr>
<tr><td colspan="2">Idaho Code Title 46, Chapter 10, Section 8 – The Governor and Disaster Emergencies</td><td>Law</td><td>3</td><td>◆</td><td>◆</td><td>◆</td><td></td><td></td><td></td></tr>
<tr><td>Description:</td><td colspan="9">Under this act, the Governor may issue executive orders, proclamations and amend or rescind them. Executive orders and proclamations have the force and effect of law.</td></tr>
<tr><td>Integration with Mitigation Plan:</td><td colspan="9">During a disaster event, the Governor could issue proclamations such as requiring evacuation or closing major roadways to prevent any unnecessary accidents or loss of life.</td></tr>
<tr><td>Category:</td><td colspan="9">Planning and Regulatory; Administrative and Technical</td></tr>
<tr><td>Notable Changes:</td><td colspan="9">Continued training for new employees</td></tr>
<tr><td>Challenges:</td><td colspan="9">Provide training</td></tr>
<tr><td>Opportunities:</td><td colspan="9">Continue safety messages</td></tr>
<tr><td>Effect on Future Conditions:</td><td colspan="9">Disaster events continue to happen and increase in severity at times.</td></tr>
<tr><td>Equitable Outcomes:</td><td colspan="9">Continue messaging about safety in all communities</td></tr>
<tr><td>Community Lifelines:</td><td colspan="9">Safety and Security</td></tr>
<tr><td>Hazards:</td><td colspan="9">Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire</td></tr>
<tr><td colspan="2">Idaho Code Title 46, Chapter 10, Section 22 – Floodplain Zoning Ordinances</td><td>Law</td><td>1, 3</td><td>◆</td><td>◆</td><td>◆</td><td></td><td></td><td></td></tr>
<tr><td>Description:</td><td colspan="9">Subject to the availability of adequate mapping and data to properly identify the floodplains, if any, within their jurisdiction, each local government is encouraged to adopt a floodplain map and floodplain management ordinance that identify these floodplains and require, at a minimum, that any development in a floodplain must be constructed at a flood protection elevation and/or have adequate flood proofing.</td></tr>
<tr><td>Integration with Mitigation Plan:</td><td colspan="9">Law doesn't provide information or receive information.</td></tr>
<tr><td>Category:</td><td colspan="9">Planning and Regulatory; Disaster Response/Recovery</td></tr>
<tr><td>Notable Changes:</td><td colspan="9">None identified, but in progress.</td></tr>
<tr><td>Challenges:</td><td colspan="9">Outdated maps</td></tr>
<tr><td>Opportunities:</td><td colspan="9">Continue to train homeowners on flooding and what to do to decrease impacts.</td></tr>
<tr><td>Effect on Future Conditions:</td><td colspan="9">Flooding will continue to happen—communities need to continue to heighten awareness</td></tr>
<tr><td>Equitable Outcomes:</td><td colspan="9">Safety for all communities</td></tr>
<tr><td>Community Lifelines:</td><td colspan="9">Safety and Security</td></tr>
<tr><td>Hazards:</td><td colspan="9">Flood</td></tr>
</table>

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Code Title 67 Chapter 52		Law	2, 4, 5	◆	◆	◆			
Description:	Describes the Idaho Administrative Procedure Act (Title 67, Chapter 52, Idaho Code), which governs rulemaking in Idaho, defines rulemaking as the process for the formulation, adoption, amendment, or repeal of a rule.								
Integration with Mitigation Plan:	Law doesn't provide information or receive information.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	2023 July reviewed								
Challenges:	Review completed								
Opportunities:	Review completed								
Effect on Future Conditions:	Continue review								
Equitable Outcomes:	Continue review								
Community Lifelines:	N/A								
Hazards:	Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire								
Idaho Department of Environmental Quality (DEQ)		Program	1	◆	◆	◆			
Description:	DEQ's Surface Water Program routinely measures and assesses the levels of pollutants in surface waters, such as rivers and streams. The program develops analytical tools, provides guidance for stream and river water quality evaluations, monitors protocols and schedules, and writes and submits federally required reports. Regional office staff perform on-the-groundwater quality testing and data collection When water quality fails to meet State standards, regional office staff work with communities, industry, and citizen groups to develop water quality improvement plans known as total maximum daily loads (TMDLs). These plans outline the actions needed to restore impaired water bodies to a healthy, fishable, swimmable condition. Surface Water staff coordinate the overall TMDL program; regional office staff develop and write the individual TMDLs								
Integration with Mitigation Plan:	Planning data obtained from DEQ's reports could be incorporated into various hazard profiles, such as flooding and hazardous materials. DEQ has knowledgeable staff and equipment available to assess an area in the event that hazard materials were released into water. DEQ has many grant funding capabilities and could assist local governments with projects to lessen the risk from flooding and water contamination.								
Category:	Planning and Regulatory								
Notable Changes:	DEQ has many grant funding opportunities								
Challenges:	Keeping streams, rivers, lakes, reservoirs clean								
Opportunities:	Public outreach								
Effect on Future Conditions:	DEQ's Surface Water Program ensures Idaho's streams, rivers, lakes, reservoirs, and wetlands meet standards set by the Clean Water Act.								
Equitable Outcomes:	Clean water will help all								
Community Lifelines:	Food, Water, Shelter								
Hazards:	Flood, Hazardous Materials Release								

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
IDL Community Forestry Program		Program	3, 4, 5	◆	◆	◆			◆
Description:	The Community Forestry Program provides technology transfer and financial assistance to develop awareness and understanding of the value of sound urban/community forestry management among community citizens and leaders. Assistance is provided to Idaho communities to establish and enhance sustainable urban and community forestry management programs on non-federal government and private lands. The IDL partners with various cooperators and contractors to provide technical assistance to communities throughout the State, at no charge.								
Integration with Mitigation Plan:	The program provides funding and technical assistance to obtain resources needed to complete mitigation projects related to the State Hazard Mitigation Plan.								
Category:	Administrative and Technical; Financial; Education, Outreach, and Capacity Building								
Notable Changes:	Several IDL and USFS staff changes and federal legislation								
Challenges:	Program delivery is limited to populations less than 10,000. Additionally, there are limitations on where program delivery can occur as delineated by map found within the State Forest Action Plan.								
Opportunities:	Amending federal law/policy or when the Farm Bill Legislation is enacted provided greater latitude for program delivery.								
Effect on Future Conditions:	Programs attempt to address climate resilience within the context of climatic changes								
Equitable Outcomes:	Urban forests in particular will have the greatest impact by creating cooler communities and addressing wastewater from hard surfaces within communities. Additionally, from managed private forests will maintain or increase a variety of natural resources to include clean water.								
Community Lifelines:	Safety and Security								
Hazards:	Drought, Flood, Landslide, Severe Weather, Avalanche, Wildfire								
Idaho Department of Lands (IDL) – Fire Management Program		Program	1, 2, 3, 4	◆	◆	◆			◆
Description:	Goal is to conserve and protect 6 million acres of private, State and Federal forestlands by preventing and/or suppressing all unwanted fire; to enhance forest management on State endowment lands by utilizing fire as a management tool; to help local communities better cope with wildfire in the wildland/urban interface. IDL has wildland fire protection responsibilities in two Geographic Area Coordination Centers. The Centers provide support to wildland fire agencies for large fire management and mobilization of firefighting resources. Lands to the north of the Salmon River fall in the Northern Rockies Geographic Area, while lands to the south of the Salmon River are in the Eastern Great Basin Geographic Area.								
Integration with Mitigation Plan:	IDL can assist counties with their County Wildfire Preparedness Plans and their associated countywide working groups, dissemination of information, and oversight and prioritization of grant assistance programs to facilitate the implementation of the National Fire Plan in Idaho. Areas of concern from the National Fire Plan can be incorporated in the State Hazard Mitigation Plan in both the Risk Assessment and Mitigation Strategy. Both IDL and IOEM work together to incorporate actions and develop strategies to reduce the risk of wildland fire								
Category:	Disaster Response/Recovery								
Notable Changes:	Several federal laws have been passed with greater emphasis being put on wildfire programs, to include response and mitigation.								
Challenges:	The mitigation contractor portion of the industry continues to be a bottleneck to implementation as there are not enough resources to implement the level of work associated with available funding.								
Opportunities:	Through Shared Stewardship many resources in a designated area can be brought to bear on a particular endeavor.								
Effect on Future Conditions:	Programs attempt to address climate resilience within the context of climatic changes								
Equitable Outcomes:	Wildfire has been found to disproportionally impact vulnerable populations. Programs delivered through IDL attempt to reduce wildfire impacts through strategic implementation of projects throughout the state, with goals of reducing loss and smoke impacts to Idaho's populous.								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
Community Lifelines:	Safety and Security							
Hazards:	Wildfire							
Idaho Department of Water Resources (IDWR)–Dam Safety Program	Program	1, 2, 3, 4		◆	◆			
Description:	The Department regulates nearly 400 water storage dams and more than 20 mine tailings impoundment structures throughout the State. Dam Safety Program personnel perform regular inspections of projects according to the potential consequences that a dam failure and sudden release of water would present to downstream life and property.							
Integration with Mitigation Plan:	Dam Safety Program can incorporate data from inspections to assist with assessing risk. They can obtain inundation mapping and help counties apply for grants for inundation mapping and emergency action plans.							
Category:	Planning and Regulatory; Disaster Response/Recovery							
Notable Changes:	Idaho Administrative Rules (IDAPA 37.03.06) that address dam safety were revised and adopted by the 2023 State Legislature earlier this spring (April 2023).							
Challenges:	Risk Reduction is preferred vs. Hazard Mitigation; the lack of funding for repair and (or) rehabilitation of aging dams continues to be a challenge. Although some monies and programs do exist, the cost of repair often exceeds the amount that is available per project dam. Another challenge encountered per Hazard Mitigation is a reluctance on the part of many dam owners to regularly update and (or) revise their Emergency Action Plans (EAP). Although EAPs are a condition of approval for reservoir storage, the lack of meaningful enforcement often results in this important method for lowering the downstream hazard potential being ignored by the dam owner.							
Opportunities:	Continue to encourage dam owners to regularly review EAPs							
Effect on Future Conditions:	Aging dams are a challenge							
Equitable Outcomes:	Regular inspections will help all							
Community Lifelines:	Safety and Security; Food, Water, Shelter							
Hazards:	Flood							
Idaho Department of Water Resources (IDWR)–HHPD Program	Program	1, 2, 4	◆	◆	◆			
Description:	The Department manages the High Hazard Potential Dam (HHPD) Program to provide technical planning, design, and construction assistance to non-federal sponsors for rehabilitation of eligible high hazard potential dams.							
Integration with Mitigation Plan:	HHPD requirements include plan integration and must have in place a FEMA-approved state hazard mitigation plan that includes all dam risks.							
Category:	Planning and Regulatory; Disaster Response/Recovery							
Notable Changes:	Idaho Administrative Rules (IDAPA 37.03.06) that address dam safety were revised and adopted by the 2023 State Legislature earlier this spring (April 2023).							
Challenges:	Risk Reduction is preferred vs. Hazard Mitigation; the lack of funding for repair and (or) rehabilitation of aging dams continues to be a challenge. Although some monies and programs do exist, the cost of repair often exceeds the amount that is available per project dam. Another challenge encountered per Hazard Mitigation is a reluctance on the part of many dam owners to regularly update and (or) revise their Emergency Action Plans (EAP). Although EAPs are a condition of approval for reservoir storage, the lack of meaningful enforcement often results in this important method for lowering the downstream hazard potential being ignored by the dam owner.							
Opportunities:	Continue seeking grant opportunities to update dams							
Effect on Future Conditions:	Lack of funding to repair dams may increase the possibility of dam failures during severe precipitation events.							
Equitable Outcomes:	If more funding was available to update dams, all communities would be safer.							
Community Lifelines:	Safety and Security; Food, Water, Shelter							
Hazards:	Flood							

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Department of Water Resources – Floodplain Management Program		Program	1, 2, 4	◆		◆			
Description:	The IDWR state floodplain coordinator manages the National Flood Insurance Program (NFIP) in Idaho. Floodplain Management involves reviewing community ordinances that guide development in the floodplain and assisting communities with adopting floodplain ordinances and qualifying for the NFIP, which makes it possible for citizens to qualify for NFIP flood insurance. The IDWR state floodplain coordinator also helps communities plan for floods, conducts training for floodplain management for floodplain administrators', surveyors, engineers, and others, and reviews applications and permits for work within floodplains to ensure that it will not cause an increase in flood levels when flooding occurs.								
Integration with Mitigation Plan:	The IDWR state floodplain coordinator assists with integrating county flood data into the State Plan and suggests appropriate mitigation actions that can be incorporated into state and county hazard mitigation plans. The state floodplain coordinator also suggests higher standards, more stringent floodplain ordinances and regulations to limit future development in the floodplain and thus prevent an increase in flood risk.								
Category:	Planning and Regulatory; Administrative and Technical; Capital Projects and Maintenance; Education, Outreach, and Capacity Building; Disaster Response/Recovery								
Notable Changes:	The NFIP's Risk Rating 2.0 implemented by FEMA has increased the policy premiums such that Idaho has less flood insurance coverage today than in 2018. The Preferred Rick Policy no longer exists which used to allow properties not in the SFHA to buy a subsidized policy usually for less than $500 per year.								
Challenges:	The state floodplain coordinator retired in January 2023, a replacement has been difficult to hire, few applicants apply. FEMA's grant for the state floodplain coordinator has increased but is not enough funding to hire an additional full-time staff person.								
Opportunities:	Idaho has adopted a new Executive Order to ensure proper NFIP permitting occurs for state projects located in the floodplain, in the communities that have mapped floodplain but do not or no longer participate in the NFIP.								
Effect on Future Conditions:	FEMA is the administrator of the NFIP and does not map flood risk for future conditions.								
Equitable Outcomes:	IDWR with Silver Jackets has obtained grants to digitize the paper flood maps issued by FEMA prior to 2005. This has been extremely beneficial for the socially vulnerable rural cities and counties of Idaho.								
Community Lifelines:	Safety and Security								
Hazards:	Flood								
Idaho Disaster Preparedness Act of 1975		Law	1, 2, 3, 4	◆	◆	◆			
Description:	State law that was put into place to: Create an Office of Emergency Management (IOEM); prevent and reduce damage, injury, and loss of life and property resulting from natural or manmade catastrophes; prepare assistance for prompt and efficient search, rescue, and care; provide for rapid restoration and rehabilitation; prescribe the roles of government in prevention, preparation, and response to disaster; authorize and encourage cooperation in disaster prevention, preparation, and response; provide for coordination of activities; provide a disaster management system; and provide for payment of obligations and expenses incurred by the State of Idaho through the IOEM.								
Integration with Mitigation Plan:	Law doesn't provide information or receive information.								
Category:	Planning and Regulatory; Administrative and Technical; Capital Projects and Maintenance; Financial; Education, Outreach, and Capacity Building; Disaster Response/Recovery								
Notable Changes:	DEA changes? Length of ongoing disaster before Leg approval								
Challenges:	Lack of funding								
Opportunities:	Amended by the Idaho Homeland Security Act 2004								
Effect on Future Conditions:	Help with disaster assistance as conditions change								

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Equitable Outcomes:	Disaster assistance for all communities								
Community Lifelines:	Safety and Security; Food, Water, Shelter; Health and Medical; Energy; Communications; Transportation; Hazardous Materials								
Hazards:	Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire								
Idaho Fish and Wildlife Foundation Funding Program		Program	1, 2, 3, 4, 5	◆	◆	◆			
Description:	The Idaho Fish and Wildlife Foundation is an organization dedicated to the conservation of natural resources: fish, wildlife, and habitat. The Foundation is a 501 (c) (3) nonprofit organization established in 1990 and is headquartered in Boise. Board members represent all regions of the State and work to enhance Idaho's fish and wildlife habitat. The Foundation grants funding for statewide conservation and education projects.								
Integration with Mitigation Plan:	The Idaho Fish and Wildlife Foundation has a funding program that could assist with completing mitigation action items. The organization has members that represent all regions of the State, which could be helpful with hazard mitigation outreach and education.								
Category:	Capital Projects and Maintenance; Financial; Education, Outreach, and Capacity Building								
Notable Changes:	Continue to see education and outreach								
Challenges:	Idaho has more than 10,000 species of plants, fish and wildlife. Idaho Fish & Wildlife Foundation was created to help ensure these wild plants and animals survive.								
Opportunities:	Support wildlife by donating to one of their feature projects.								
Effect on Future Conditions:	This foundation's mission is to partner with Idaho Fish and Game to sustain Idaho's fishing, hunting, and wildlife heritage; and improve habitat restoration, public access, conservation, education, and effectively utilize its resources.								
Equitable Outcomes:	Education and outreach								
Community Lifelines:	Safety and Security								
Hazards:	Drought, Flood, Hazardous Materials Release, Severe Weather, Avalanche, Wildfire								
Idaho Office of Emergency Management (IOEM) – Mitigation Section		Program	4	◆	◆	◆			◆
Description:	IOEM's Hazard Mitigation Section supports proactive measures to reduce or eliminate future losses related to natural hazards such as earthquakes, floods, and wildfires. Support is provided to local government, State agencies, and the citizens of Idaho in several ways. IOEM's Mitigation Section is responsible for the following: Risk and Vulnerability Analysis; Mitigation Planning; Administration of FEMA's Mitigation Grant Programs; Coordination of natural hazards or manmade risk reduction projects								
Integration with Mitigation Plan:	The IOEM is the lead organization responsible for promoting, encouraging, and facilitating hazard mitigation. IOEM serves as repository and as a clearinghouse for the counties when applying for FEMA-funded mitigation programs. IOEM as a State entity can work with other departments and initiatives within the State of Idaho to promote integration of other planning mechanisms into the State Hazard Mitigation Plan.								
Category:	Planning and Regulatory; Administrative and Technical; Capital Projects and Maintenance; Financial; Education, Outreach, and Capacity Building; Disaster Response/Recovery								
Notable Changes:	Increase in grant opportunities								
Challenges:	Lack of funding								
Opportunities:	Reduce and minimize the long-term risk associated with man-made and natural hazards and disasters.								
Effect on Future Conditions:	efforts provide long-term risk reduction programs that build resilience to multiple hazards, so maintaining a current plan benefits communities throughout the state.								
Equitable Outcomes:	IOEM Mitigation Section assists the state and jurisdictions with grants for plans and projects. In some cases, for small impoverished communities they can possibly get assistance for projects.								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Community Lifelines: Safety and Security; Food, Water, Shelter; Health and Medical; Communications; Transportation; Hazardous Materials								
Hazards: Drought, Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire								
Idaho Silver Jackets	Program	1, 2, 3, 4, 5	◆	◆	◆			
Description: The Silver Jackets Program is the State-level implementation of the U.S. Army Corps of Engineers National Flood Risk Management Program. The core member agencies will establish a continuous intergovernmental collaborative team working with other State and Federal Agencies to: Provide assistance in identifying and prioritizing actions to reduce the threat, vulnerability and consequences of flooding in the State of Idaho; Facilitate strategic planning and implementation of life-cycle mitigation, response and recovery actions to reduce the threat, vulnerability and consequences of flooding in the State of Idaho; Create or supplement a process to collaboratively identify issues and implement or recommend solutions; Identify and implement ways to leverage available resources and information between agencies; Increase and improve flood risk communication and outreach; Promote wise stewardship of the taxpayers' investments; Develop more comprehensive State flood risk management policies and strategies; and Develop advanced hydrologic predictive services to reduce loss of life and property damage from flooding.								
Integration with Mitigation Plan: The goals that the Silver Jackets have correspond with many of the Hazard Mitigation Plan goals. Teaming with the Silver Jackets will help coordinate efforts and save time and money. Included in the Silver Jacket goals are to: Ensure continuous collaboration for flood mitigation, response and recovery activities before, during and after flooding; Provide a forum for examining all types of solutions for flood risk management, including both non-structural and structural solutions; Learn about partner agency programs, identifying limitations and opportunities, and combine programs to create integrated, comprehensive and sustainable solutions; Create a multiagency technical resource for State and local agencies; Provide assistance in implementing high priority actions identified in the State's mitigation plans; Improve flood risk communication and outreach, present a unified intergovernmental message, and better educate and advise customers; Identify and facilitate improvements to existing programs, policies and processes; Identify other collaboration opportunities to combine resources and identify gaps in order to minimize duplication of effort; Catalog and share information on past and future flood projects and initiatives; Prioritize current and future flood risk mitigation initiatives, individually and collectively; Improve flood hazard mapping and risk analysis and linkages to advanced hydrologic prediction models.								
Category: Planning and Regulatory; Administrative and Technical; Capital Projects and Maintenance; Financial; Education, Outreach, and Capacity Building; Disaster Response/Recovery								
Notable Changes: Continue to enlist other agencies								
Challenges: Lack of funding								
Opportunities: Extensive outreach with the many participating agencies – **Federal**—Federal Emergency Management Agency (FEMA), NOAA, National Weather Service (NOAA-NWS), U.S. Army Corps of Engineers (USACE), U.S. Bureau of Reclamation (USBR), USDA, Natural Resources Conservation Service (USDA-NRCS) and U.S. Geological Survey (USGS) **State—**Idaho Department of Environmental Quality, Idaho Department of Lands (IDL), Idaho Department of Water Resources (IDWR), Idaho Transportation Department (ITD) and Idaho Office of Emergency Management (IOEM)								
Effect on Future Conditions: Increase outreach as conditions change								
Equitable Outcomes: Continue to work with small, impoverished communities								
Community Lifelines: Safety and Security; Communications								
Hazards: Flood								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho State Legislature – Local Highway Assistance Council – Leading Idaho Local Bridge Program	Program		◆	◆	◆			◆

Description:	This program funds the repair or replacement of bridges greater than 20 feet long in poor condition or posted for load restriction.
Integration with Mitigation Plan:	Replacing or retrofitting bridges that are not built to withstand hazard events is a direct tie-in to mitigation action items.
Category:	Capital Projects and Maintenance
Notable Changes:	The program provided a $50 million investment in 2022 and 2023.
Challenges:	Numerous bridges throughout the state need to be replaced or strengthened
Opportunities:	Ongoing funding in future years would allow more projects to be completed
Effect on Future Conditions:	Stronger infrastructure will be able to better withstand more extreme hazard events exacerbated by a changing climate
Equitable Outcomes:	This program is available throughout the state, including in areas that are considered socially vulnerable
Community Lifelines:	Transportation
Hazards:	Flood, Earthquake, Severe Weather

Capability	Type of Authority	SHMP Goals	Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	Provides Funding for Mitigation
Idaho State Legislature – Idaho Water Resource Board – Aging Infrastructure Grant	Program		◆	◆	◆			◆

Description:	During its 2022 session, the Idaho legislature appropriated to the Idaho Water Resource Board (IWRB) $75,000,000 to "be used for expenditures, loans, or grants for water projects, including studies, to address water sustainability, rehabilitate or improve aging water infrastructure or support flood management."
Integration with Mitigation Plan:	Sustainable water resources and strong infrastructure are key components to hazard mitigation
Category:	Planning and Regulatory; Administrative and Technical; Capital Projects and Maintenance
Notable Changes:	This was a new funding program in 2022
Challenges:	Limited financial resources
Opportunities:	The program could be used as a funding match for a larger grant opportunity
Effect on Future Conditions:	Adequate water infrastructure may help mitigate the effects of a changing climate, such as increased drought conditions
Equitable Outcomes:	This program is available throughout the state, including in areas that are considered socially vulnerable

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Community Lifelines:	Food, Water, Shelter								
Hazards:	Drought, Earthquake, Flood								
Idaho Statue Title 18 Chapter 64 Section 01 – Riot defined		Law	1, 2, 3, 4, 5	◆	◆	◆			
Description:	Any action, use of force or violence, or threat thereof, disturbs the public peace, or any threat to use such force or violence, if accompanied by immediate power of execution, by two (2) or more persons acting together, and without authority of law, which results in:(a) Physical injury to any person; or (b) Damage or destruction to public or private property; or (c) A disturbance of the public peace; is a riot.								
Integration with Mitigation Plan:	Supports civil disturbance hazard and establishes when action should be taken.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	Seeing disturbances more often								
Challenges:	Keeping people safe								
Opportunities:	Continue to educate public.								
Effect on Future Conditions:	Possibly make consequences more prevalent.								
Equitable Outcomes:	Continue to educate public.								
Community Lifelines:	Safety and Security								
Hazards:	Civil Disorder								
Idaho Statute Title 18 Chapter 64 Section 04 – Unlawful assembly defined		Law	2	◆	◆	◆			
Description:	Whenever two or more persons assemble to do an unlawful act, and separate without doing or advancing toward it, or do a lawful act in a violent, boisterous or tumultuous manner, such assembly is an unlawful assembly.								
Integration with Mitigation Plan:	Defines unlawful assembly.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	More common now								
Challenges:	Keeping innocent bystanders safe								
Opportunities:	Continue to educate public.								
Effect on Future Conditions:	Possibly make consequences more prevalent.								
Equitable Outcomes:	Continue to educate public.								
Community Lifelines:	Safety and Security								
Hazards:	Civil Disorder								

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Statue Title 18 Chapter 81 Section 02 – Civil disorder		Law	2	◆	◆	◆			
Description:	"Civil disorder" means any public disturbance involving acts of violence by an assemblage of two (2) or more persons which acts cause an immediate danger of or result in damage or injury to the property or person of any other individual.								
Integration with Mitigation Plan:	Defines civil disorder.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	Public disturbance happening more often								
Challenges:	Safety								
Opportunities:	Continue to educate public.								
Effect on Future Conditions:	Possibly make consequences more prevalent.								
Equitable Outcomes:	Continue to educate all communities								
Community Lifelines:	Safety and Security								
Hazards:	Civil Disorder								
Idaho Statue Title 18 Chapter 81 Section 03 – Prohibited activities		Law	2	◆	◆	◆			
Description:	Any person who: (1) Conspires with one (1) or more persons to injure, oppress, threaten or intimidate any citizen in the free exercise or enjoyment of any right or privilege secured to him by the constitutions or laws of the United States or the state of Idaho, by the use of violence against the person or property of such citizen; or (2) Goes on the highway, or on the premises of any citizen, with one (1) or more other persons, with the intent by use of violence against such citizen or his property, to prevent or hinder his free exercise or enjoyment of any right or privilege so secured; or (3) Assembles with one (1) or more persons for the purpose of training or instructing in the use of, or practicing with, any technique or means capable of causing property damage, bodily injury or death with the intent to employ such training, instruction or practice in the commission of a civil disorder, as defined herein; or (4) Commits an act of terrorism, as defined in this chapter; or (5) Conspires with one (1) or more persons to commit an act of terrorism, as defined in this chapter.								
Integration with Mitigation Plan:	Gives a clear definition of prohibited activities.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	Happening more often								
Challenges:	Continue to educate public.								
Opportunities:	Possibly make consequences more prevalent.								
Effect on Future Conditions:	Continue to educate public.								
Equitable Outcomes:	Personal safety for all communities								
Community Lifelines:	Safety and Security								
Hazards:	Civil Disorder, Cyber Threats								

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Statue Title 22, Chapter 27, Section 18 – Idaho State Soil and Water Conservation Commission		Law	2	◆	◆	◆			
Description:	There is hereby established and created in the Department of Agriculture of the State of Idaho the Idaho State Soil and Water Conservation Commission, which shall perform all functions conferred upon it by this chapter and shall be a non-regulatory agency. The commission shall consist of five members appointed by the Governor. In appointing commission members, the Governor shall give consideration to geographic representation. Commission members shall be chosen with due regard to their demonstrated expertise including, but not limited to, knowledge of and interest in water quality and other natural resource issues, production agriculture, banking or other similar financial experience, or experience as a county commissioner.								
Integration with Mitigation Plan:	This law created the State of Idaho Soil and Water Conservation Commission, which is involved in carbon sequestration and groundwater issues and drafted the Idaho Agricultural Pollution Abatement Plan. The commission is responsible for the Resource Conservation and Rangeland Development Loan Program and provides conservation improvement grants. Having the Soil and Water Commission included in Hazard Mitigation meetings would assist in incorporating their agricultural plan into the State Hazard Mitigation Plan, where applicable, and assist with obtaining funding for environmental projects related to hazard mitigation.								
Category:	Administrative and Technical; Education, Outreach, and Capacity Building								
Notable Changes:	Seeing more education opportunities								
Challenges:	Funding								
Opportunities:	Provide more education								
Effect on Future Conditions:	Water quality impacts								
Equitable Outcomes:	Taking care of the water in all communities								
Community Lifelines:	Safety and Security; Food, Water, Shelter								
Hazards:	Drought, Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire								
Idaho Statue Title 33 Chapter 55 – Idaho digital learning academy		Law	1, 2, 3, 4	◆	◆	◆			
Description:	Idaho Digital Learning was created to provide access, equity, and flexibility for students in the state of Idaho according to its statutory authority, and Idaho Digital Learning enables the state to meet its constitutional requirement to provide a uniform and thorough educational system.								
Integration with Mitigation Plan:	Provides education and awareness.								
Category:	Administrative and Technical; Education, Outreach, and Capacity Building								
Notable Changes:	None identified								
Challenges:	Encourage education								
Opportunities:	Education and awareness								
Effect on Future Conditions:	Increased awareness								
Equitable Outcomes:	Continued outreach in all communities								
Community Lifelines:	Communications								
Hazards:	Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire								

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Statue Title 39 Chapter 28 – Abatement Districts		Law	3	◆	◆	◆			
Description:	This statue authorizes the formation of abatement districts, describes their powers and duties, and outlines procedures for formation and financing of abatement districts.								
Integration with Mitigation Plan:	Defines responsibilities and duties.								
Category:	Planning and Regulatory; Administrative and Technical; Financial; Education, Outreach, and Capacity Building; Disaster Response/Recovery								
Notable Changes:	No changes								
Challenges:	Everyone has to be cognizant of their surroundings, example standing water								
Opportunities:	Work with the lateral ditch water users' associations, irrigation, drainage and flood control districts and others								
Effect on Future Conditions:	Maintenance and cleaning of ditches will benefit the districts with changing conditions								
Equitable Outcomes:	Health and welfare of all communities								
Community Lifelines:	Safety and Security								
Hazards:	Drought, Earthquake, Flood, Landslide, Avalanche, Volcano, Wildfire								
Idaho Statue Title 39, Chapter 41, Building Code Act		Law	1, 2, 4, 5	◆	◆	◆			
Description:	It is the intent of the legislature to: (a) Promote the health, safety and welfare of the occupants or users of buildings and structures subject to this chapter; (b) Require minimum performance standards and requirements for construction and construction materials, consistent with accepted standards of engineering, fire safety, life safety and accessibility for those with disabilities; (c) Establish, for jurisdictions enforcing building codes pursuant to this chapter, minimum standards and requirements in terms of performance, energy efficiency, effect upon construction costs and consistency with nationally accepted standards; (d) Permit the use of modern technical methods, devices and improvements; and € Clarify and establish roles of the various jurisdictions subject to this chapter.								
Integration with Mitigation Plan:	Through the identification of hazards and a vulnerability analysis within the Hazard Mitigation Plan, it may be determined that the building code act needs to be revised to: Require more stringent performance standards; Identify suitable materials to be used when building in areas prone to high winds and flooding; Identify which modern technical methods are acceptable; Better clarify roles and issue more regulatory power to various jurisdictions.								
Category:	Planning and Regulatory; Administrative and Technical; Capital Projects and Maintenance; Financial								
Notable Changes:	Code enforcement								
Challenges:	Unless ordered, not all codes have to be adopted								
Opportunities:	Adopt building codes								
Effect on Future Conditions:	Violations of this act are considered misdemeanors								
Equitable Outcomes:	Building codes offer safety for all communities								
Community Lifelines:	Safety and Security								
Hazards:	Earthquake, Flood, Landslide, Severe Weather, Avalanche, Wildfire								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
Idaho Statute Title 46 Section 1012 –Disaster and Preparations Act	Law	1, 2, 4, 5	◆	◆	◆			
Description:	This statue establishes compensation for seizure of medical equipment or facilities during a disaster.							
Integration with Mitigation Plan:	Defines compensation for materials seized during a disaster.							
Category:	Planning and Regulatory; Financial; Disaster Response/Recovery							
Notable Changes:	Increased messaging							
Challenges:	Large population area.							
Opportunities:	Each person within this state shall conduct himself and keep and manage his affairs and property in ways that will reasonably assist and will not unreasonably detract from the ability of the state, other political subdivisions, and the public to successfully meet disaster emergencies.							
Effect on Future Conditions:	Success in disasters							
Equitable Outcomes:	Safety for all communities							
Community Lifelines:	Safety and Security; Health and Medical							
Hazards:	Civil Disorder, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire							
Idaho Statue Title 47, Chapter 17- Mines and Mining – Idaho Abandoned Mine Reclamation Act	Law	4		◆	◆			
Description:	It is the purpose of this act to provide for the reclamation of abandoned mines on State and Federal lands and on certain private lands, thereby protecting human health, safety and welfare; conserving natural resources; aiding in the protection of wildlife, aquatic resources, and domestic animals; and reducing soil erosion.							
Integration with Mitigation Plan:	By reclaiming previously mined lands, voids that were created can be properly filled to an appropriate degree. Mapping and other data acquired during the reclamation process would assist with hazard mitigation. Having this data in a GIS system would allow individuals to know that, due to the previous disturbance, the area may not be conducive to development and the reclaimed land should remain open space.							
Category:	Administrative and Technical; Education, Outreach, and Capacity Building							
Notable Changes:	2022 Idaho Code—rights and liabilities of lessees.							
Challenges:	Lessees of mineral lands shall fully protect rights agricultural and grazing leases							
Opportunities:	Protection of wildlife							
Effect on Future Conditions:	Protection of wildlife despite changing future conditions							
Equitable Outcomes:	Land should stay open space rather than being developed for vulnerable communities							
Community Lifelines:	Safety and Security, Health and Medical							
Hazards:	Flood, Hazardous Materials Release, Landslide							

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Idaho Statue Title 67, Chapter 65, Section 8 – Planning Duties		Law	1, 2, 4	◆	◆	◆			◆
Description:	It shall be the duty of the planning or planning and zoning commission to conduct a comprehensive planning process designed to prepare, implement, and review and update a comprehensive plan, hereafter referred to as the plan. The plan shall include all land within the jurisdiction of the governing board. The plan shall consider previous and existing conditions, trends, desirable goals and objectives, or desirable future situations for each planning component. The plan, with maps, charts, and reports, shall be based on the following components as they may apply to land use regulations and actions, unless the plan specifies reasons why a particular component is unneeded.								
Integration with Mitigation Plan:	This legislation provides for comprehensive land use planning, which can be incorporated into the hazard mitigation plan at both the State and local level. Having the two planning mechanisms being consistent will enable State and local government to know where development should not occur and in which areas it can occur with little or no hazard risk.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	Comprehensive plans and all-hazards plan are being done together more often								
Challenges:	No requirements exist right now to compare								
Opportunities:	Be more consistent with information sharing								
Effect on Future Conditions:	Consistency will help improve future conditions								
Equitable Outcomes:	More consistency will be easier for all to understand								
Community Lifelines:	Safety and Security								
Hazards:	Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Severe Weather, Avalanche, Volcano, Wildfire								
Idaho Statue Title 70 – Watercourses/Port Districts		Law	1, 2, 4, 5	◆	◆	◆			
Description:	Legislation enacted to create the Coeur D'Alene River and Lake Commission (previously created commission groups for the Snake River and Boise River necessary improvements).								
Integration with Mitigation Plan:	As it stands, the legislative act is neutral. However, if, as part of updating the Hazard Mitigation Plan, the risk assessment deemed a river completely unfit due to previous development and other unnatural changes to the water course, legislation could be enacted to create and fund a commission until the watercourse is restored.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	Chapter 1 Port Districts and Chapter 2 Snake River improvements repealed								
Challenges:	Chapter 1 Port Districts and Chapter 2 Snake River improvements repealed								
Opportunities:	Boise River improvements								
Effect on Future Conditions:	Termination of commission upon completion of construction of said improvements								
Equitable Outcomes:	Improvements help to ensure safety for all communities								
Community Lifelines:	Food, Water, Shelter; Transportation								
Hazards:	Flood								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
International Business Code (IBC 2015)	Regulation	4	◆	◆		◆		◆
Description:	The provisions of this code shall apply to the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.							
Integration with Mitigation Plan:	Code applies to construction, alteration, relocation, enlargement, replacement, repair, and equipment.							
Category:	Planning and Regulatory; Capital Projects and Maintenance							
Notable Changes:	This is a model building code developed by the council and has been adopted for use as a base code standard							
Challenges:	Code enforcement							
Opportunities:	Provides oversight							
Effect on Future Conditions:	Codes will encourage safety							
Equitable Outcomes:	Safety and security for all communities							
Community Lifelines:	Safety and Security							
Hazards:	Civil Disorder, Cyber Threats, Earthquake, Flood, Landslide, Severe Weather, Avalanche, Wildfire							
International Energy Conservation Code (2018)	Regulation	1, 2	◆	◆	◆			
Description:	Regulates the design and construction of buildings for the use and conservation of energy over the life of each building.							
Integration with Mitigation Plan:	Code helps regulate construction.							
Category:	Planning and Regulatory							
Notable Changes:	Idaho's current energy code is based on the 2018 International Energy Conservation Code with state-specific amendments.							
Challenges:	Funding							
Opportunities:	Safety							
Effect on Future Conditions:	Less energy required							
Equitable Outcomes:	Safety for all communities							
Community Lifelines:	Safety and Security; Energy							
Hazards:	Severe Weather							
International Existing Building Code (IEBC 2015)	Regulation	1, 2, 4	◆	◆	◆			
Description:	Provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety and welfare insofar as they are affected by repair, alteration, change of occupancy, additional and relocation of existing buildings							
Integration with Mitigation Plan:	Code helps regulate construction.							
Category:	Planning and Regulatory							
Notable Changes:	Funding							
Challenges:	Funding for relocations							
Opportunities:	Some alternatives are less costly							
Effect on Future Conditions:	Better alternatives							
Equitable Outcomes:	More flexibility might save money							
Community Lifelines:	Safety and Security; Health and Medical							
Hazards:	Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire							

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
International Fire Code (2021)		Regulation	1, 4	◆	◆	◆			
Description:	Addresses conditions hazardous to life and property from fire, explosion, handling or use of hazardous materials and the use and occupancy of buildings and premises.								
Integration with Mitigation Plan:	Provide protection for public health, safety and welfare from the hazards of fire, explosion or dangerous conditions in buildings, structures and premises.								
Category:	Planning and Regulatory								
Notable Changes:	2021 International Fire Code contains regulation to safeguard life and property from fire and explosion hazards								
Challenges:	Safety								
Opportunities:	Updated codes can continue to increase safety								
Effect on Future Conditions:	Fire safety								
Equitable Outcomes:	Updated codes help all communities								
Community Lifelines:	Safety and Security; Hazardous Materials								
Hazards:	Hazardous Materials Release, Wildfire								
International Fuel and Gas Code (2018)		Regulation	1, 2, 4	◆	◆	◆			
Description:	This code is a model that regulates the design and installation of fuel gas distribution piping and systems, appliances, appliance venting systems, combustion air provisions, gaseous hydrogen systems and motor vehicle gaseous-fuel-dispensing stations.								
Integration with Mitigation Plan:	Provides standards for safety to protect life and property.								
Category:	Planning and Regulatory; Capital Projects and Maintenance								
Notable Changes:	Effective January 1, 2021								
Challenges:	Possible—less reliance on gas								
Opportunities:	Industry changes								
Effect on Future Conditions:	Code updates to keep up with industry changes								
Equitable Outcomes:	Updated codes help all communities								
Community Lifelines:	Energy; Hazardous Materials								
Hazards:	Hazardous Materials Release, Radiological Accidents, Wildfire								

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
International Green Construction Code (2018)		Regulation	1, 2, 4	◆	◆	◆			
Description:	The International Green Construction Code creates a regulatory framework for new and existing buildings, establishing minimum green requirements for buildings and complementing voluntary rating systems, which may extend beyond baseline of the code. The code acts as an overlay to the existing set of International Codes, including provisions of the International Energy Conservation Code and ICC-700, the National Green Building Standard, and incorporates ASHRAE Standard 189.1 as an alternate path to compliance.								
Integration with Mitigation Plan:	Green construction creates jobs and contributes to economic growth, according to the U.S. Green Building Council Green Jobs Study. In addition, there is no significant difference in the average life cycle cost for green buildings as compared to non-green buildings.								
Category:	Planning and Regulatory								
Notable Changes:	Encourages public/private collaboration to help provide a green model code to government jurisdictions.								
Challenges:	Technical support needed								
Opportunities:	Focuses more on new construction								
Effect on Future Conditions:	Can provide better indoor environments with lower impacts on natural resources								
Equitable Outcomes:	Less impacts on natural resources in all communities								
Community Lifelines:	Safety and Security								
Hazards:	Drought, Severe Weather, Hazardous Materials Release								
International Mechanical Code (IMC 2018)		Regulation	4	◆	◆	◆			
Description:	Internationally, code officials recognize the need for a modern, up-to-date mechanical code addressing the design and installation of mechanical systems through requirements emphasizing performance.								
Integration with Mitigation Plan:	The International Mechanical Code provisions provide many benefits, among which is the model code development process that offers an international forum for mechanical professionals to discuss performance and prescriptive code requirements. This forum provides an excellent arena to debate proposed revisions. This model code also encourages international consistency in the application of provisions.								
Category:	Planning and Regulatory								
Notable Changes:	Idaho Mechanical Code 2018 is based on International Code								
Challenges:	International consistency								
Opportunities:	This code provides many benefits including an international forum of professional to discuss performance and codes								
Effect on Future Conditions:	The code encourages international consistency in the application of provisions								
Equitable Outcomes:	Consistent codes for all communities								
Community Lifelines:	Safety and Security								
Hazards:	Cyber Threats, Severe Weather, Volcano, Wildfire								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
International Residential Code 2018 (IRC 2018)	Regulation	1, 2, 3, 4	◆	◆	◆			
Description:	The 2018 International Residential Code for One- and Two-Family Dwellings (IRC) offers the most current and innovative set of regulations for residential construction.							
Integration with Mitigation Plan:	Sets standard for building homes.							
Category:	Planning and Regulatory							
Notable Changes:	https://codes/iccsafe.org							
Challenges:	International consistency							
Opportunities:	Provides innovative set of regulations for residential construction							
Effect on Future Conditions:	Offers most current codes							
Equitable Outcomes:	Updated codes should help provide consistency							
Community Lifelines:	Safety and Security							
Hazards:	Earthquake, Flood, Landslide, Severe Weather, Avalanche, Volcano, Wildfire							
International Wildlife –Urban Interface Code (2021)	Regulation	1, 2	◆	◆	◆			
Description:	Intended to mitigate the hazard from fires through the development of provisions that adequately protect public health, safety and welfare; provisions that do not unnecessarily increase construction costs; provisions that do not restrict the use of new materials, products or methods of construction; and provisions that do not give preferential treatment to particular types or classes of materials, products or methods of construction.							
Integration with Mitigation Plan:	Mitigate the hazard from fires through the development of provisions.							
Category:	Planning and Regulatory; Capital Projects and Maintenance							
Notable Changes:	https://codes.iccsafe.org/content/IWUIC2021							
Challenges:	Protect property and people in the WUI from the intrusion of wildfire							
Opportunities:	Provides standards for emergency access, water supply and fire protection							
Effect on Future Conditions:	Contains provisions addressing fire spread, accessibility, defensible space, water supply and more for buildings con near wildland areas							
Equitable Outcomes:	The code official reasonably expects to demonstrate that "equal protection under the law has been provided"							
Community Lifelines:	Safety and Security; Health and Medical							
Hazards:	Wildfire							
LiDAR	Program	1, 2, 3, 4, 5	◆	◆	◆			
Description:	High spatial resolution lidar data is increasingly available for Idaho. These data have been used to revise the floodplain to be more accurate and can be used for landslide and post-wildfire debris flow modeling.							
Integration with Mitigation Plan:	Allows areas with potential for hazard to be identified and ideally, proactive measures taken to mitigate losses.							
Category:	Planning and Regulatory							
Notable Changes:	More LiDAR data is available today than 5 years ago							
Challenges:	Skilled GIS professionals knowledgeable in the use of LiDAR (how to process LiDAR point clouds and perform spatial analysis to determine potential hazard prior to a disaster).							
Opportunities:	The GIS TReC at ISU offers Lidar workshops supported by FEMA CTP. These are free of charge for individuals wishing to attend.							
Effect on Future Conditions:	Completing potential hazard analysis can be very helpful but only if proactive measures are executed once the potential is identified							

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
			Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Equitable Outcomes:	This analysis will benefit all							
Community Lifelines:	All							
Hazards:	Flood, Landslide, Wildfire							
Local Option Swine Facilities Act	Law	1, 2, 4	◆	◆	◆			
Description:	Prohibits the siting of swine facilities in known hazard areas.							
Integration with Mitigation Plan:	This legislation provides a certain degree of zoning, which can be incorporated into the hazard mitigation plan at both the State and local level.							
Category:	Planning and Regulatory							
Notable Changes:	See Title 39 Health and Safety—Chapter 79—Local Option Swine Facilities Siting Act—39-7904							
Challenges:	See Title 39 Health and Safety—Chapter 79—Local Option Swine Facilities Siting Act—39-7904							
Opportunities:	Provides county commissioners and governing bodies of cities with an optional procedure for siting swine facilities							
Effect on Future Conditions:	Simple facilities can work as well as high technology facilities							
Equitable Outcomes:	Simple facilities can work as well as high technology facilities							
Community Lifelines:	Safety and Security; Health and Medical							
Hazards:	Hazardous Materials Release, Pandemic							
National Green Building Standard (ICC 700) 2020	Regulation	1, 4	◆		◆			
Description:	Aims to encourage increased environmental and health performance in residences and residential portions of buildings. Its criteria apply to the design and construction of homes and subdivisions.							
Integration with Mitigation Plan:	These standards have been widely implemented throughout the industry.							
Category:	Planning and Regulatory; Education, Outreach, and Capacity Building							
Notable Changes:	The first residential green building standard to undergo the full consensus process and receive approval from ANSI							
Challenges:	For current standards go to https://codes.iccsafe.org							
Opportunities:	Provides above-code program to design and construct homes and apartments that are sustainable and cost effective							
Effect on Future Conditions:	Cost effective standards							
Equitable Outcomes:	For current standards go to https://codes.iccsafe.org							
Community Lifelines:	Food, Water, Shelter							
Hazards:	Drought, Severe Weather, Hazardous Materials Release							
National Poultry Improvement Plan	Policy	1, 4	◆	◆	◆			
Description:	Established to provide a cooperative industry, state, and federal program through which new diagnostic technology can be effectively applied to the improvement of poultry and poultry products throughout the country. The mission is to safeguard the health of the nation's agricultural resources							
Integration with Mitigation Plan:	Provide a cooperative industry, state, and federal program through which new diagnostic technology can be effectively applied to the improvement of poultry and poultry products throughout the country.							
Category:	Administrative and Technical							
Notable Changes:	Plan last modified June 2, 2020							
Challenges:	For more information go to https://www.alphis.usda.gov							
Opportunities:								
Effect on Future Conditions:	Intent of eliminating Pullorum disease and creating a national network of disease-free poultry							

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
Equitable Outcomes:	We encourage all poultry and game bird producers to become members of the National Poultry Improvement Plan.							
Community Lifelines:	Food, Water, Shelter; Health and Medical							
Hazards:	Hazardous Materials Release, Pandemic							
NFPA-780 Standard for the Installation of Lightning Protection Systems	Regulation	1, 3, 4, 5	◆		◆			
Description:	NFPA 780 provides lightning protection system installation requirements to safeguard people and property from fire risk and related hazards associated with lightning exposure.							
Integration with Mitigation Plan:	Provides lightning protection system installation requirements to safeguard people and property from fire risk and related hazards associated with lightning exposure.							
Category:	Planning and Regulatory; Capital Projects and Maintenance							
Notable Changes:	NFPA 780-2020 resides 2017 edition							
Challenges:	No way to tell where lightening will strike.							
Opportunities:	NFPA standardizes the installation of lightening protection systems							
Effect on Future Conditions:	Continue to improve protection systems to safeguard people and property.							
Equitable Outcomes:	All community members should seek shelter whenever possible.							
Community Lifelines:	Safety and Security; Communications							
Hazards:	Severe Weather, Wildfire							
Pacific Northwest Regional Water Quality Program	Program	1, 2	◆	◆	◆			
Description:	The Pacific Northwest Region Water Quality Program builds on the strengths of the Extension Water Quality Programs at the four Land Grant Universities throughout the Northwest. These States—Alaska, Idaho, Oregon, and Washington—correspond to EPA Region 10. The goal of the Pacific Northwest Program is to provide leadership for water resources research, education, and outreach to help communities, industry, and governments prevent and solve current and emerging water quality and quantity problems. To achieve this goal, the Partners have developed a coordinated regional water quality effort based on promoting and strengthening individual State programs. The Pacific Northwest Program promotes regional collaboration by acknowledging existing programs and successful efforts; assessing program gaps; identifying potential issues for cross-agency and private sector collaboration; and developing a clearinghouse of expertise and programs. In addition, the program establishes or enhances partnerships with Federal, State, and local environmental and water resource management agencies, such as by placing a University Liaison within the offices of EPA Region 10. This organization only provides technical service on a watershed-to-watershed basis. No grant funding is available.							
Integration with Mitigation Plan:	For the State of Idaho, the University of Idaho is the lead entity involved with the Pacific Northwest Regional Water Program. The program entity does not have any grant funding ability but is able to assist with technical support. With budget constraints, it would be mutually beneficial to have students take part in hazard mitigation planning. They could assist with GIS and mapping capabilities and perform research functions necessary for updating the risk assessment portion of the Plan. They may also be able to complete mitigation projects as a group that will not only help accomplish tasks associated with the Plan but provide them with experience required for their school coursework.							
Category:	Administrative and Technical; Education, Outreach, and Capacity Building							
Notable Changes:	Capacity building							
Challenges:	Budget constraints							

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
Opportunities:	Water is a precious natural resource and is increasingly stressed by the demand's society places on it. Adequate water supplies are an essential element in human survival, ecosystem health, energy production, and economic sustainability. Reclamation has a variety of programs to help fulfill the overall mission to "manage, develop and protect water and related resources in an environmentally sound manner in the interest of the American public." These programs focus on improving water conservation and helping water and resource managers make wise decisions about water use.							
Effect on Future Conditions:	These programs focus on improving water conservation and helping water and resource managers make wise decisions about water use.							
Equitable Outcomes:	Water is precious and all communities need it							
Community Lifelines:	Food, Water, Shelter							
Hazards:	Flood, Hazardous Materials Release, Severe Weather							
Reclamation Act of 1902	Law	3, 4	◆	◆	◆			
Description:	The Act established the U.S. Reclamation Service within the USGS. The full name of the act is "An Act Appropriating the receipts from the sale and disposal of public lands in certain States and Territories to the construction of irrigation works for the reclamation of arid lands". The act identifies 16 states and territories included in the project: Arizona, California, Colorado, Idaho, Kansas, Montana, Nebraska, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington, and Wyoming. It requires surplus fees from sales of land be set aside for a "reclamation fund" for the development of water resources. It also requires the Treasury Department to fund education from unappropriated monies under certain conditions.							
Integration with Mitigation Plan:	Helps establish roles for action.							
Category:	Administrative and Technical							
Notable Changes:	None							
Challenges:	Funding							
Opportunities:	Establish roles for action							
Effect on Future Conditions:	None identified							
Equitable Outcomes:	None identified							
Community Lifelines:	Food, Water, Shelter							
Hazards:	Drought, Flood							
Resource, Conservation and Recovery Act	Law	3, 4	◆			◆		
Description:	Federal law in the United States governing the disposal of solid waste and hazardous waste. Congress enacted RCRA to address the increasing problems the nation faced from its growing volume of municipal and industrial waste. The RCRA regulations are contained in title 40 of the Code of Federal Regulations (CFR) parts 239 through 282. The CFR is a collection of all federal regulations codified and enforced by all federal agencies.							
Integration with Mitigation Plan:	Regulates disposal of waste and hazardous waste.							
Category:	Planning and Regulatory							
Notable Changes:	Continue enforcement							
Challenges:	Hard to enforce illegal disposal							
Opportunities:	In any given state, EPA or the state's hazardous waste regulatory agency enforces hazardous waste laws. EPA encourages states to assume primary responsibility for implementing a hazardous waste program through state adoption, authorization and implementation of the regulations.							
Effect on Future Conditions:	Communities need to continue to enforce the disposal of solid waste and hazardous waste in Idaho							
Equitable Outcomes:	Better health for all communities							

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Community Lifelines:	Hazardous Material								
Hazards:	Hazardous Materials Release, Radiological Accidents								
State Drought Plan		Regulation	1, 2, 4	◆	◆	◆			
Description:	The Idaho Drought Plan stresses involvement from local and county officials and encourages these officials to prepare triggers for response and a demand reduction program for implementation during droughts. Even drought declarations, and subsequent responses, are made at the local level, except in cases of extreme drought. The Idaho Drought Plan was written in 1990 and revised in 1995 and 2001. The lead agency for the plan is IDWR. The IDWR monitors water supplies around the State and, as potential water supply problems develop, alerts the Governor's office and organizes a water supply committee. This committee is chaired by IDWR and contains members from the university, State and Federal agencies, and the private sector. As conditions continue to deteriorate, the water supply committee organizes subcommittees to address impacts in various sectors.								
Integration with Mitigation Plan:	IDWR has the ability to facilitate, monitor, and implement the State Water Plan. IDWR's areas of concern and research on drought can be incorporated in the State Hazard Mitigation Plan in both the Risk Assessment and Mitigation Strategy. Also, actions developed by the IDWR for drought can be incorporated to reduce the risk.								
Category:	Planning and Regulatory; Administrative and Technical; Disaster Response/Recovery								
Notable Changes:	Declared Counties—South of the Salmon River—April 29, 2022, Adams County—August 4, 2021, Bingham County—July 29, 2021, Bonneville County—July 20, 2021, Cassia and Twin Falls Counties—July 20, 2021, Bear Lake County—July 1, 2021, Elmore County—July 1, 2021, Lemhi County—July 1, 2021, Teton County—July 1, 2021 and Valley County—June 21, 2021								
Challenges:	Funding								
Opportunities:	Continue to educate communities how to conserve water.								
Effect on Future Conditions:	Adequate water for communities.								
Equitable Outcomes:	Conserving water will help whole communities.								
Community Lifelines:	Safety and Security; Food, Water, Shelter; Communications								
Hazards:	Drought								
State Executive Order		Policy	1, 2, 3, 4, 5	◆	◆	◆			
Description:	The IOEM is directed by Governor Executive Order to establish and maintain the Idaho Emergency Operations Center for directing the coordination of emergency and disaster operations.								
Integration with Mitigation Plan:	The IOEM, being responsible for the State Mitigation Plan and the Emergency Operations Center, has the ability to incorporate some of the functionality of the center into the Plan. Also, when a disaster occurs, the IOEM has the ability to see if the Plan requires modifications.								
Category:	Planning and Regulatory; Administrative and Technical; Disaster Response/Recovery								
Notable Changes:	IOEM is accredited by the Emergency Management Accreditation Program (EMAP) and is a division of the Idaho Military Division.								
Challenges:	Funding								
Opportunities:	IOEM Continues to build strong relationships with all county and tribal leaders								
Effect on Future Conditions:	IOEM continues to help all cities and tribal nations to continue to make their towns and cities more resilient to hazard.								
Equitable Outcomes:	IOEM works with low-income towns and cities to create a safer more resilient people.								
Community Lifelines:	Safety and Security; Health and Medical; Communications								
Hazards:	Civil Disorder, Cyber Threats, Drought, Earthquake, Flood, Hazardous Materials Release, Landslide, Pandemic, Radiological Accidents, Severe Weather, Avalanche, Volcano, Wildfire								

Capability	Type of Authority	SHMP Goals	Type of Hazard Management Capability: Pre-Disaster	Type of Hazard Management Capability: Post-Disaster	Effect on Loss Reduction: Support	Effect on Loss Reduction: Facilitate	Effect on Loss Reduction: Conflict	Provides Funding for Mitigation
State Fire Assistance Program	Program	1, 2, 3, 4, 5	◆	◆	◆			
Description:	The State Fire Assistance Program provides financial and technical support directly to States, to enhance firefighting capacity, support community-based hazard mitigation, and expand outreach and education concerning fire prevention to homeowners and communities. The program requires a 50-50 match by the State. The delivery system is through the State Forester. As a result of the National Fire Plan and the Healthy Forest Restoration Act, the hazardous fuels reduction component is a major part of the State Fire Assistance Program. The hazardous fuels application and selection process is managed by the Western States Fire Managers. The hazardous fuels component, along with most other fuels mitigation funds provided by Federal agencies and the State, is coordinated through a collaborative interagency effort. This is a cooperative program between Idaho Department of Lands and USDA Forest Service, State and Private Forestry, which provides financial and technical assistance to organize, train, and equip local forces for fire protection and suppression.							
Integration with Mitigation Plan:	Funding from this program can help communities obtain the money and technical resources needed to complete mitigation projects related to fire hazards and forest pollution.							
Category:	Administrative and Technical; Financial; Capital Projects and Maintenance; Education, Outreach, and Capacity Building; Disaster Response/Recovery							
Notable Changes:	Congress has recognized that fire protection in rural communities is generally lacking or inadequate. To improve this situation, Congress authorized the Rural Fire Capacity (RFC) program, formerly known as the Volunteer Fire Assistance program. This is a cooperative program between Idaho Department of Lands and USDA Forest Service, State and Private Forestry, which provides financial and technical assistance to organize, train, and equip local forces for fire protection and suppression.							
Challenges:	Funding							
Opportunities:	Provides financial assistance to organize, train and equip forces for fire protection.							
Effect on Future Conditions:	More assistance for fire protection.							
Equitable Outcomes:	More assistance possible to equip local forces for fire protection and suppression							
Community Lifelines:	Safety and Security; Communications; Hazardous Material							
Hazards:	Wildfire							
State Water Plan	Regulation	1, 2, 3, 4	◆	◆	◆			◆
Description:	The Idaho State Water Plan was adopted by the Idaho Water Resource Board to guide the development, management, and use of the State's water and related resources. The plan recognizes past actions, addresses present conflicts and opportunities, and seeks to ensure that future water resource uses will complement, and supplement State goals directed toward serving the citizens of Idaho. The plan is a dynamic document, subject to change to reflect citizens' desires and to be responsive to new opportunities and needs.							
Integration with Mitigation Plan:	The Idaho Water Resource Board has the ability to facilitate, monitor, and implement the State Water Plan. The resource board involves various State agencies. Some of these agencies are also involved with the State Hazard Mitigation Plan. Coordinating efforts will save time, and money. Areas of concern from the resource board can be incorporated into the State Hazard Mitigation Plan in both the Risk Assessment and Mitigation Strategy. Also, actions developed by the resource board can be incorporated to reduce the risk of flooding and drought.							
Category:	Planning and Regulatory; Administrative and Technical							
Notable Changes:	Sustainability is the active stewardship of Idaho's water resources to satisfy current uses and assure future uses of this renewable resource in accordance with State law and policy (Nov 2016)							
Challenges:	Increase in population							
Opportunities:	This plan is a dynamic document subject to changes to reflect citizens' responsiveness to new opportunities.							
Effect on Future Conditions:	The proposed Sustainability section is the result of a robust public involvement process.							

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
Equitable Outcomes:	None identified								
Community Lifelines:	Safety and Security								
Hazards:	Drought, Flood								
The Steele-Reese Foundation Grant Program		Program	5	◆	◆	◆			
Description:	The Steele-Reese Foundation, a trust for charitable purposes, was created by Eleanor Steele Reese on August 10, 1955. The foundation makes grants to charitable organizations operating in Idaho and Montana, and in the southern Appalachian Mountain region of eastern Kentucky. Rural Conservation: Examples include composting programs, wildlife projects, ecosystem protection programs, and water projects. All conservation/environmental programs must be locally, rather than regionally, focused. National organizations are eligible for support only if all Steele-Reese funds are employed directly in projects located in the geographical areas served by this foundation. Rural Health: Examples include hospices; preventive health programs; equipment for clinics, small hospitals, EMS and ambulance units; family planning programs. Rural Humanities: Examples include local arts groups and local historical projects.								
Integration with Mitigation Plan:	The Steele-Reese Foundation has a funding program in place that could assist with completing mitigation action items, such as stream restoration. This program assists with maintaining the land's rural integrity.								
Category:	Financial								
Notable Changes:	Family Forestry planning programs								
Challenges:	Funding								
Opportunities:	Continue to maintain the integrity of the land								
Effect on Future Conditions:	In Idaho, Montana, and in the Native nations within these states, the Foundation supports federally tax-exempt entities working in rural education; health; human and social services; the arts and humanities; and land, water, and wildlife conservation and historic preservation.								
Equitable Outcomes:	In Idaho and Montana Grant Program, the Foundation supports projects that affect people in rural areas in Idaho, Montana, and in Native nations that share the geography in the following program areas: Rural Education, Rural Health, Rural Human and Social Services, Rural Arts and Humanities, and Rural Conservation or Preservation.								
Community Lifelines:	Safety and Security; Health and Medical								
Hazards:	Drought, Flood, Landslide, Pandemic, Severe Weather, Wildfire								
Superfund Amendments and Reauthorization Act (SARA) Title III		Law	1, 4	◆	◆	◆			◆
Description:	List of extremely hazardous substances are identified in Title III of this act.								
Integration with Mitigation Plan:	Provides list of identified extremely hazardous substances.								
Category:	Planning and Regulatory; Administrative and Technical								
Notable Changes:	Continue to increase responses								
Challenges:	Rapid response to emergencies								
Opportunities:	Accelerated clean-ups								
Effect on Future Conditions:	Throughout fiscal year 2022, the Superfund program protected human health and the environment nationwide by accelerating cleanups, developing innovative remedies, responding rapidly to emergencies, advancing environmental justice, and supporting sites' return to beneficial use.								
Equitable Outcomes:	Advances environmental justice								
Community Lifelines:	Hazardous Material								
Hazards:	Hazardous Materials Release, Radiological Accidents								

Capability		Type of Authority	SHMP Goals	Type of Hazard Management Capability		Effect on Loss Reduction			Provides Funding for Mitigation
				Pre-Disaster	Post-Disaster	Support	Facilitate	Conflict	
The Wilburforce Foundation Grant Program		Program	1, 2, 4	◆	◆	◆			
Description:	Wilburforce Foundation protects wildlife habitat in Western North America by actively supporting organizations and leaders advancing conservation solutions. Wilburforce makes investments that contribute to the following types of outcomes: Increase access to and use of scientific, legal, political, and economic information resources; Improve the efficiency and effectiveness of grantee organizations, conservation leaders, and other allies; Increase communication, cooperation and collaboration among grantees, stakeholders, decision makers and/or allies; Increase awareness, support and utilization of conservation policies, plans and practices that protect wildlife habitat; Decrease or mitigate threats to wildlife habitat; Improve the protected status of wildlife habitat; Improve the ecological resilience of the landscapes in which people work								
Integration with Mitigation Plan:	The Wilburforce Foundation provides funding to mitigate threats to wildlife and improve ecological resilience, which may involve acquiring and restoring land back to its natural habitat. This could be helpful for flood-related mitigation projects that require land to be acquired and either returned to its natural state or kept as permanent open space. This also may result in acquiring land to prevent habitat disruption caused by development. The Wilburforce Foundation also assists in funding for environmental education. This could incorporate mitigation outreach and education components.								
Category:	Capital Projects and Maintenance; Financial								
Notable Changes:	Increase collaboration between diverse stakeholders.								
Challenges:	Lack of funding								
Opportunities:	The Wilburforce Foundation looks for opportunities to restore, protect, and connect wild places and the wildlife that depend on them. It supports efforts that enhance collaboration among diverse stakeholders, provide policy-informed conservation and social science research, and build active constituencies for wildlife and wild places.								
Effect on Future Conditions:	Funding for outreach and education components								
Equitable Outcomes:	Education possibilities								
Community Lifelines:	Safety and Security								
Hazards:	Drought, Flood, Severe Weather, Wildfire								

LOCAL CAPABILITY MITIGATION SUCCESS STORIES

The following mitigation success stories highlight implementation of some of the local capabilities throughout the state (Figure H-1 through H-5).

MITIGATION PROJECT IMPACT REPORT

KOOTENAI ELECTRIC COOPERATIVE UNDERGROUNDING POWERLINES

Undergrounding powerlines prevents power outages and saves restoration costs.

Completion Date:

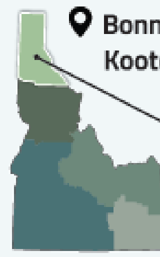
August 2021

Category:

Severe Storm / Wind

A severe storm is an atmospheric disturbance resulting in strong winds, large hail, thunderstorms, tornadoes, rain, snow, or other mixed precipitation.

Location:

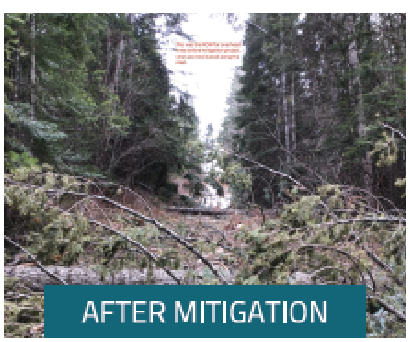


Bonner, Benewah, Kootenai Counties

Northern Region

Mitigation Project:

Problem: Federal disasters 4246 and 4252 were declared in Northern Idaho for wind storms and heavy snow fall in 2015. Businesses and residents were without power for days and private non-profit utility companies had expensive repairs.

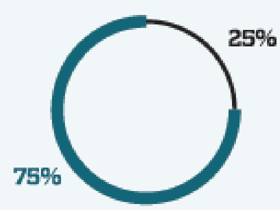


Solution: Kootenai Electric Cooperative applied for funding to underground 1.9 miles of powerlines to eliminate future repairs from weather or wildfire events. In 2021, another storm hit the area. Numerous trees fell in the mitigated area that would have fallen on powerlines. Power restoration would have taken an additional 36 to 48 hours to restore power and cost $600,000-$900,000.

Funding & Cost:

- [x] Disaster (HMGP/Post Fire)
- [ ] Non-Disaster (PDM/BRIC/FMA)

Total Cost Shares



Non-Federal: **$5,651,586**

Federal: **$16,954,756**

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Figure H-1. Mitigation Success Story for the Northern Region

MITIGATION PROJECT IMPACT REPORT

LEWISTON STORMWATER IMPROVEMENT

Lewiston established a stormwater utility to generate funds and partnered with the State (US Hwy 12), US Army Corps of Engineers, and Burlington Northern Railroad to reduce repetitive flooding.

Completion Date:

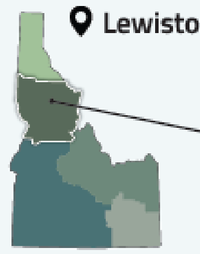
May 2014

Category:

Flood (severe storms)

Floods occur when an overflow of water submerges land that is usually dry.

Location:



Lewiston, Idaho

North Central Region

Mitigation Project:

Problem: The City of Lewiston lies at the confluence of the Snake and Clearwater Rivers with USACE constructed dam, reservoir, and levees designed to protect downtown from a 100-year flood. The drainage system passes under a railroad and highway into the USACE system; however, high intensity rain events caused flooding behind the levees repeatedly damaging properties due to undersized stormwater drainage.

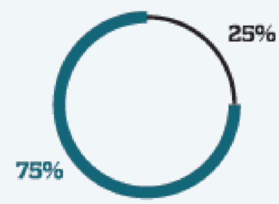
Solution: The City of Lewiston improved catch basins, main lines, drain inlets, and drilled/tunneled to increase major outlet pipes under the railroad and U.S. Highway 12 to USACE drainage ditches. The extensive coordination with residents, businesses, USACE, ITD, and Burlington Northern Railroad protects residences, commercial structures, and local government offices including core City and Nez Perce County fire and police resources.

Funding & Cost:

☐ Disaster (HMGP/Post Fire)

☑ Non-Disaster (PDM/BRIC/FMA)

Total Cost Shares



Non-Federal: **$531,253**

Federal: **$1,593,691**

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Figure H-2. Mitigation Success Story for the North Central Region

MITIGATION PROJECT IMPACT REPORT

U OF I MOSS CAMPUS FUEL REDUCTION

Multiple mitigation efforts and partners reduce wildfire risk while educating students and the public.

Completion Date:

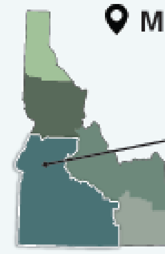
October 2011

Category:

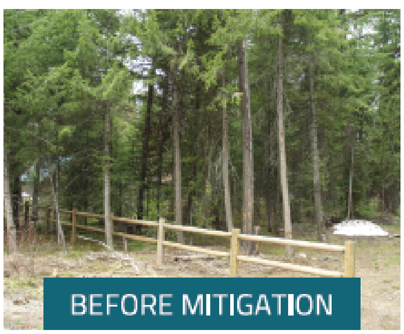
Wildfire

A wildfire is an unplanned fire that burns in a natural area such as a forest, grassland, or prairie.

Location:



Mitigation Project:



Problem: Excess fuels at the University of Idaho McCall field campus, Ponderosa State Park, and Herald Nokes Family Experimental Forest property posed a significant risk to over 70 structures and neighboring developments. Wildfires burned over 600,000 acres across Payette and Boise National Forests at the cost of over $82.6 million in 2007.

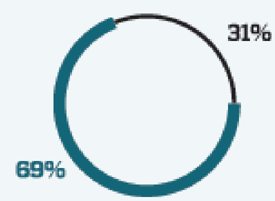
Solution: Student crews created defensible space and reduced fuel loads, landscaped with native plantings, replaced cedar shake roofs with metal roofs, single pane windows with fire resistant double pane windows, and installed vent screens. Educational signs depicting mitigation practices were added to trails, and debris was chipped or used for benches.

Funding & Cost:

☐ Disaster (HMGP/Post Fire)

☑ Non-Disaster (PDM/BRIC/FMA)

Total Cost Shares



Non-Federal: **$139,126**

Federal: **$316,025**

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Figure H-3. Mitigation Success Story for the South Central Southwest Region

MITIGATION PROJECT IMPACT REPORT

TETON CREEK RESTORATION

The restoration of Teton Creek protects homes, farmland, infrastructure, and the environment - fish species are returning.

Completion Date:

December 2014

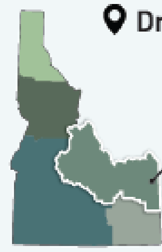
Category:

Flood / Human Caused

Floods occur when an overflow of water submerges land that is usually dry.

Location:

Driggs, Idaho



Mitigation Project:


BEFORE MITIGATION

Problem: Teton Creek, east of Driggs, Idaho, was channelized, which caused banks to fail, the channel to widen, and riparian trees to fall. Tens of thousands of cubic yards of sediment were deposited often in the form of gravel bars that displaced the creek and caused destabilization. Teton Creek threatened millions of dollars in damages to public and private property.

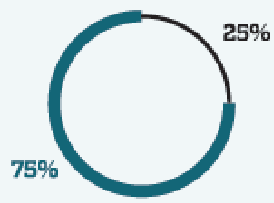

AFTER MITIGATION

Solution: The restoration project stabilized stream banks and floodplain with rock, logs, rootwads, and native vegetation. The reconstructed stream channel restored elevations with riffles to control flow and pools to encourage fish habitat. A newly formed flood control district was formed to maintain the project, monitor stream construction, vegetation and returning fish habitat through field inspections and data collection.

Funding & Cost:

- ☐ Disaster (HMGP/Post Fire)
- ☑ Non-Disaster (PDM/BRIC/FMA)

Total Cost Shares



Non-Federal: **$334,001**
Federal: **$1,000,000**

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Figure H-4. Mitigation Success Story for the Northeast Region

MITIGATION PROJECT IMPACT REPORT

FRANKLIN COUNTY COURTHOUSE RETROFIT

Incremental projects increase life safety and help protect the public.

Completion Date:

May 2021

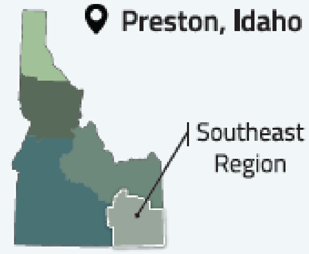
Category:

Seismic / Windstorm

Seismic / windstorm retrofitting is the modification of existing structures to make them more resistant to seismic activity and severe weather.

Location:

Preston, Idaho



Mitigation Project:

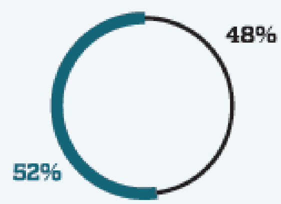
Problem: Critical government offices are housed in the 1939 Franklin County Courthouse. In 2015 Myers/Anderson prepared a Building Assessment for Franklin County Courthouse and recommended retrofitting windows with safety glass. In 2016 a severe wind storm blew out one of the larger windows and sent sheets of glass crashing to the steps below. Fortunately, it was Saturday and no one was near.

Solution: Historical looking thermal aluminum frames and window panes with bomb blast film replaced the outside windows of the Courthouse to mitigate potential falling glass during an earthquake or windstorm protecting pedestrians below.

Funding & Cost:

- [x] Disaster (HMGP/Post Fire)
- [ ] Non-Disaster (PDM/BRIC/FMA)

Total Cost Shares



Non-Federal: **$48,701**

Federal: **$53,299**

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Figure H-4. Mitigation Success Story for the Southeast Region

State of Idaho Hazard Mitigation Plan

Appendix I. Funding Opportunities

I. FUNDING OPPORTUNITIES

Listed below are known sources of mitigation assistance for the State and for communities and individuals in Idaho. It usually comes in the form of financial, technical, or education/outreach assistance.

<table>
<tr><th colspan="3">Hazard Mitigation Grant Program (HMGP)</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
As stated in FEMA's Hazard Mitigation Assistance Program and Policy Guide (March 23, 2023), "HMGP is authorized by Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) and implemented in regulations at 44 Code of Federal Regulations (CFR) §§ 206.430-440.
HMGP funding is available when authorized through a major disaster declaration. A governor, tribal chief executive, or equivalent, may request that HMGP funding be available to the state or territory that was affected by the declared disaster."
Eligible HMGP projects include:
• Structural hazard controls or protection projects
• Construction activities that will result in reduction of hazards
• Retrofitting of facilities
• Acquisition of real property, relocation, demolition of structures
• Elevation of residential structures
• Minor flood reduction projects
• Structural retrofitting of existing structures
• Safe room construction
• Initial implementation of vegetation management programs
• Elevation or dry flood- proofing of non-residential structures
• Initial training of building officials and other professionals to facilitate the implementation of newly adopted state or local mitigation standards and codes, and mitigation planning actions
Applicants must have a FEMA-approved local mitigation plan in accordance with 44 CFR 201.6 and 206.434(b) to be eligible to receive project grant funding under the HMGP. All activities submitted for consideration must be consistent with the Grantee's State/Tribal standard or enhanced hazard mitigation plan and the applicant's Tribal/local/university hazard mitigation plan for the jurisdiction in which the activity is located.
The primary responsibility for selecting and administering mitigation activities resides with the State. The State sets mitigation priorities and selects project applications that are developed and submitted by local jurisdictions. Although individuals may not apply directly to the State for assistance, local governments may sponsor an application on their behalf. After its eligibility review, the State forwards applications consistent with State mitigation planning objectives to FEMA for review and approval.
Application requirements—eligibility and completeness review, including benefit-cost analysis, engineering feasibility and mitigation planning requirements, environmental and historic preservation reviews.</td></tr>
<tr><td colspan="2">Source: FEMA</td><td>Type: Financial Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">HMGP grant funds may be used to pay up to 75% of the eligible project costs. The non-Federal match does not need to be cash; in-kind services or materials may be used.</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Initiated after disaster declaration. The deadline is 12 months after the disaster declaration is issued.</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Varies annually. The amount of HMGP funding available to the applicant is based upon the estimated total Federal assistance to be provided by FEMA for disaster recovery under the Presidential major disaster declaration.</td></tr>
<tr><td colspan="3">For More Information: Visit FEMA's Website at
https://www.fema.gov/grants/mitigation
Federal Emergency Management Agency
Federal Regional Center
130—228th Street, Southwest
Bothell, WA 98021-8627
(425) 487-4600</td></tr>
</table>

<table>
<tr><th colspan="3">Building Resilient Infrastructure and Communities (BRIC)</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
Building Resilient Infrastructure and Communities (BRIC) will support states, local communities, tribes and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards.
The BRIC program guiding principles are supporting communities through capability- and capacity-building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency.
The BRIC program aims to categorically shift the federal focus away from reactive disaster spending and toward research-supported, proactive investment in community resilience. Examples of BRIC projects are ones that demonstrate innovative approaches to partnerships, such as shared funding mechanisms, and/or project design.
For example, an innovative project may bring multiple funding sources or in-kind resources from a range of private and public sector partners. Or an innovative project may offer multiple benefits to a community in addition to the benefit of risk reduction.
Through BRIC, FEMA continues to invest in a variety of mitigation activities with an added focus on infrastructure projects benefitting disadvantaged communities, nature-based solutions, climate resilience and adaption, and adopting hazard resistant building codes.</td></tr>
<tr><td colspan="2">Source: FEMA</td><td>Type: Financial Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">Matching requirements are up to 75% Federal, minimum 25% non-Federal match required. Small, impoverished communities may be eligible for up to a 90% Federal cost-share.</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Changes with fiscal year (issued on a competitive basis)</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Varies annually</td></tr>
<tr><td colspan="3">For More Information: Visit FEMA’s Website at
https://www.fema.gov/grants/mitigation
Federal Emergency Management Agency
Federal Regional Center
130—228th Street, Southwest
Bothell, WA 98021-8627
(425) 487-4600</td></tr>
</table>

<table>
<tr><th colspan="3">Pre-Disaster Mitigation (PDM) Program</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
The Pre-Disaster Mitigation (PDM) grant program makes federal funds available to state, local, tribal and territorial governments to plan for and implement sustainable cost-effective measures designed to reduce the risk to individuals and property from future natural hazards, while also reducing reliance on federal funding from future disasters. The program is authorized by Section 203 of the Stafford Act. Those eligible include State-level agencies including State institutions (e.g., State hospital or university); federally recognized Indian Tribal governments; local governments, including State-recognized Indian Tribal Nations, authorized Indian Tribal organizations, and Alaska Native villages; public colleges and universities; and Indian Tribal colleges and universities. Private non-profit organizations and private colleges and universities are not eligible sub-applicants; however, an eligible, relevant State agency or local government may apply to the applicant as the sub-applicant for assistance to benefit the private entity.
Project grants are available for:
• Property Acquisition and Structure Demolition or Relocation
• Structure Elevation
• Dry Flood-Proofing
• Minor Localized Flood Reduction Projects
• Structural Retrofitting of Existing Buildings
• Non-structural Retrofitting of Existing Buildings
• Safe Room Construction
• Infrastructure Retrofit
• Soil Stabilization
• Wildfire Mitigation
• Hazard Mitigation Planning
• Management Costs
In order to receive project grants, all applicants MUST have a FEMA-approved State/Tribal standard or enhanced hazard mitigation plan in accordance with 44 CFR Part 201 by the application deadline. In addition, all sub-applicants MUST have a FEMA-approved hazard mitigation plan in accordance with 44 CFR 201 to be eligible to receive project grant funding under the PDM program. PDM planning grants will continue to be available to applicants and sub-applicants that do not have a FEMA-approved hazard mitigation plan to enable them to meet the planning requirements.
Application Requirements—Eligibility and completeness review, including applicant/sub-applicant eligibility, benefit cost analysis, and mitigation planning requirements
Ranking—Applicants (IOEM) must rank each sub-application included in their grant application in order of their priority for funding. Each sub-application must be assigned a unique rank in eGrants. Applicants must provide an explanation for the rank given to each sub-application and demonstrate how it is consistent with the State Hazard Mitigation Plan. FEMA will identify sub-applications for further review based on Applicant rank. FEMA may identify a sub-application for further review out of rank order based on considerations such as program priorities, available funds, and policy factors.</td></tr>
<tr><td colspan="2">Source: FEMA</td><td>Type: Financial Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">Matching requirements are up to 75% Federal, minimum 25% non-Federal match required. Small, impoverished communities may be eligible for up to a 90% Federal cost-share.</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Changes with fiscal year (issued on a competitive basis)</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Varies annually</td></tr>
<tr><td colspan="3">For More Information: Visit FEMA’s Website at
https://www.fema.gov/grants/mitigation
Federal Emergency Management Agency
Federal Regional Center
130—228th Street, Southwest
Bothell, WA 98021-8627
(425) 487-4600</td></tr>
</table>

Flood Mitigation Assistance (FMA) Program	
Program Description / Activities Funded: As stated in FEMA's *Hazard Mitigation Assistance Program and Policy Guide* (March 23, 2023), "FMA is a competitive program that provides funding to states, local communities, federally recognized tribes and territories. Funds can be used for projects that reduce or eliminate the risk of flood damage to structures insured by the National Flood Insurance Program (NFIP). The National Flood Insurance Reform Act of 1994 amended Section 1366 of the National Flood Insurance Act of 1968 and directed FEMA to provide financial assistance in the form of grants for planning and carrying out activities designed to reduce the risk of flood damage to structures covered under contracts for flood insurance with the NFIP. Individuals and businesses are not eligible sub-applicants. However, a relevant State agency or local government may apply for funding on behalf of individuals and businesses. Planning funds are eligible to support only the flood hazard portion of a mitigation plan in communities participating in the NFIP. Project grants are available for: • Property Acquisition and Structure Demolition or Relocation • Structure Elevation • Dry Flood-Proofing • Minor Localized Flood Reduction Projects • Hazard Mitigation Planning (Flood Portion) • Non-structural Retrofitting of Existing Buildings and Facilities • Management Costs All properties must be insured at the time of application, and a local Flood Mitigation Plan meeting 44 CFR Part 78.5 is required prior to award as a condition of receiving project grants. Ranking—Applicants must rank each sub-application included in their grant application in order of priority for funding. Each sub-application must be assigned a unique rank in eGrants. Applicants must provide an explanation for the rank given to each sub-application and demonstrate how it is consistent with their State or Tribal (Standard or Enhanced) Mitigation Plan. FEMA will identify sub-applications for further review based on a number of criteria, including but not limited to savings to the National Flood Insurance Fund, applicant rank, and property status (e.g., repetitive loss property, severe repetitive loss property). FEMA also may identify a sub-application for further review out of rank order based on considerations such as program priorities, available funds, and other factors.	
Source: FEMA	**Type: Financial Assistance**
Cost Sharing:	Matching requirements are up to 75% Federal, minimum 25% non-Federal match for NFIP-insured properties. For severe repetitive loss properties, FEMA may fund up to 100%. On repetitive loss properties, up to 90% Federal with 10% non-Federal cost shares may apply.
Application Timeframe:	Changes with fiscal year
Amount Available:	Varies annually. FEMA will allocate funds for eligible projects to States and Territories consistent with applicable, statutory base and/or maximum allocations in the authorizing and appropriation laws. FEMA will administer the program as directed by Congress.
For More Information: Visit FEMA's Website at https://www.fema.gov/grants/mitigation **Federal Emergency Management Agency** Federal Regional Center 130—228th Street, Southwest Bothell, WA 98021-8627 (425) 487-4600	

Rehabilitation of High Hazard Potential Dam Grant Program (HHPD)	
Program Description / Activities Funded: The President signed the Water Infrastructure Improvements for the Nation Act or the "WIIN Act," on December 16, 2016, which adds a new grant program under FEMA's National Dam Safety Program (33 U.S.C. 467f). Section 5006 of the Act, Rehabilitation of High Hazard Potential Dams, provides technical, planning, design, and construction assistance in the form of grants for rehabilitation of eligible high hazard potential dams. A state or territory with an enacted dam safety program, the State Administrative Agency, or an equivalent state agency, is eligible for the grant. The following dams are eligible for HHPD funding: • Located in a state or territory with a dam safety program. • Classified as "high hazard potential" by the state/territory dam safety agency in the state or territory in which the dam is located. • Has an Emergency Action Plan (EAP)-approved state or territory dam safety program or is in conformance with state or territory law and pending approval by the relevant state or territory dam safety agency. • Located in a jurisdiction with a FEMA-approved hazard mitigation plan that includes dam risk. • Fails to meet minimum state/territory dam safety standards and pose an unacceptable risk to the public.	
Source: FEMA	**Type: Financial Assistance**
Cost Sharing:	Federal funding is available for up to 65% of the eligible activity costs. The remaining 35% of eligible activity costs must be derived from non-federal sources, which may be in-kind.
Application Timeframe:	Changes with fiscal year (issued on a competitive basis)
Amount Available:	Varies annually
For More Information: Visit FEMA's Website at https://www.fema.gov/emergency-managers/risk-management/dam-safety/rehabilitation-high-hazard-potential-dams **Federal Emergency Management Agency** Federal Regional Center 130—228th Street, Southwest Bothell, WA 98021-8627 (425) 487-4600	

Public Assistance (PA) Program		
Program Description / Activities Funded: Funding provided through federally declared disaster assistance programs may be used for mitigation actions as part of the recovery process. This funding is administered by IOEM. Examples of such applications include the PA Program. According to the FEMA website, "The Robert T. Stafford Disaster Relief and Emergency Assistance Act provides FEMA the authority to fund the restoration of eligible facilities that have sustained damage due to a presidentially declared disaster. Title 44 CFR §206.226 Restoration of damaged facilities contains a provision for the consideration of funding additional measures that will enhance a facility's ability to resist similar damage in future events". Section 406 of the Stafford Act provides a funding source for cost-effective hazard mitigation measures that would reduce or eliminate the threat of future damage to a facility damaged during the disaster. The measures must apply only to the damaged elements of a facility rather than to other, undamaged parts of the facility or to the entire system. Section 406 mitigation measures are considered part of the total eligible costs of repair, restoration, reconstruction, or replacement of a facility. They are limited to measures of permanent work, and the Applicant may not apply mitigation funding to alternate projects or improved projects if a new replacement facility is involved. Required upgrades meeting applicable codes and standards are part of eligible restoration work and are not considered mitigation measures.		
Source: FEMA		**Type: Financial Assistance**
Cost Sharing:	25% match; State determines how the cost share will be split up between sub-grantees (eligible applicants)	
Application Timeframe:	Process begins once disaster declaration is issued	
Amount Available:	Varies	
For More Information: Visit FEMA's Website at https://www.fema.gov/assistance/public **Federal Emergency Management Agency** Federal Regional Center 130—228th Street, Southwest Bothell, WA 98021-8627 (425) 487-4600		

Fire Management Assistance Grant Program (FMAG)		
Program Description / Activities Funded: Fire Management Assistance is available to State, local, and Tribal governments for the mitigation, management, and control of fires on publicly or privately owned forests or grasslands, which threaten such destruction as would constitute a major disaster. The Fire Management Assistance declaration process is initiated when a State submits a request for assistance to the FEMA Regional Administrator at the time a "threat of major disaster" exists. The entire process is accomplished on an expedited basis, and FEMA's decision is rendered in a matter of hours. The Fire Management Assistance Grant Program provides a 75% Federal cost share, and the State pays the remaining 25% for actual costs. Before a grant can be awarded, a State must demonstrate that total eligible costs for the declared fire meet or exceed either the individual fire cost threshold—which applies to single fires, or the cumulative fire cost threshold, which recognizes numerous smaller fires burning throughout a State. Eligible firefighting costs may include expenses for field camps; equipment use, repair and replacement; tools, materials and supplies; and mobilization and demobilization activities.		
Source: FEMA		**Type: Financial Assistance**
Cost Sharing:	25%	
Application Timeframe:	Dependent on Declaration	
Amount Available:	Changes with Fiscal Year and disaster	
For More Information: **Visit FEMA's Website:** Fire Management Assistance Grants | FEMA.gov **Federal Emergency Management Agency** Federal Regional Center 130—228th Street, Southwest Bothell, WA 98021-8627 (425) 487-4600		

Fire Management Assistance Grant Program (FMAG)		
National Flood Insurance Program (NFIP)		
Program Description / Activities Funded: The NFIP offers flood insurance to homeowners, renters, and business owners if their community participates in the NFIP. Communities participate in the NFIP by adopting and enforcing floodplain development controls designed to reduce future flood risks in the 1-percent-annual-chance floodplain. The program is available to all flood prone communities (participation in NFIP is voluntary), and most eligible communities have elected to participate. IDWR administers the program in Idaho, and insurance is sold through State-licensed companies. The NFIP includes Increased Cost of Compliance (ICC) coverage for new and renewed Standard Flood Insurance Policies. ICC is an effective way to help cover costs of meeting community floodplain ordinance requirement for high-risk properties and may be considered in combination with other funding streams. *Community Rating System*—The NFIP's Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. Flood insurance premium rates are discounted to reflect the reduced flood risk resulting from community actions meeting the three goals of the CRS.		
Source: FEMA		**Type: Financial Assistance**
Cost Sharing:	N/A	
Application Timeframe:	Communities can sign up to become a member of the NFIP or CRS program at any time.	
Amount Available:	CRS program provides varied discounts on flood insurance premium rates.	
For More Information: Visit the official NFIP website at https://www.floodsmart.gov/ **Federal Emergency Management Agency** Federal Regional Center 130—228th Street, Southwest Bothell, WA 98021-8627 (425) 487-4600		

<table>
<tr><th colspan="3">Emergency Management Performance Grants (EMPG)</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
The Emergency Management Performance Grant (EMPG) provides state, local, tribal and territorial emergency management agencies with the resources required for implementation of the National Preparedness System and works toward the National Preparedness Goal of a secure and resilient nation. The EMPG's allowable costs support efforts to build and sustain core capabilities across the prevention, protection, mitigation, response and recovery mission areas. Participating communities develop performance goals for their emergency management programs and design projects to meet those goals. After being funded, the participants must evaluate progress and report back to IOEM to remain eligible.</td></tr>
<tr><td colspan="2">Source: FEMA</td><td>Type: Financial Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">EMPG has a 50 percent Federal and 50 percent State cost-share requirement.</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Changes with fiscal year</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Varies from fiscal year to fiscal year.</td></tr>
<tr><td colspan="3">For More Information: Visit FEMA's Website at
https://www.fema.gov/grants/preparedness/emergency-management-performance
Federal Emergency Management Agency
Federal Regional Center
130—228th Street, Southwest
Bothell, WA 98021-8627
(425) 487-4600</td></tr>
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Community Assistance Program – State Support Services Element	
Program Description / Activities Funded: According to the FEMA website, "Community Assistance Program – State Support Services Element (CAP-SSSE) helps states proactively identify, prevent and resolve floodplain management issues in participating communities before a flood event even occurs. In this way, CAP-SSSE helps to: • Ensure that the flood loss reduction goals of the NFIP are met, • Build state and community floodplain management expertise and capability and • Leverage state knowledge and expertise in working with their communities." Examples of some fundable activities are: • Entering Floodplain Management Data into the Community Information System (CIS) Strategic Planning Ordinance Assistance • CAP GAP Analysis Community Assistance Visits and Community Assistance Contacts • Outreach, Workshops, and Other Training • General Technical Assistance • Mapping Coordination Assistance • Coordination with Other State Programs and Agencies • Assistance to Communities in Responding to Disasters	
Source: FEMA	**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	There is a 25 percent cash or in-kind non-Federal match for all States receiving CAP-SSSE funds.
Application Timeframe:	Changes with fiscal year
Amount Available:	Varies from fiscal year to fiscal year.
For More Information: Visit FEMA's Website at https://www.fema.gov/floodplain-management/community-assistance-program **Federal Emergency Management Agency** Federal Regional Center 130—228th Street, Southwest Bothell, WA 98021-8627 (425) 487-4600	

Community Disaster Loan Program		
Program Description / Activities Funded: The program provides direct loans to local governments to offset the loss of tax or other revenues as a result of a major disaster. The loans are to be directly used to maintain local governmental functions such as police and fire protection, or water and sewer services. Loans are not to exceed 25 percent of the local government's annual operating budget for the fiscal year in which a major disaster occurs, up to a maximum of $5 million. **Eligibility**: Any local government or other eligible jurisdiction in a designated disaster area that has demonstrated a substantial tax loss and a need for financial assistance to perform its governmental functions. **Application**: The State's Governor requests a Presidential declaration of an emergency or disaster through the FEMA Regional Director. An applicant should consult the office or official designated as the single point of contact in the State for more information on the process the State requires in applying for assistance. Upon declaration of a major disaster, one may apply for assistance through the Governor's authorized representative.		
Source: FEMA		**Type: Financial Assistance**
Cost Sharing:	No cost-sharing requirements	
Application Timeframe:	Initiated when a disaster is declared	
Amount Available:	Loans are not to exceed 25 percent of the local government's annual operating budget for the fiscal year in which the major disaster occurs, up to a maximum of $5 million.	
For More Information: Visit FEMA's Website at https://www.fema.gov/assistance/public/community-disaster-loan **Federal Emergency Management Agency** Public Assistance Branch, Recovery Division 500 C Street SW. Washington, DC 20472		

Individuals and Households Program		
Program Description / Activities Funded: Individuals and Households Program (IHP) provides financial and direct services to eligible individuals and households affected by a disaster, who have uninsured or under-insured necessary expenses and serious needs. IHP assistance is not a substitute for insurance and cannot compensate for all losses caused by a disaster. The assistance is intended to meet basic needs and supplement disaster recovery efforts.		
Source: FEMA		**Type: Financial Assistance**
Cost Sharing:	None	
Application Timeframe:	Initiated when a disaster is declared	
Amount Available:	Varies	
For More Information: Visit FEMA's Website at https://www.fema.gov/assistance/individual/program Applicants with questions about disaster assistance can call the Helpline: 1-800-621-FEMA Speech- or hearing-impaired callers can use the TTY number 1-800-462-7585		

Environmental Planning and Historic Preservation Program	
Program Description / Activities Funded: The Environmental Planning and Historic Preservation Program integrates historic preservation considerations with FEMA's mission of preparedness, response, recovery, and mitigation. During disaster recovery operations, the agency assesses damages to historic and cultural resources, provides technical assistance to States and local jurisdictions, and ensures compliance with applicable Federal laws and regulations, such as the National Historic Preservation Act. It is FEMA's policy to act with care to ensure that its disaster response and recovery, mitigation and preparedness responsibilities are carried out in a manner consistent with all Federal environmental and historic preservation policies and laws. FEMA uses all practical means and measures to protect, restore and enhance the quality of the environment, to avoid or minimize adverse impacts to the environment, and to attain the objectives of: • Using the environment without degradation or undesirable and unintended consequences • Preserving historic, cultural and natural aspects of national heritage and maintaining, wherever possible, an environment that supports diversity and variety of individual choice • Achieving a balance between resource use and development within the sustained carrying capacity of the ecosystem involved • Enhancing the quality of renewable resources and working toward the maximum attainable recycling of depletable resources.	
Source: FEMA	**Type: Financial Assistance**
Cost Sharing:	Contact FEMA Representative
Application Timeframe:	Changes with fiscal year
Amount Available:	Changes with fiscal year
For More Information: Visit FEMA's Website at https://www.fema.gov/emergency-managers/practitioners/environmental-historic	

Floodplain Management Services Program		
Program Description / Activities Funded: Section 206 of the 1960 Flood Control Act (PL 86-645), as amended, provides the authority for the U.S. Army Corps of Engineers (USACE) to provide assistance and guidance on all aspects of floodplain management planning. The program develops or interprets site-specific data on obstructions to flood flows, flood formation and timing, and the extent, duration, and frequency of flooding. Upon request, program services are provided to State, regional, and local governments, Indian Tribal Nations, and other non-Federal public agencies without charge. Activities under the USACE Floodplain Management Services Program are described below: **General Technical Services** Flood- and floodplain-related data are obtained or developed and interpreted. Topics include flood formation and timing, flood depth or stage, floodwater velocity, extent of flooding, duration of flooding, flood frequency, obstruction to flood flows, "regulatory floodways," natural and cultural resource values of note, and flood loss potentials before and after employment of floodplain management measures. **General Planning Assistance** Planning assistance and guidance is provided for implementing or meeting requirements of floodplain regulations; flood warning and flood emergency preparedness; hurricane evacuation planning; flood proofing measures (e.g., elevation, closures and seals, and anchorage); permanent evacuation and relocation; the NFIP; and Executive Order 11988. The USACE assists in all aspects of floodplain management planning. This can range from helping a community identify the future of the floodplain and related problems (of both the flood modifying and occupancy modifying varieties). Included are the possible impacts of off-floodplain land-use changes to the physical, socioeconomic, and environmental conditions of the floodplain. **Guides, Pamphlets, and Supporting Studies** The program includes studies to improve methods and procedures for flood damage prevention and abatement and preparation of guides and pamphlets on topics such as flood proofing, floodplain regulations, floodplain occupancy, economics of floodplain regulations, and important natural floodplain values. Guides and pamphlets are prepared for use by State and local governments, private citizens, and Federal agencies in planning and in taking action to reduce flood damages or damage potentials as part of a floodplain management program.		
Source: U.S. Army Corps of Engineers		**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	None. State and local governments can receive technical assistance free of charge. (Program services are also offered to non-water resource Federal agencies and to the private sector on a 100% cost recovery basis. For most of these requests, payment is required before services are provided.)	
Application Timeframe:	Requests are funded in the order in which they are received, subject to the availability of funds.	
Amount Available:	Changes with fiscal year and is also dependent upon services requested.	
For More Information: **U.S. Army Corps of Engineers** Walla Walla District Headquarters 201 North Third Avenue Walla Walla, WA 99362-1876 https://www.nae.usace.army.mil/missions/public-services/flood-plain-management-services/		

Planning Assistance to States Program

Program Description / Activities Funded:

Section 22 of the Water Resources Development Act (WRDA) of 1974, as amended, provides authority for the USACE to assist States, local governments, and other non-Federal entities in the preparation of comprehensive plans for the development and conservation of water and related land resources. Section 208 of the WRDA of 1992 amended the WRDA of 1974 to include Native American Tribal Nations as equivalent to a State.

Funding: The Planning Assistance to States program is funded annually by Congress. Federal allotments for each State or Tribal Nation from the nationwide appropriation are limited to $500,000 annually, but typically are much less. Individual studies, of which there may be more than one per State or Tribal Nation per year, generally cost $25,000 to $75,000. These studies are cost shared on a 50-percent Federal – 50-percent non-Federal basis.

The needed planning assistance is determined by the individual States and Tribal Nations. Every year, each State and Indian Tribal Nation can request USACE studies under the program, and the USACE accommodates as many studies as possible within the funding allotment. Typical studies are only planning level of detail; they do not include detailed designs for project construction. The studies generally involve the analysis of existing data for planning purposes using standard engineering techniques, although some data collection is often necessary. Most studies become the basis for State or Tribal and local planning decisions.

Types of studies conducted in recent years under the program include the following:

- Water Supply and Demand Studies
- Water Quality Studies
- Environmental Conservation/Restoration Studies
- Wetlands Evaluation Studies
- Dam Safety/Failure Studies
- Flood Damage Reduction Studies
- Flood Plain Management Studies
- Coastal Zone Management/Protection Studies
- Harbor/Port Studies

How to Request Assistance: State, local government and Tribal officials who are interested in obtaining planning assistance under this program can contact the appropriate USACE office for details. Alternatively, interested parties can contact the appropriate State or Tribal Planning Assistance to States coordinator to request assistance. In either case, the USACE will coordinate all requests for assistance with the State or Tribal Planning Assistance to States coordinator to ensure that studies are initiated on State or Tribal prioritized needs.

Source: U.S. Army Corps of Engineers | **Type: Technical Assistance, Financial Assistance**

Cost Sharing:	These studies are cost shared on a 50-percent Federal – 50-percent non-Federal basis.
Application Timeframe:	Changes with fiscal year
Amount Available:	Varies from fiscal year to fiscal year, but is limited to $500,000

For More Information:

U.S. Army Corps of Engineers
Walla Walla District Headquarters
201 North Third Avenue
Walla Walla, WA 99362-1876
https://www.nae.usace.army.mil/missions/public-services/planning-assistance-to-states/

Continuing Authorities Program		
Program Description / Activities Funded: Congress has provided the USACE with a number of standing authorities to study and build water resource projects for various purposes without additional project specific congressional authorization. The types of projects addressed by the Continuing Authorities Program include emergency streambank and shoreline erosion, small flood control projects, small navigation projects, and snagging and clearing for flood control.		
Source: U.S. Army Corps of Engineers		**Type: Technical Assistance**
Cost Sharing:	Varies based on project, although most require a 35% match	
Application Timeframe:	Submittals are accepted year-round but preferred by April, so the project could potentially be included in the next year's funding.	
Amount Available:	Varies from fiscal year to fiscal year and by project	
For More Information: **U.S. Army Corps of Engineers** Walla Walla District Headquarters 201 North Third Avenue Walla Walla, WA 99362-1876 https://www.nae.usace.army.mil/missions/public-services/continuing-authorities-program/		

Inspection of Completed Works Program		
Program Description / Activities Funded: Civil works structures whose failure or partial failure could jeopardize the operational integrity of the project, endanger the lives and safety of the public, or cause substantial property damage are periodically inspected and evaluated to ensure their structural stability, safety, and operational adequacy. For structures constructed by the USACE and turned over to others for operation and maintenance, the operating entity is responsible for periodic inspection and evaluation. The USACE may conduct the inspection on behalf of the project sponsor, provided appropriate reimbursement to the USACE is made. However, the USACE may participate in the inspection with the operating entity at the government's expense.		
Source: U.S. Army Corps of Engineers		**Type: Technical Assistance**
Cost Sharing:	Contact USACE Representative	
Application Timeframe:	Contact USACE Representative	
Amount Available:	Changes with fiscal year	
For More Information: **U.S. Army Corps of Engineers** Walla Walla District Headquarters 201 North Third Avenue Walla Walla, WA 99362-1876		

<table>
<tr><th colspan="3">Rehabilitation and Inspection Program</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
The Rehabilitation and Inspection Program is the USACE program that provides for inspection of flood control projects, the rehabilitation of damaged flood control projects, and the rehabilitation of federally authorized and constructed shore protection projects.</td></tr>
<tr><td colspan="2">Source: U.S. Army Corps of Engineers</td><td>Type: Technical Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">Contact USACE Representative</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Contact USACE Representative</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Changes with fiscal year</td></tr>
<tr><td colspan="3">For More Information:
U.S. Army Corps of Engineers
Walla Walla District Headquarters
201 North Third Avenue
Walla Walla, WA 99362-1876</td></tr>
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<tr><th colspan="3">Community Development Block Grant (CDBG) Program</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
The Community Development Block Grant (CDBG) Program provides annual grants on a formula basis to states, cities, and counties to develop viable urban communities by providing decent housing and a suitable living environment, and by expanding economic opportunities, principally for low- and moderate-income persons. The program is authorized under Title 1 of the Housing and Community Development Act of 1974, Public Law 93-383, as amended 42 U.S.C. 5301 et seq. The program was designed to reinforce several important values and principles of community development:
• CDBG's flexibility empowers people and communities to design and implement strategies tailored to their own needs and priorities.
• CDBG's emphasis on consolidated planning expands and strengthens partnerships among all levels of government and the private sector in enhancing community development.
• CDBG's technical assistance activities and set-aside for grantees builds the capacity of these partners.
The Competitive component provides funding of up to $500,000 to non-federally designated communities. These grants may be used for infrastructure improvement, public services, or development and planning, but 70% of the project must benefit low- and moderate-income persons. CDBG money can be used as matching funds for the FEMA HMA grant programs.</td></tr>
<tr><td colspan="2">Source: U.S. Department of Housing and Urban Development (HUD)</td><td>Type: Technical Assistance, Financial Assistance, Education/Outreach</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">Contact Representative</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Contact Representative</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Up to $500,000</td></tr>
<tr><td colspan="3">For More Information:
U.S. Department of Housing and Urban Development
Boise Field Office
Plaza IV, Suite 220
800 Park Boulevard
Boise, Idaho 83712-7743
Phone: 208-334-1990, Fax: 208-334-9648 and Website:
https://www.hud.gov/program_offices/comm_planning/cdbg</td></tr>
</table>

Department of Homeland Security Grant Program	
Program Description / Activities Funded: The Homeland Security Grant Program (HSGP) plays an important role in the implementation of the National Preparedness System (NPS) by supporting the building, sustainment, and delivery of core capabilities essential to achieving the National Preparedness Goal (NPG) of a secure and resilient Nation. Delivering core capabilities requires the combined effort of the whole community, rather than the exclusive effort of any single organization or level of government. The HSGP's allowable costs support efforts to build and sustain core capabilities across the Prevention, Protection, Mitigation, Response, and Recovery mission areas, including the following priorities: • Building and sustaining law enforcement terrorism prevention capabilities • Maturation and enhancement of state and major urban area fusion center	
Source: Department of Homeland Security (DHS)	**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	(Optional)
Application Timeframe:	Varies from fiscal year to fiscal year
Amount Available:	Varies from fiscal year to fiscal year and depends on which sub-program the grant application is for.
For More Information: • For additional program-specific information, contact the Centralized Scheduling and Information Desk (CSID) help line at (800) 368-6498 or askcsid@dhs.gov. CSID hours of operation are from 8:00 a.m. to 6:00 p.m. EDT, Monday through Friday. • For financial-related questions, including pre-and post-award administration and technical assistance, contact the FEMA Call Center at (866) 927-5646 or website at https://www.dhs.gov/homeland-security-grant-program-hsgp	

Small Business Administration (SBA) Disaster Loan Programs		
Program Description / Activities Funded: The SBA Disaster Loan Program provides businesses with low-interest, long-term loans to repair or replace damaged property owned by the business, including real estate, machinery and equipment, inventory, and supplies. Homeowners may also qualify for low-interest loans to help rebuild or repair their homes or repair or replace uninsured or underinsured flood-damaged personal property. Renters may qualify for loans to repair or replace personal property. Economic Injury Disaster Loans provide working capital to small businesses and small agricultural cooperatives to assist them through the recovery period.		
Source: Small Business Administration		**Type: Financial Assistance**
Cost Sharing:	Not Applicable	
Application Timeframe:	The application timeframe typically begins once a declaration is made. The deadline is usually 60 days after a declared declaration. The timeframe may change depending upon the disaster. It is best to contact the SBA for more detailed information. This is for physical damage only.	
Amount Available:	Varies on a case-by-case basis	
For More Information: **SBA Field Operations Center—West** Mailing address: P.O. Box 419004 Sacramento, CA 95841-9004 Phone (916) 735-1500, Toll-Free (800) 488-5323 or 1-800-659-2955, TTY (916) 735-1683 Hours of Operation: 8 am to 5 pm Monday through Friday https://www.sba.gov/funding-programs/disaster-assistance		

<table>
<tr><th colspan="2">National Earthquake Hazards Reduction Program (NEHRP)</th></tr>
<tr><td colspan="2">Program Description / Activities Funded:
Under NEHRP, The National Earthquake Technical Assistance (NETAP) Program is a technical assistance program created to provide short-term, no-cost architectural and engineering support related to earthquake mitigation. Examples of NETAP projects are seismic retrofit/evaluation training, evaluation of seismic hazards to critical/essential facilities, post-earthquake evaluations of buildings, and the development of retrofit guidance for homeowners. IOEM administers this program in Idaho.
• State and local agencies and organizations interested in holding a NETAP course in their locality should contact the earthquake program manager at their FEMA Regional Office (FEMA Headquarters and Regional Earthquake Contacts, http://www.fema.gov/plan/prevent/earthquake/hq_regions.shtm) for information. NETAP can often cover the cost of providing course materials for students and a highly qualified onsite instructor.
• Some of the NETAP courses are based upon specific FEMA earthquake publications, and FEMA also maintains an online training tool for State earthquake program personnel. Visit Earthquake Publications and Tools—Training (http://www.fema.gov/plan/prevent/earthquake/training_pubs.shtm) to review and access these resources.
Other tools available are:
• FEMA also creates tools that facilitate and promote the use of earthquake risk-reduction measures. The most prominent example is the Hazus earthquake model, part of the Hazards U.S. Multi-Hazard (Hazus) software system. The earthquake model, which FEMA first released in 1997 and has since continually refined, employs sophisticated risk-assessment methodologies to estimate potential earthquake damage and losses. Hazus estimates inform and stimulate preparedness and response planning and training, and help States and localities assess the need for and potential benefits of specific risk-reduction strategies such as seismic rehabilitation of existing buildings.</td></tr>
<tr><td>Source: FEMA</td><td>Type: Technical Assistance, Financial Assistance, Education/Outreach</td></tr>
<tr><td>Cost Sharing:</td><td>Varies</td></tr>
<tr><td>Application Timeframe:</td><td>Changes with fiscal year</td></tr>
<tr><td>Amount Available:</td><td>Changes with fiscal year</td></tr>
<tr><td colspan="2">Notes: EMPG, HMGP, BRIC and PDM grants may also be used for earthquake mitigation projects.</td></tr>
<tr><td colspan="2">For More Information:
Website: https://www.nehrp.gov/
Federal Emergency Management Agency
Federal Regional Center
130—228th Street, Southwest
Bothell, WA 98021-8627
(425) 487-4645</td></tr>
</table>

USGS Earthquake Hazards Program	
Program Description / Activities Funded: The grants offered through the USGS Earthquake Hazards Program are a long-standing effort to contribute to the advancement of earthquake research. USGS encourages the continued submission of new ideas that provide more accurate and timely earthquake information, better characterize earthquake sources, and reduce uncertainty in earthquake hazard and risk assessments. It seeks proposals that will help to mitigate earthquake losses and better inform the public about earthquakes and earthquake safety, or other scientific efforts that will lead to reduced risk. Every year the USGS invites innovative earthquake research proposals from colleges and universities, state and local offices, non-profit organizations, private institutions, unaffiliated scientists, engineers, and foreign organizations.	
Source: USGS	**Type: Financial Assistance**
Cost Sharing:	Varies
Application Timeframe:	Changes with fiscal year
Amount Available:	Changes with fiscal year
Notes: EMPG, HMGP, and PDM grants may also be used for earthquake mitigation projects.	
For More Information: Website: https://www.usgs.gov/programs/earthquake-hazards	

Drought Assistance Programs		
Program Description / Activities Funded: Natural disaster is a constant threat to America's farmers and ranchers and rural residents. USDA provides assistance for losses from drought, flood, fire, freezing, tornadoes, pest infestation, and other calamities. The most common assistance programs are listed below: • Emergency Food Assistance Program USDA provides emergency food assistance to States that are in crisis. USDA purchases, processes, and packages the food, then ships it to the individual States. • Emergency Food Safety Information Disasters can jeopardize the safety of food due to unfavorable conditions. USDA provides information on how to determine if food is safe and how to keep it safe in cases of emergency. This helps to minimize the risk of foodborne illness in emergency situations. • Federal Disaster Assistance Information USDA helps to keep the public prepared when disaster strikes with safety alerts, preparedness lists, and disaster prevention information. • Food Aid Programs USDA helps provide the U.S. agricultural commodities that feed millions of hungry people in needy countries through its direct donations and concession programs. • Emergency Loan Assistance USDA provides emergency loans to help producers recover from losses due to natural disasters or quarantine. • Emergency Watershed Protection Program USDA safeguards lives and property from floods, droughts, and the erosion on any watershed, when natural occurrences cause a sudden impairment of the watershed. • Noninsured Crop Disaster Assistance Program USDA provides financial assistance to producers of non-insurable crops when natural disasters cause low yields, loss of inventory, or prevented planting. • Crop Disaster Program Facts USDA offers facts and information on crop disasters. • Crop Insurance Policies USDA offers crop insurance policies as a risk management option for agricultural producers.		
Source: United States Department of Agriculture (USDA)		**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	Is dependent upon the program selected	
Application Timeframe:	Varies according to disaster and fiscal year	
Amount Available:	Varies according to disaster and fiscal year	
For More Information: Commodity Technician (**Emergency Food Assistance**) Tel: (208) 332-6820, Fax: (208) 334-2228 (**Food Stamp- Emergency Assistance**) Program Manager, Division of Welfare, State of Idaho 450 West State Street, 2nd Floor Boise, ID 83720 Tel: (208) 334-5656, Cell: (208) 850-8250, Fax: (208) 334-5817 Policy Specialist **Idaho Department of Health & Welfare** Division of Welfare, State of Idaho 450 West State Street, 2nd Floor Boise, ID 8372 Tel: (208) 334-5742, Fax: (208) 334-5817		

State Dam Safety Program (DSP)		
Program Description / Activities Funded: The State DSP is administered in Idaho by the IDWR. This program focuses on inspection, classification, and emergency planning for dam safety and permitting of Emergency Action Plans (EAPs). Funding may be used for a variety of projects, including dam safety – related training for State personnel and training in the field for dam owners on conducting annual maintenance reviews; revision of State maintenance and operation guidelines; improvements to dam inventory databases; and creation of dam safety videos and outreach materials. Additionally, water system improvement funds are authorized under the Revolving Development Account and the Water Management Account, administered by the Idaho Water Resource Board. Interested organizations and communities can contact IDWR for additional information on these accounts. Funding for this program is initially obtained at the Federal level, and the State delegates the funding that is made available. Funding amounts will vary from fiscal year to fiscal year.		
Source: Idaho Department of Water Resources		**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	Contact Representative	
Application Timeframe:	Contact Representative	
Amount Available:	Most funding is awarded to Inundation Mapping Initiatives	
For More Information: **The Idaho Water Center** 322 East Front Street PO Box 83720 Boise, Idaho 83720-0098 Phone: (208) 287-4800, Fax: (208) 287-6700 https://idwr.idaho.gov/dams/		

Water Quality Improvement Projects	
Program Description / Activities Funded: The Department of Environmental Quality (DEQ) administers federal and state funds to provide grants and low-interest loans to eligible entities for activities to improve the quality of Idaho's water resources. Each grant and loan has its own application requirements and time schedule. DEQ often receives notice of funding opportunities for water quality improvement projects from other agencies and organizations and passes relevant information on to stakeholders. These are not DEQ-administered funds or programs, and DEQ is not involved in decisions relating to them but provides the information as a public service. **Drinking Water Construction Loans**: DEQ's Drinking Water Construction Loan Fund provides below-market-rate interest loans to help repair or build new drinking water facilities. Eligible facilities include water supply, treatment, storage, and distribution facilities. Loans of up to 100% of project costs may be awarded for project design and/or construction. **Drinking Water Planning Grants**: DEQ's Drinking Water Planning Grant Program assists eligible public drinking water systems for facility planning projects designed to ensure safe and adequate supplies of drinking water. Grants awarded under this program may be used to develop engineering reports identifying the most cost-effective, environmentally sound method of upgrading a public drinking water system to achieve and maintain compliance with State and Federal standards. Grants cover up to 50% of eligible planning costs, with a matching share funded by local sources. **Nonpoint Source Management Section 319 Subgrants**: Section 319 of the Clean Water Act established a grant program under which States, territories, and Tribal Nations may receive funds to support a wide variety of nonpoint source pollution management activities. DEQ is the State agency responsible for administering this grant program in Idaho. A successful grant must focus on improving the water quality of lakes, streams, rivers, and aquifers. Funds may be used to address a variety of nonpoint source management and prevention activities in the areas of agriculture, urban stormwater runoff, transportation, silviculture/forestry, mining, groundwater activities, and hydrologic and habitat modification and related activities. **Source Water Protection Grants**: DEQ's Source Water Protection Grants provide funding for projects to protect sources of public drinking water. Projects can take either a local or regional approach. Local projects will concentrate on protecting a specific community public water supply system, while regional protection activities will cover multiple systems and communities. Types of projects that are eligible for funding include those associated with source water protection measures. Operations and maintenance of the system and water treatment are not eligible activities. Community involvement and education is a central theme in these grants, and projects will be expected to provide long-term benefits to drinking water quality, quantity, awareness, and/or security. **Wastewater Construction Loans** The Water Pollution Control State Revolving Loan Fund provides below-market-rate interest loans to help build new or repair existing wastewater treatment facilities. Eligible facilities include treatment plants, interceptor sewers, and collector sewers. Loans of up to 100% of project costs may be awarded for project design and/or construction. Loans also may be awarded to address nonpoint source pollution control activities such as effluent trading, upgrading or replacing individual septic tanks, restoring wetlands, treating and controlling stormwater, and dealing with agricultural runoff. These loans must be fully repaid within 20 years of project completion. **Wastewater Planning Grants** DEQ's Wastewater Planning Grant Program provides financial assistance to eligible entities in Idaho planning to upgrade municipal or non-profit wastewater facilities. Grants awarded under this program must be used entirely to prepare facility plans that identify the most cost effective, environmentally sound methods to upgrade eligible wastewater systems to achieve and maintain compliance with State and Federal standards. Grants cover up to 50% of eligible planning costs, with the grantee providing a matching share from local sources.	
Source: Idaho Department of Environmental Quality	**Type: Financial Assistance**
Cost Sharing:	Varies upon program
Application Timeframe:	Applications are encouraged to be submitted prior to the end of the fiscal year.
Amount Available:	Changes with fiscal year. Generally, Wastewater and Drinking Water Planning Grants are $250,000.
For More Information: **Water Quality Division** DEQ State Office 1410 North Hilton Boise, Idaho 83706 Phone: (208) 373-0502, Fax: (208) 373-0576	

Water & Waste Disposal Loan & Grant Program	
Program Description / Activities Funded: This program provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and stormwater drainage to households and businesses in eligible rural areas. **Who may apply?** This program assists qualified applicants who are not otherwise able to obtain commercial credit on reasonable terms. Eligible applicants include: • Most state and local governmental entities • Private nonprofits • Federally recognized tribes **What is an eligible area?** Areas that may be served include: • Rural areas and towns with populations of 10,000 or less • Tribal lands in rural areas **What kinds of funding are available?** • Long-term, low-interest loans • If funds are available, a grant may be combined with a loan if necessary to keep user costs reasonable. **How may the funds be used?** Funds may be used to finance the acquisition, construction or improvement of: • Drinking water sourcing, treatment, storage and distribution • Sewer collection, transmission, treatment and disposal • Solid waste collection, disposal and closure • Stormwater collection, transmission and disposal In some cases, funding may also be available for related activities such as: • Legal and engineering fees • Land acquisition, water and land rights, permits and equipment • Start-up operations and maintenance • Interest incurred during construction • Purchase of facilities to improve service or prevent loss of service • Other costs determined to be necessary for completion of the project **What is the loan term and rate?** • Up to 40-year payback period, based on the useful life of the facilities financed • Fixed interest rates, based on the need for the project and the median household income of the area to be served **Are there additional requirements?** • Borrowers must have the legal authority to construct, operate and maintain the proposed services or facilities. • All facilities receiving federal financing must be used for a public purpose. • Partnerships with other federal, state, local, private and nonprofit entities that offer financial assistance are encouraged. • Projects must be financially sustainable.	
Source: United States Department of Agriculture Rural Development	**Type: Financial Assistance**
Cost Sharing:	Contact Representative
Application Timeframe:	Contact Representative
Amount Available:	Contact Representative
For More Information: **Website:** https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-loan-grant-program **Northern Idaho** (Office Location: Coeur d'Alene) **Phone: (208) 209-4367** (Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Shoshone) **Western Idaho** (Office Location: Boise) **Phone: (208) 779-3438** (Ada, Adams, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley, Washington) **Central Idaho** (Office Location: Twin Falls) **Phone: (208) 944-3747** (Blaine, Camas, Cassia, Gooding, Jerome, Lincoln, Minidoka, Twin Falls) **Eastern Idaho** (Office Location: Preston Satellite Office—Blackfoot Area Office) **Phone: (208) 244-3937** (Bannock, Bear Lake, Bingham, Bonneville, Butte, Caribou, Clark, Custer, Franklin, Fremont, Jefferson, Lemhi, Madison, Oneida, Power, Teton)	

Water & Waste Disposal Predevelopment Planning Grants	
Program Description / Activities Funded: This program assists low-income communities with initial planning and development of applications for USDA Rural Development Water and Waste Disposal direct loan/grant and loan guarantee programs. **Who may apply?** • Most state and local governmental entities • Nonprofit organizations • Federally recognized tribes **What is an eligible area?** • Rural areas and towns with populations of 10,000 or less. • Federally recognized tribal lands **NOTE:** The area must also have a median household income below the poverty line or less than 80 percent of the statewide non-metropolitan median household income **How may the funds be used?** • Grants may be used to pay part of the costs of developing a complete application for USDA Rural Development Water & Waste Disposal direct loan/grant and loan guarantee programs. **What are the terms for grants?** • Grants may not be used to pay for work already completed. • For projects eligible under several programs, the amount of the pre-development or SEARCH grant will be subtracted from the total grant eligibility as determined in underwriting for the water or waste disposal project. • These grants do not have to be paid back if the application for the USDA direct loan or loan/grant combination is not successful. • Grants are based on demonstrated need and subject to the availability of funds. • Partnerships with other federal, state and local entities are encouraged, and grants are awarded only when the applicant cannot afford to borrow the needed funds.	
Source: United States Department of Agriculture Rural Development	**Type: Financial Assistance**
Cost Sharing:	25% minimum required.
Application Timeframe:	Contact Representative
Amount Available:	Maximum of $30,000 or 75 percent of the predevelopment planning costs.
For More Information: **Website:** https://www.rd.usda.gov/programs-services/water-environmental-programs/water-waste-disposal-predevelopment-planning-grants **Northern Idaho** (Office Location: Coeur d'Alene) **Phone: (208) 209-4367** (Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Shoshone) **Western Idaho** (Office Location: Boise) **Phone: (208) 779-3438** (Ada, Adams, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley, Washington) **Central Idaho** (Office Location: Twin Falls) **Phone: (208) 944-3747** (Blaine, Camas, Cassia, Gooding, Jerome, Lincoln, Minidoka, Twin Falls) **Eastern Idaho** (Office Location: Preston Satellite Office—Blackfoot Area Office) **Phone: (208) 244-3937** (Bannock, Bear Lake, Bingham, Bonneville, Butte, Caribou, Clark, Custer, Franklin, Fremont, Jefferson, Lemhi, Madison, Oneida, Power, Teton)	

Emergency Community Water Assistance Grant		
Program Description / Activities Funded: This program helps eligible communities prepare for, or recover from, an emergency that threatens the availability of safe, reliable drinking water. **Who may apply?** • Most state and local governmental entities • Nonprofit organizations • Federally recognized tribes **What kind of event can qualify as an emergency?** • Drought or flood • Earthquake • Tornado or hurricane • Disease outbreak • Chemical spill, leak or seepage • Other disasters NOTE: A federal disaster declaration is not required. **What is an eligible area?** • Rural areas and towns with populations of 10,000 or less • Tribal lands in rural areas The area to be served must also have a median household income less than the state's median household income for non-metropolitan areas. **How may the funds be used?** • Water transmission line grants up to $150,000 to construct waterline extensions, repair breaks or leaks in existing water distribution lines, and address related maintenance necessary to replenish the water supply • Water source grants up to $500,000 are to construct a water source, intake or treatment facility **Are matching funds required?** • Partnerships with other federal, state, local, private and nonprofit entities are encouraged.		
Source: United States Department of Agriculture Rural Development		**Type: Financial Assistance**
Cost Sharing:	Contact Representative.	
Application Timeframe:	Contact Representative.	
Amount Available:	Contact Representative.	
For More Information: **Website:** https://www.rd.usda.gov/programs-services/water-environmental-programs/emergency-community-water-assistance-grants **Northern Idaho** (Office Location: Coeur d'Alene) **Phone: (208) 209-4367** (Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, Latah, Lewis, Nez Perce, Shoshone) **Western Idaho** (Office Location: Boise) **Phone: (208) 779-3438** (Ada, Adams, Boise, Canyon, Elmore, Gem, Owyhee, Payette, Valley, Washington) **Central Idaho** (Office Location: Twin Falls) **Phone: (208) 944-3747** (Blaine, Camas, Cassia, Gooding, Jerome, Lincoln, Minidoka, Twin Falls) **Eastern Idaho** (Office Location: Preston Satellite Office—Blackfoot Area Office) **Phone: (208) 244-3937** (Bannock, Bear Lake, Bingham, Bonneville, Butte, Caribou, Clark, Custer, Franklin, Fremont, Jefferson, Lemhi, Madison, Oneida, Power, Teton)		

The Water Infrastructure Finance and Innovation Act of 2014		
Program Description / Activities Funded: The Water Infrastructure Finance and Innovation Act of 2014 (WIFIA) established the WIFIA program, a federal credit program administered by EPA for eligible water and wastewater infrastructure multi-million-dollar projects. The WIFIA program offers loans with low, fixed interest rates and flexible financial terms. Green infrastructure includes projects that manage wet weather and that maintain and restores natural hydrology by infiltrating, evapotranspiring and harvesting and using stormwater. On a regional scale, green infrastructure is the preservation and restoration of natural landscape features, such as forests, floodplains and wetlands, coupled with policies such as infill and redevelopment that reduce overall imperviousness in a watershed. On the local scale, green infrastructure consists of site- and neighborhood-specific practices, such as bioretention, trees, green roofs, permeable pavements and cisterns.		
Source: United States Environmental Protection Agency		**Type: Financial Assistance**
Cost Sharing:	• 49%: Maximum portion of eligible project costs that WIFIA can fund. • Total federal assistance may not exceed 80% of a project's eligible costs.	
Application Timeframe:	Contact Representative.	
Amount Available:	• $20 million: Minimum project size for large communities. • $5 million: Minimum project size for small communities (population of 25,000 or less).	
For More Information: https://www.epa.gov/wifia		

Western States Fire Manager's Grant Program		
Program Description / Activities Funded: This grant program is the primary source of funding used to conduct hazardous fuels treatments on private lands in Idaho. The ILRCC prioritizes all applications received in Idaho. These applications are then reviewed by a panel of Western States Fire Managers, where final funding decisions are made. Eligible Recipients: County Wildland Fire Interagency Groups (or county governments)		
Source: Idaho State Fire Plan Working Group		**Type: Financial Assistance**
Cost Sharing:	10% minimum required.	
Application Timeframe:	Applications are due in August or September.	
Amount Available:	Maximum award amount is $300,000.	
For More Information: **Website:** https://www.idl.idaho.gov/about-forestry/forestry-fire-grants/western-state-fire-managers/ **Idaho Department of Lands** 3780 Industrial Ave South Coeur d'Alene, ID 83815 Phone: (208) 666-8649, Fax: (208) 769-1524 Specific questions regarding policies or procedures of the ILRCC: Tyre Holfeltz: tholfeltz@idl.idaho.gov Idaho Department of Lands/USDA Forest Service Phone:(208) 666-8646		

Bureau of Land Management (BLM) Communities at Risk (Community Assistance) Program	
Program Description / Activities Funded: Provides financial assistance to local jurisdictions in Idaho for efforts that support fire prevention activities. Funds may be used for planning efforts (including the use of GIS software and support), the hiring of countywide WUI coordinators, and education efforts such as FIREWISE. Funds may also be used to reduce hazardous fuels accumulations on non-Federal lands; however, use of funds for this purpose may require environmental clearance. Applications are available through Grants.gov. Contact your local BLM line officer or fire mitigation specialist for more information. Eligible Recipients: County Wildland Fire Interagency Groups, county governments, communities, not-for-profit entities	
Source: U.S. Bureau of Land Management	**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	None
Application Timeframe:	Awards are made throughout the year. However, a large number of awards are made prior to the end of the Federal fiscal year (September 30)
Amount Available:	Amounts vary significantly based upon the nature of the award, between a few thousand and several hundred thousand dollars.
For More Information: Idaho Fire Mitigation Specialist **Bureau of Land Management, Idaho State Office** (208) 373-3854	

U.S. Forest Service/ Idaho Department of Lands (USFS/IDL) Community Fire Protection (formerly "Steven's Funds") and BLM Partnership Funds	
Program Description / Activities Funded: Provide funding for hazardous fuels treatments on private lands adjacent to National Forests (Community Fire Protection) and BLM (Partnership Fund) boundaries. Funds may only be used for hazardous fuels work and not for related activities. Eligible Recipients: County Wildland Fire Interagency Groups (or county governments)	
Source: USFS/IDL	**Type: Financial Assistance**
Cost Sharing:	None
Application Timeframe:	Applications are available in early spring and are due in May.
Amount Available:	Awards can be for any amount but average at or below $50,000.
For More Information: **Idaho Department of Lands grant programs:** Hazardous Fuels Treatment Program Manager Idaho Department of Lands (208) 666-8653	

FEMA Assistance to Firefighters Grants Program	
Program Description / Activities Funded: This competitive grant from the Federal Emergency Management Agency provides direct assistance to fire protection organizations. Funds may be awarded for training safety and equipment, firefighting vehicles, fire prevention equipment, or emergency services. Eligible Recipients: fire departments at all levels.	
Source: FEMA	**Type: Financial Assistance**
Cost Sharing:	10% non-Federal match required.
Application Timeframe:	Online applications are accepted from early March until early April. Awards are made throughout the summer and fall.
Amount Available:	Amounts vary significantly based on the nature of the award. The largest awards are usually for firefighting vehicles and digital radio conversions, which may cost over $1 million.
For More Information: Fire department personnel who have questions regarding these grants can reach FEMA's Grants Programs Directorate Assistance to Firefighters Grants program staff at 1-866-274-0960 or by e-mail at firegrants@dhs.gov. Firefighter Assistance Grants website: https://www.fema.gov/grants/preparedness/firefighters	

Rural Fire Assistance (RFA) Program	
Program Description / Activities Funded: Eligible Recipients: Rural Fire Departments serving 10,000 people or less that are adjacent to BLM land. Types of projects or purchases that are acceptable: • Personal Protective Equipment • New-generation fire shelters/case • Communications equipment • Basic Tools • Basic Wildland Fire Training Contact BLM for specifics on purchasing guidelines.	
Source: BLM	**Type: Financial Assistance**
Cost Sharing:	10% in additional wildland equipment or "in kind" services.
Application Timeframe:	RFA Pre-Applications are due in the fall.
Amount Available:	Up to $20,000. Most awards are for $5,000 or less.
Notes: The U.S. Fish & Wildlife Service, Bureau of Indian Affairs, and National Park Service also have RFA funds available for rural fire departments with protection areas adjacent to these Federal lands. Contact your local Federal representative for information.	
For More Information: **Website:** https://www.frames.gov/catalog/81 **BLM Rural Fire Assistance Program (RFA):** Rural Fire Assistance Coordinator Bureau of Land Management, Idaho State Office (208) 373-3854	

<table>
<tr><th colspan="3">Volunteer Fire Assistance Program</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
Rural firefighting resources are often the first line of defense in meeting expanded protection needs for wildland-urban interface fires. Of the more than 35,000 local fire agencies nationwide, 75% are volunteers. They provide nearly 80% of the initial attack on wildland fires in the United States. These departments provide, at no cost, wildfire and emergency protection service to 43% of the population, at an estimated value of $36 billion per year. The U.S. Forest Service has programs to help these crucial volunteers through their State Foresters.
The Volunteer Fire Assistance Program, formerly known as the Rural Community Fire Protection Program, provides financial, technical, and other Federal assistance to State Foresters and other appropriate officials to organize, train and equip fire departments in rural areas and rural communities to suppress fires. A rural community is defined as having a population of 10,000 or less. This 10,000-person limit for participation facilitates the distribution of Volunteer Fire Assistance funding to the neediest fire departments.
Eligible Recipients: Rural Fire Departments serving 10,000 people or less.</td></tr>
<tr><td colspan="2">Source: USFS/IDL</td><td>Type: Financial Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">10% Hard Match (cash)</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Applications are due at the beginning of May. Applications are prioritized by the Idaho State Fire Plan Working Group in June.</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Up to $20,000. Most awards are for $5,000 or less.</td></tr>
<tr><td colspan="3">For More Information:
ID Department of Lands
3284 W. Industrial Loop
Coeur d’Alene, ID 83815
(208) 769-1525
https://www.idl.idaho.gov/about-forestry/forestry-fire-grants/</td></tr>
</table>

Forest Legacy Program		
Program Description / Activities Funded: The Forest Legacy Program (FLP), a federal program in partnership with tates, supports state efforts to protect environmentally sensitive forest lands. Designed to encourage the protection of privately owned forest lands, FLP is an entirely voluntary program. To maximize the public benefits it achieves, the program focuses on the acquisition of partial interests in privately owned forest lands. FLP helps States develop and carry out their forest conservation plans. It encourages and supports the acquisition of conservation easements, legally binding agreements transferring a negotiated set of property rights from one party to another, without removing the property from private ownership. Most FLP conservation easements restrict development, require sustainable forestry practices, and protect other values. The FLP complements private, Federal and State programs focusing on conservation in two ways. First, FLP directly supports property acquisition. Additionally, FLP supports efforts to acquire donated conservation easements. FLP-funded acquisitions serve public purposes identified by participating States and agreed to by the landowner. Participation in the FLP is limited to private forest landowners. To qualify, landowners are required to prepare a multiple resource management plan as part of the conservation easement acquisition. The USDA's Forest Service administers the FLP in cooperation with State partners. The State grant option allows States a greater role in implementing the program. FLP also encourages partnerships with local governments and land trusts, recognizing the important contributions landowners, communities, and private organizations make to conservation efforts. Goals of the program are to protect wildlife, habitat, biodiversity and threatened and endangered species, and to promote and restore water quality, wetlands, and riparian buffers and encourage recreation.		
Source: USDA/USFS		**Type: Financial Assistance**
Cost Sharing:	At least 25% coming from private, State or local sources	
Application Timeframe:	Generally due in June but may vary year to year. Contact USDA Representative.	
Amount Available:	Varies upon project and fiscal year	
For More Information: USDA Forest Service 1400 Independence Ave. SW Washington, D.C. 20078-5500 (202) 205-8333 Phone: 801-625-5189, Website: https://www.fs.usda.gov/managing-land/private-land/forest-legacy		

State Fire Assistance Program	

Program Description / Activities Funded:

The State Fire Assistance Program provides financial and technical support directly to States, to enhance firefighting capacity, support community-based hazard mitigation, and expand outreach and education to homeowners and communities concerning fire prevention. The program requires a 50-50 match by the State. The delivery system is through the State Forester.

As a result of the National Fire Plan and the Healthy Forest Restoration Act, the hazardous fuels reduction component is a major part of the State Fire Assistance Program. The hazardous fuels application and selection process is managed by the Western States Fire Managers. The hazardous fuels component, along with most other fuels mitigation funds provided by Federal agencies and the State, is coordinated through a collaborative interagency effort.

Some benefits include:

- Complements Federal firefighting forces to optimize fire protection across ownerships
- Complements hazardous mitigation efforts across ownerships to reduce risks to communities
- Enhances the capability and capacity (training, equipment, preparedness, and education) of local fire protection entities
- Engages communities and homeowner to be able to recognize interface fire hazards, and provides them with opportunities to develop local solutions
- Provides a fire protection training link to volunteer fire departments

Opportunities for National Forests and Grasslands:

- Coordinate fire prevention, pre-suppression, hazard mitigation and suppression activities with State Foresters and local cooperators
- Provide training opportunities for local fire departments to assist each other in wildland suppression activities
- Helps local communities and cooperators to identify opportunities to work with each other, especially in the wildland-urban interface

Source: USFS	**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	Contact USFS representative for details
Application Timeframe:	Changes with fiscal year
Amount Available:	Varies with project and fiscal year

For More Information:

Phone: 801-625-5189

Or

Coop Fire—Idaho, North Dakota, and Montana

Phone: 406-329-3409

<table>
<tr><th colspan="3">Federal Excess Personal Property Program</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
The program is administered by the USDA's Forest Service with delivery through the State Forester. The Federal Excess Personal Property program re-utilizes excess federal property obtained from military and other Federal sources for use in rural and wildland firefighting. This equipment is loaned by agreement to State Foresters, who can sub-loan it to local firefighting organizations. The benefits of the program include:
• Enhances State and local fire protection capabilities by providing important equipment at a fraction of the cost of purchasing new or used
• Complements the State Fire Assistance Program and the Volunteer Fire Assistance Program to improve the efficiency and effectiveness of fire protection across ownerships
Opportunities for National Forests and Grasslands
• Forest Service personnel can assist by identifying excess property that may be used by State and local fire organizations, and by encouraging local fire departments to pursue needed equipment through this program.</td></tr>
<tr><td colspan="2">Source: USFS</td><td>Type: Technical Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">Contact USFS representative for details</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Contact USFS representative for details</td></tr>
<tr><td>Amount Available:</td><td colspan="2">Contact USFS representative for details</td></tr>
<tr><td colspan="3">For More Information:
Website: https://www.fs.usda.gov/managing-land/fire/fepp
Phone: 801-625-5189
Or
Coop Fire—Idaho, N. Dakota, and Montana
Phone: 406-329-3409</td></tr>
</table>

Forest Stewardship Program (FSP)	
Program Description / Activities Funded: Approximately 45% of all forestland in the United States, or 354 million acres, is under nonindustrial private ownership. This contributes significantly to America's clean water and air, wildlife habitat, recreational resources, and timber supplies. Authorized by the Cooperative Forestry Assistance Act of 1978, the FSP provides technical assistance, through State forestry agency partners, to nonindustrial private forest owners to encourage and enable active long-term forest management. A primary focus of the FSP is the development of comprehensive, multi-resource management plans that provide landowners with the information they need to manage their forests for a variety of products and services. **Landowner Participation** Participation in the FSP is open to any non-industrial private forest landowners who are committed to the active management and stewardship of their forested properties for at least 10 years. The FSP is not a cost-share program. Cost-share assistance for plan implementation may be available through other programs, such as the Forest Land Enhancement Program. **Rural Forestry Assistance** The FSP also assists State forestry agencies with a variety of programs to further support planning and management efforts by nonindustrial private forest owners, including tree improvement and seedling production, and landowner education programs. The Rural Forestry Assistance component of the FSP also provides for tree planting and timber stand improvement projects on non-Federal forest land, the development of discrete, resource-targeted management prescriptions, or practice plans for landowners.	
Source: USFS	**Type: Technical Assistance, Financial Assistance**
Cost Sharing:	None
Application Timeframe:	Changes with fiscal year
Amount Available:	Changes with fiscal year
For More Information: Phone: 801-625-5189 Website: https://www.fs.usda.gov/managing-land/forest-stewardship/program For more information on how this program is managed nationally, Program Manager	

Community Forestry Program	
Program Description / Activities Funded: The Community Forestry Program transfers technology and provides financial assistance to develop awareness and understanding of the value of sound urban/community forestry management among community citizens and leaders. Assistance is provided to Idaho communities to establish and enhance sustainable urban and community forestry management programs for public and private lands. The Idaho Department of Lands partners with the nine Resource Conservation and Development (RC&D) Councils to provide technical assistance to communities throughout the State. Cooperative agreements with the RC&D provide for the contracting of three Community Forestry Assistants. These specialists offer timely local assistance to cities and organizations in their respective geographic areas at no charge.	
Source: IDL/RC&D	**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	None
Application Timeframe:	Contact Representative for more information
Amount Available:	Contact Representative for more information
For More Information: Sara Wilson Phone: 986-226-1811 Email: sara.wilson2@usda.gov Website: https://www.fs.usda.gov/managing-land/private-land/community-forest	

National Wildfire Community Preparedness Day Grant	
Applicants create a proposal for a Wildfire Community Preparedness Day Grant Application for a $500 award to work on a one-day community wildfire hazard mitigation project. The idea is to help raise wildfire awareness, promote collaboration and bring neighbors together to work on projects that can help protect homes, neighborhoods and entire communities from future wildfire risk or current post-fire impacts. Applicants are encouraged to collaborate with HOA, Firewise Community Board, club officers, youth group, faith-based groups, and agency partners (water district, fire department, school district and other land managing agencies).	
Source: NFPA	**Type: Financial Assistance, Education/Outreach**
Cost Sharing:	None
Application Timeframe:	This is an annual recurring event and award.
Amount Available:	$500
For More Information: Website: https://www.nfpa.org/Events/Events/National-Wildfire-Community-Preparedness-Day	

Rural Housing Programs		
Program Description / Activities Funded: This service is responsible for providing safe, sanitary, and affordable housing for rural families with very low income, low income, and moderate income. The Rural Housing Program delivers its services through a wide range of housing programs, including programs supporting single-family homeownership, multi-family rental housing, and farm labor housing. • Section 502 Direct Program: Loans for up to 100% of the value of the home are made directly to low- and very low-income persons to help them purchase a modest new or existing home, using a payment assistance subsidy to reduce the homeowners' payments. Some government-owned properties are eligible under this program. • Section 502 Guaranteed Program: The Federal government agrees to guarantee a home loan, thus allowing lending institutions to help buyers while incurring little risk. • Section 504 Loan and Grant Program: Loans for repairs are available for very-low-income rural homeowners. Loans are at 1-percent interest and allow up to 20 years for repayment. Grants are available to owners 62 years of age or older. • Section 515 Multi-family Housing Program: Subsidized loans for the construction and subsequent improvement of multifamily housing in rural communities are provided to housing authorities, individuals, nonprofit or limited-profit corporations, and limited partnerships. The housing units can be rented to very low-income, low-income, and moderate-income persons, including the elderly. • Section 538 Guaranteed Rural Rental Housing Program: The Federal government agrees to guarantee loans made through approved lenders to build or acquire apartments for moderate-income tenants.		
Source: USDA		**Type: Financial Assistance**
Cost Sharing:	None	
Application Timeframe:	Contact Housing Program Director	
Amount Available:	Contact Housing Program Director	
For More Information: Director, Housing Program Director 9173 West Barnes, Ste A1 Boise, ID 83709 Phone: 208-378-5630 Website: https://www.usda.gov/topics/rural/housing-assistance		

Reimbursement for Firefighting on Federal Property		
Under Section 11 of the Federal Fire Prevention and Control Act of 1974, fire departments may be reimbursed for fighting fire on property owned by the Federal government. Only firefighting costs over and above normal operating costs are reimbursable. Claims are submitted to USFA and are reviewed by the Deputy Administrator to ensure they meet the criteria outlined in the Code of Federal Regulations.		
Source: U.S. Fire Administration		**Type: Financial Assistance**
Cost Sharing:	None	
Application Timeframe:	Contact U.S. Fire Administration	
Amount Available:	Contact U.S. Fire Administration	
For More Information: **Website:** https://www.usfa.fema.gov/a-z/grants/firefighting-federal-property.html#:~:text=If%20your%20fire%20department%20responded,U.S.%20Fire%20Administration%20(USFA). Reimbursement is paid to the fire departments by the U.S. Department of Treasury after a claim is approved for payment. For more information, contact the USFA at (301) 447-1358. **U.S. Fire Administration**- General Contact Information: 16825 South Seton Avenue Emmitsburg, MD 21727 Phone: (301) 447-1000, Fax: (301) 447-1346, Admissions Fax: (301) 447-1441		

Pacific Northwest Region Water Quality Program		
Program Description / Activities Funded: The Pacific Northwest Region Water Quality Program builds on the strengths of the Extension Water Quality Programs at the four Land Grant Universities throughout the Northwest. These States—Alaska, Idaho, Oregon, and Washington—correspond to EPA Region 10. The goal of the Pacific Northwest Program is to provide leadership for water resources research, education, and outreach to help communities, industry, and governments prevent and solve current and emerging water quality and quantity problems. To achieve this goal, the Partners have developed a coordinated regional water quality effort based on promoting and strengthening individual State programs. The Pacific Northwest Program promotes regional collaboration by acknowledging existing programs and successful efforts; assessing program gaps; identifying potential issues for cross-agency and private sector collaboration; and developing a clearinghouse of expertise and programs. In addition, the program establishes or enhances partnerships with Federal, State, and local environmental and water resource management agencies, such as placing a University Liaison within the offices of EPA Region 10. **This organization only provides technical service on a watershed-to-watershed basis. No grant funding is available.**		
Source: Pacific Northwest Regional Water Program		**Type: Technical Assistance**
Cost Sharing:	N/A	
Application Timeframe:	N/A	
Amount Available:	N/A	
For More Information: University of Idaho Soil and Environmental Sciences, Soil Science Division Moscow, ID 83844-2339 Phone: 208-885-7025, FAX: 208-885-7760		

USDA Farm Service Agency Emergency Conservation Program	
Program Description / Activities Funded: The Emergency Conservation Program (ECP) provides emergency funding and technical assistance for farmers and ranchers to rehabilitate farmland damaged by natural disasters and to carry out emergency water conservation measures in periods of severe drought. Funding for ECP is appropriated by Congress. **Program Administration** ECP is administered by State and county Farm Service Agency (FSA) committees. Subject to availability of funds, locally elected county committees are authorized to implement ECP for all disasters except drought, which is authorized at the national office of FSA. **Land Eligibility** County FSA committees determine land eligibility based on onsite inspections of damage, taking into account the type and extent of damage. For land to be eligible, the natural disaster must create new conservation problems that, if untreated, would: • impair or endanger the land • materially affect the land's productive capacity • represent unusual damage which, except for wind erosion, is not the type likely to recur frequently in the same area • be so costly to repair that Federal assistance is or will be required to return the land to productive agricultural use. Conservation problems existing prior to the applicable disaster are ineligible for ECP assistance. Technical assistance may be provided by USDA's Natural Resources Conservation Service.	
Source: USDA Farm Service Agency (FSA)	**Type: Technical Assistance, Financial Assistance**
Cost Sharing:	ECP program participants receive cost-share assistance of up to 75% of the cost to implement approved emergency conservation practices, as determined by county FSA committees.
Application Timeframe:	Should check with local county FSA offices regarding ECP sign-up periods, which are set by county FSA committees.
Amount Available:	Individual or cumulative requests for cost-sharing of $50,000 or less per person, per disaster are approved at the county committee level. Cost-sharing from $50,001 to $100,000 is approved at the State committee level. Cost-sharing over $100,000 must be approved by FSA's national office.
For More Information: https://www.fsa.usda.gov/programs-and-services/conservation-programs/emergency-conservation/index **USDA/FSA** **Idaho State FSA** 9173 West Barnes Drive Boise, ID 83709-1573 Phone: 208-378-5650, Fax: 208-378-5678	

The Conservation Reserve Program (CRP)

Program Description / Activities Funded:

The CRP is a voluntary program for agricultural landowners. Through CRP, landowners can receive annual rental payments and cost-share assistance to establish long-term, resource-conserving vegetative covers on eligible farmland. The Commodity Credit Corporation (CCC) makes annual rental payments based on the agriculture rental value of the land, and it provides cost-share assistance for up to 50% of the participant's costs in establishing approved conservation practices. Participants enroll in CRP contracts for 10 to 15 years.

Benefits

CRP protects millions of acres of American topsoil from erosion and is designed to safeguard the Nation's natural resources. By reducing water runoff and sedimentation, CRP protects groundwater and helps improve the condition of lakes, rivers, ponds, and streams. Acreage enrolled in the CRP is planted to resource-conserving vegetative covers, making the program a major contributor to increased wildlife populations in many parts of the country.

CRP Administration

FSA administers CRP, while technical support functions are provided by:

- USDA's Natural Resource Conservation Service (NCRCS)
- USDA's Cooperative State Research, Education, and Extension Service
- State forestry agencies
- Local soil and water conservation districts
- Private sector providers of technical assistance.

CRP General Sign-up

Producers can offer land for CRP general enrollment only during designated sign-up periods. For information on upcoming sign-ups, contact the local FSA office. To find your local office, visit FSA's Web site at https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/crp-general-sign-up/index

CRP Continuous Sign-up

Environmentally desirable land devoted to certain conservation practices may be enrolled at any time under CRP continuous sign-up. Certain eligibility requirements still apply but offers are not subject to competitive bidding. Additional information on CRP continuous sign-up is available in the FSA fact sheet "Conservation Reserve Program Continuous Sign-up."

Eligible Producers

To be eligible for CRP enrollment, a producer must have owned or operated the land for at least 12 months prior to close of the CRP sign-up period, unless:

- The new owner acquired the land due to the previous owner's death
- The ownership change occurred due to foreclosure, where the owner exercised a timely right or redemption in accordance with State law
- The circumstances of the acquisition present adequate assurance to FSA that the new owner did not acquire the land for the purpose of placing it in CRP.

Eligible Land

To be eligible for placement in CRP, land must be either: cropland (including field margins) that is planted or considered planted to an agricultural commodity for 4 of the previous 6 crop years, and which is physically and legally capable of being planted in a normal manner to an agricultural commodity; or certain marginal pastureland that is suitable for use as a riparian buffer or for similar water quality purposes.

Additional Cropland Requirements

In addition to the eligible land requirements, cropland must meet one of the following criteria:

- Have a weighted average erosion index of 8 or higher
- Be expiring CRP acreage
- Be located in a national or State CRP conservation priority area.

Ranking CRP Offers

Offers for CRP contracts are ranked according to the Environmental Benefits Index (EBI). FSA collects data for each of the EBI factors based on the relative environmental benefits for the land offered. Each eligible offer is ranked in comparison to all other offers, and selections are made from that ranking. FSA uses the following EBI factors to assess the environmental benefits for the land offered:

- Wildlife habitat benefits resulting from vegetative covers on contract acreage
- Water quality benefits from reduced erosion, runoff, and leaching

The Conservation Reserve Program (CRP)	
• On-farm benefits from reduced erosion • Benefits that will likely endure beyond the contract period • Air quality benefits from reduced wind erosion • Cost	
Source: USDA Farm Service Agency (FSA)	**Type: Technical Assistance, Financial Assistance, Education/Outreach**
Cost Sharing:	The cost-share assistance can be an amount not more than 50% of the participants' costs in establishing approved practices.
Application Timeframe:	CRP sign up is announced annually by the Secretary and Continuous can sign up at any time.
Amount Available:	Varies upon project and fiscal year funding availability
For More Information: **Website:** https://www.fsa.usda.gov/programs-and-services/conservation-programs/conservation-reserve-program/index **USDA/FSA** **Idaho State FSA** 9173 West Barnes Drive Boise, ID 83709-1573 Phone: 208-378-5650, Fax: 208-378-5678	

USDA Farm Service Agency's (FSA) Tree Assistance Program (TAP)	
Program Description / Activities Funded: The Agricultural Act of 2014 (the 2014 Farm Bill) authorized the Tree Assistance Program (TAP) to provide financial assistance to qualifying orchardists and nursery tree growers to replant or rehabilitate eligible trees, bushes and vines damaged by natural disasters. The 2014 Farm Bill makes TAP a permanent disaster program and provides retroactive authority to cover eligible losses back to Oct. 1, 2011. The Bipartisan Budget Act of 2018 made several changes to TAP, including removing the per person and legal entity program year payment limitation ceiling of $125,000. It also increased the acreage cap, and growers are eligible to be partly reimbursed for losses on up to 1,000 acres per program year, double the previous acreage. **Eligible Tree Types** Eligible trees, bushes and vines are those from which an annual crop is produced for commercial purposes. Nursery trees include ornamental, fruit, nut and Christmas trees produced for commercial sale. Trees used for pulp or timber are ineligible. **Eligible Producers** To qualify for TAP, orchardists and nursery tree growers must: • Suffer qualifying tree, bush or vine losses in excess of 15% (adjusted for normal mortality) from an eligible natural disaster for the individual stand • Have owned the eligible trees, bushes and vines when the natural disaster occurred; however, eligible growers are not required to own the land on which eligible trees, bushes and vines are planted • Replace eligible trees, bushes and vines within 12 months of the date the application is approved.	
Source: USDA/FSA	**Type: Technical Assistance, Financial Assistance**
Cost Sharing:	Varies
Application Timeframe:	Contact USDA/FSA Representative
Amount Available:	Contact USDA/FSA Representative
For More Information: **USDA/FSA** **Website:** https://www.fsa.usda.gov/programs-and-services/disaster-assistance-program/tree-assistance-program/index **Idaho State FSA** 9173 West Barnes Drive Boise, ID 83709-1573 Phone: 208-378-5650, Fax: 208-378-5678	

Internal Revenue Service (IRS) Casualty Loss-Special Disaster Provisions	
Program Description / Activities Funded: Special tax law provisions may help taxpayers and businesses recover financially from the impact of a disaster, especially when the Federal government declares their location to be a major disaster area. Depending on the circumstances, the IRS may grant additional time to file returns and pay taxes. Both individuals and businesses in a federally declared disaster area can get a faster refund by claiming losses related to the disaster on the tax return for the previous year, usually by filing an amended return. The IRS also offers audio presentations on Planning for Disaster. These presentations discuss business continuity planning, insurance coverage, recording keeping and other tips to stay in business after a major disaster.	
Source: IRS	**Type: Technical Assistance, Financial Assistance**
Cost Sharing:	N/A
Application Timeframe:	Initiated when a disaster declaration is available
Amount Available:	N/A (The main priority is service to either obtain an extension with taxes or receive a refund more quickly, and assistance with itemizing items destroyed during a disaster.)
For More Information: https://www.irs.gov/taxtopics/tc515#:~:text=If%20you%20have%20a%20casualty,you%20can%20deduct%20the%20loss Area offices: **Boise** Phone: (208) 387-2847 550 West Fort St. Boise, ID 83724 **Coeur D'Alene** Phone: (208) 676-8798 1221 Ironwood Dr. Coeur D'Alene, ID 83814 **Idaho Falls** Phone: (208) 523-8041 1820 East 17th St. Idaho Falls, ID 83404 **Pocatello** Phone: (208) 236-6795 611 Wilson Ave. Pocatello, ID 83201	

Bonneville Power Administration: Integrated Fish and Wildlife Program	
Program Description / Activities Funded: Environmental values are an important part of the Pacific Northwest heritage. So, too, is the low-cost and clean energy produced by Federal hydroelectric facilities throughout the Columbia River Basin. BPA and its partners operating the Federal Columbia River Power System are working to protect and enhance environmental, fish, and wildlife values, and ensure these qualities for future generations. BPA partners with the Northwest Power and Conservation Council, the Columbia Basin Fish and Wildlife Authority, Columbia Basin Tribal Nations, and other Federal, State, and private organizations. BPA provides funding for conservation easements, habit acquisitions and protections, and other conservation and restoration projects.	
Source: Bonneville Power Administration	**Type: Financial Assistance**
Cost Sharing:	Contact Bonneville Power Administration
Application Timeframe:	Contact Bonneville Power Administration
Amount Available:	Contact Bonneville Power Administration
For More Information: 905 Northeast 11th Ave. Portland, OR 97232 503-230-5136 and 1-800-282-3713 (Toll Free) Integrated Fish & Wildlife Program: Director Environmental Services: Manager—Environmental Planning & Analysis	

<table>
<tr><th colspan="2">National Oceanic Atmospheric Restoration Center Grants</th></tr>
<tr><td colspan="2">Program Description / Activities Funded:
The NOAA Restoration Center is devoted to restoring the Nation’s coastal ecosystems and preserving diverse and abundant marine life. Through its strong commitment to restoration and by promoting partnerships and local stewardship, the Center informs and inspires people to act on behalf of a healthier coastal environment.
Large-scale regional restoration projects conducted under the Coastal Wetlands Planning, Protection, and Restoration Act reduce coastal erosion and reverse wetlands loss in Louisiana, where tens of thousands of acres of wetlands are lost through subsidence, erosion, and die-offs each year.
The Community-based Restoration Program applies a novel, grass-roots approach to restoration and is designed to actively engage communities in on-the-ground restoration of local habitats.
NOAA’s Damage Assessment, Remediation and Restoration Program works to restore marine resources that have been injured due to oil spills, toxic releases, or ship groundings.
NOAA’s Great Lakes Habitat Restoration Program works to restore coastal and near-shore habitats in the Great Lakes.
Finding ways to address Invasive Species is another NOAA priority, as these nuisance plants and critters continue to take over aquatic habitats.
The Restoration Science Program advances emerging restoration technology, science, and cost-effective practices.</td></tr>
<tr><td>Source: NOAA</td><td>Type: Technical Assistance, Financial Assistance</td></tr>
<tr><td>Cost Sharing:</td><td>Varies</td></tr>
<tr><td>Application Timeframe:</td><td>Varies</td></tr>
<tr><td>Amount Available:</td><td>Varies depending upon scale of project</td></tr>
<tr><td colspan="2">For More Information:
Idaho NOAA website: https://www.fisheries.noaa.gov/national/habitat-conservation/resources-noaa-restoration-center-applicants
1201 NE Lloyd Boulevard, Suite 1100
Portland, OR 97232
Phone: 503-231-2110, Fax: 503-231-6265</td></tr>
</table>

<table>
<tr><th colspan="2">Idaho Fish & Wildlife Foundation</th></tr>
<tr><td colspan="2">Program Description / Activities Funded:
The Idaho Fish and Wildlife Foundation is dedicated to the conservation of natural resources, fish, wildlife, and habitat. The Foundation is a 501 (c) (3) nonprofit organization established in 1990 and is headquartered in Boise, Idaho. Board members represent all regions of the State and work to enhance Idaho’s fish and wildlife habitat. The Foundation grants funding for statewide conservation and education projects.</td></tr>
<tr><td>Source: Idaho Fish & Wildlife Foundation</td><td>Type: Technical Assistance, Financial Assistance, Education/Outreach</td></tr>
<tr><td>Cost Sharing:</td><td>1:1 match</td></tr>
<tr><td>Application Timeframe:</td><td>Initiated in November, after the Board issues a notice about funding opportunities</td></tr>
<tr><td>Amount Available:</td><td>Maximum $10,000</td></tr>
<tr><td colspan="2">For More Information:
Website: https://ifwf.org/
208-334-2648 or email ifwf@idfg.idaho.gov</td></tr>
</table>

<table>
<tr><th colspan="2">U.S. Department of Housing and Urban Development (HUD) Programs</th></tr>
<tr><td colspan="2">Program Description / Activities Funded:
HUD awards grants to organizations and groups for a variety of purposes. To participate in the HUD grants program, you need to be registered with Grants.gov.
Some HUD programs and services are:
HUD 5-H Homeownership Program
HUD Home Program
HUD Partnership for Advancing Technology in Housing
HUD/Federal Housing Administration (FHA) Title I Home Repair Loan Program
HUD/FHA Section 203(h) Mortgage Insurance for Disaster Victims
HUD/FHA Section 203(k) Rehabilitation Mortgage Insurance Program
HUD Disaster Recovery Grants
Additional grant information can be found at HUDs website and at Grants.gov</td></tr>
<tr><td>Source: HUD</td><td>Type: Technical Assistance, Financial Assistance, Education/Outreach</td></tr>
<tr><td>Cost Sharing:</td><td>HUD generally awards noncompetitive, nonrecurring Disaster Recovery grants by a formula that considers disaster recovery needs unmet by other Federal disaster assistance programs.</td></tr>
<tr><td>Application Timeframe:</td><td>General Home services applications can be processed all year round. The disaster-related application process begins after a disaster declaration has been issued.</td></tr>
<tr><td>Amount Available:</td><td>Varies. Loan programs are based on credit and amount being requested.</td></tr>
<tr><td colspan="2">For More Information:
https://www.hud.gov/
HUD Boise Field Office
Plaza IV, Suite 220
800 Park Boulevard
Boise, Idaho 83712-7743
Phone: (208) 334-1990, Fax: (208) 334-9648</td></tr>
</table>

<table>
<tr><th colspan="3">Department of Transportation/Federal Highway Administration (FHWA) Emergency Relief Program</th></tr>
<tr><td colspan="3">Program Description / Activities Funded:
Congress authorized in Title 23, United States Code, Section 125, a special program from the Highway Trust Fund for the repair or reconstruction of Federal-aid highways and roads on Federal lands which have suffered serious damage as a result of (1) natural disasters or (2) catastrophic failures from an external cause. This program, commonly referred to as the emergency relief or ER program, supplements the commitment of resources by States, their political subdivisions, or other Federal agencies to help pay for unusually heavy expenses resulting from extraordinary conditions.
The applicability of the ER program to a natural disaster is based on the extent and intensity of the disaster. Damage to highways must be severe, occur over a wide area, and result in unusually high expenses for the highway agency. Applicability of ER to a catastrophic failure due to an external cause is based on the criteria that the failure was not the result of an inherent flaw in the facility but was sudden, caused a disastrous impact on transportation services, and resulted in unusually high expenses to the highway agency.
What Are Federal-aid Highways?
The State highway agencies, working with local officials, have established the functional classification of all public roads, ranging from high service level arterials to lower service local streets. Federal-aid highways are all the public roads not functionally classified as either local or rural minor collectors. As a result, Federal-aid highways include the more important State, county, and city roads. Based on the functional classifications, about one-quarter of the overall public road mileage has been designated as Federal-aid highways.
What Is Serious Damage?
Serious damage is major or unusual damage to a highway which severely impairs the safety or usefulness of the highway or results in road closures. Serious damage must be beyond the scope of work usually done by highway agencies in repairing damage normally expected from seasonal or occasionally different natural conditions.
As a general rule, the estimated cost for repairs from a disaster or catastrophic failure in a State must require at least $700,000 in ER funding before the FHWA will consider approving the disaster or catastrophic failure as eligible for funding under the ER program.
What Types of Repairs Are Eligible for Funding?
ER funds can be used for “emergency repairs” and “permanent repairs.” Emergency repairs are those made during and immediately following a disaster to restore essential traffic, to minimize the extent of damage, or to protect remaining facilities. Typical examples are:
establishing emergency detours
removing slides and debris
providing temporary bridges or ferry service
regrading of roadway embankments and surfaces
placing riprap to prevent further scour
Permanent repairs are those undertaken, normally after emergency repairs have been completed, to restore the highway to its pre-disaster condition. These would include:
restoring pavement surfaces
reconstructing damaged bridges and culverts
replacing signs, guardrail, fences, and other highway appurtenances</td></tr>
<tr><td colspan="2">Source: Department of Transportation/FHWA</td><td>Type: Financial Assistance</td></tr>
<tr><td>Cost Sharing:</td><td colspan="2">Approved ER funds are available at the pro-rata share that would normally apply to the Federal-aid facility damaged. For Interstate highways, the Federal share is 90%. For all other highways, the Federal share is 80%. Emergency repair work to restore essential travel, minimize the extent of damage, or protect the remaining facilities, accomplished in the first 180 days after the disaster occurs, may be reimbursed at 100% Federal share.</td></tr>
<tr><td>Application Timeframe:</td><td colspan="2">Individual States are responsible for requesting ER funds to assist in the cost of necessary repair of Federal-aid highways damaged by natural disasters or catastrophic failures. A notice of intent to request ER funds, filed by the State Department of Transportation with the FHWA Division Office located in the State, will initiate the ER application process.</td></tr>
<tr><td>Amount Available:</td><td colspan="2">$100 million in annual authorization</td></tr>
<tr><td colspan="3">For More Information:
https://www.fhwa.dot.gov/programadmin/erelief.cfm
FHWA Idaho Division Office
3050 Lakeharbor Lane, #126
Boise, ID 83703
FHWA Office Phone: (208) 334-1843</td></tr>
</table>

Department of Commerce/Economic Development Authority (EDA)		
Program Description / Activities Funded: EDA was created by Congress pursuant to the Public Works and Economic Development Act of 1965 to provide financial assistance to distressed communities, both rural and urban. EDA's mission is to lead the Federal economic development agenda by promoting innovation and competitiveness, preparing American regions for growth and success in the worldwide economy. EDA will fulfill its mission by fostering entrepreneurship, innovation, and productivity through investments in infrastructure development, capacity building, and business development. These investments will be made to attract private capital investments and higher-skill, higher-wage jobs to regions experiencing substantial and persistent economic distress. EDA works in partnership with distressed regions to address problems associated with long-term economic distress and to assist regions experiencing sudden and severe economic dislocations, such as those resulting from natural disasters, conversions of military installations, changing trade patterns, and the depletion of natural resources. EDA investments generally take the form of grants to or cooperative agreements with eligible recipients. **EDA provides assistance via:** Construction Grant Program Planning Grants Revolving Loan Fund Technical Assistance Grants **Eligible Parties include:** • City or other political subdivision of a State, including a special-purpose unit of a State or local government engaged in economic or infrastructure development activities, or a consortium of political subdivisions • State • Institution of higher education or consortium of institutions of higher education • Public or private non-profit organization or association, including a community or faith-based non-profit organization, acting in cooperation with officials of a political subdivision of a State • District Organization • Indian Tribal Nation or a consortium of Indian Tribal Nations • Private individual or for-profit organization, but only for training, research and technical assistance investments.		
Source: Department of Commerce/Economic Development Authority		**Type: Technical Assistance Financial Assistance**
Cost Sharing:	Contact Representative	
Application Timeframe:	Contact Representative	
Amount Available:	Varies upon grant program	
For More Information: **Website:** https://www.eda.gov/ **Economic Development Authority** Jackson Federal Building, Room 1890 915 Second Avenue Seattle, WA 98174-1001 Phone: 206-220-7660, Fax: 206-220-7669 Regional Director **Idaho Department of Commerce** 700 W State Street P.O. Box 83720 Boise, ID 83720-0093 Phone: (208) 334-2470, Fax: (208) 334-2631		

Environmental Education (EE) Local Grant Program	
Program Description / Activities Funded: The purpose of the Environmental Education Local Grants Program in Region 10 is to support locally focused environmental education projects that increase public awareness and knowledge about environmental and conservation issues and provide the skills that participants in its funded projects need to make informed decisions and take responsible actions toward the environment. Through this grant program, EPA intends to provide financial support for projects that design, demonstrate, and/or disseminate environmental education practices, methods, or techniques, which will serve to increase environmental and conservation literacy and encourage behavior that will benefit the environment. In addition to other environmental topics, the 2018 EE Local Grant Program includes support for projects that reflect the intersection of environmental issues with agricultural best-practices, conservation of natural resources, food waste management, and natural disaster preparedness.	
Source: United States Environmental Protection Agency	**Type: Education/Outreach, Financial Assistance**
Cost Sharing:	Applicants must demonstrate how they will provide non-federal matching funds of at least 25% of the total cost of the project.
Application Timeframe:	The closing date and time for receipt of proposal submissions is March 15 in order to be considered for funding.
Amount Available:	The total funding for the competitive opportunity in U.S. EPA Region 10 is up to $300,000. This Region expects to award three or four grants for no less than $50,000, and no more than $100,000 each. Region 10 covers the states of Alaska (AK), Idaho (ID), Oregon (OR), and Washington (WA). Send an application to this Region only if your project will take place in one or more of those states.
For More Information: **Website:** https://www.epa.gov/education/grants	

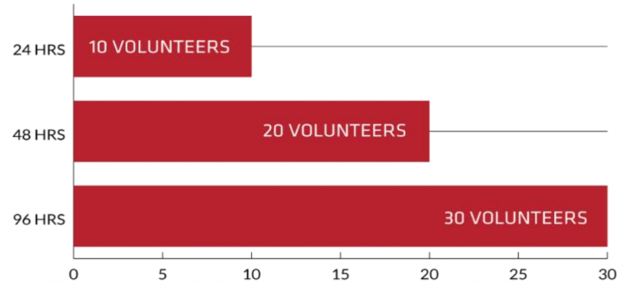
The Steele-Reese Foundation Grant Program	
Program Description / Activities Funded: The Steele-Reese Foundation, a trust for charitable purposes, was created by Eleanor Steele Reese on August 10, 1955. The foundation makes grants to charitable organizations operating in Idaho and Montana, and in the southern Appalachian Mountain region of eastern Kentucky. **Rural Conservation**: Examples include composting programs, wildlife projects, ecosystem protection programs, and water projects. All conservation/environmental programs must be locally, rather than regionally, focused. National organizations are eligible for support only if all Steele-Reese funds will be employed directly in projects located in the geographical areas served by this foundation. **Rural Health**: Examples include hospices; preventive health programs; equipment for clinics, small hospitals, EMS and ambulance units; family-planning programs. Rural Humanities: Examples include local arts groups and local historical projects.	
Source: The Steele-Reese Foundation	**Type: Financial Assistance**
Cost Sharing:	None
Application Timeframe:	Applications can be submitted at any time, but those submitted after March 1 will be considered for the next fiscal year.
Amount Available:	Grants generally vary in size from $5,000 to (rarely) over $150,000
For More Information: **Website:** https://steele-reese.org/how-to-apply/idaho-and-montana-grant-program Linda Tracy, Western Program Director **The Steele-Reese Foundation** PO Box 8311 Missoula, MT 59807-8311 E-mail: linda@steele-reese.org Phone: (406) 207-7984, Fax: (207) 470-3872	

The Wilburforce Foundation Grant Program	
Program Description / Activities Funded: Wilburforce Foundation protects wildlife habitats in Western North America by actively supporting organizations and leaders advancing conservation solutions. Wilburforce makes investments that contribute to the following types of outcomes: • Increase access to and use of scientific, legal, political, and economic information resources • Improve the efficiency and effectiveness of grantee organizations conservation leaders, and other allies • Increase communication, cooperation and collaboration among grantees, stakeholders, decision-makers and/or allies • Increase awareness, support and utilization of conservation policies, plans and practices that protect wildlife habitat • Decrease or mitigate threats to wildlife habitat • Improve the protected status of wildlife habitat • Improve the ecological resilience of the landscapes in which people work.	
Source: The Wilburforce Foundation	**Type: Financial Assistance**
Cost Sharing:	None
Application Timeframe:	Varies upon program applying to and geographic region.
Amount Available:	Varies
For More Information: **Website:** https://wilburforce.org/grants/ **Wilburforce Foundation** 3601 Fremont Ave N, #304 Seattle, WA 98103-8753 Phone: 206-632-2325, Fax: 206-632-2326 Email: grants@wilburforce.org	

Team Rubicon Disaster Response and Recovery	

Program Description / Activities Funded:
Team Rubicon is an international non-profit disaster response organization that unites the skills and experiences of military veterans with first responders to rapidly deploy emergency response teams, free of charge, to communities affected by disasters. Team Rubicon currently maintains a roster of 65,000 change volunteers able to deploy throughout the United States and world.

Team Rubicon stands ready to deploy resources in the following timeframes:



Team Rubicon maintains complete records of volunteers, hours worked, and work-orders so as to assist local, county, state, and tribal governments in applying for federal public assistance grants.

Team Rubicon deploys equipped with all the resources required to provide the capabilities above including:

- **Personal protective equipment**
- **Hand tools**
- **Solar-powered electrical suites**
- **Palantir data analysis and mapping suites (mobile and static platforms)**
- **Heavy equipment**
- **Sawyer teams**

All incident management personnel are trained in the application of Incident Command System (ICS) in compliance with the National Incident Management System (NIMS). Volunteers are trained in the basics of ICS. Team Rubicon deploys as a self-sustaining unit.
Team Rubicon has responded to numerous natural disasters across the United States. The flexibility of the organization allows it to operate in two distinct ways:
Tactical Branch, Single Resource Unit, or Task Force
Team Rubicon can work under the direction of a governmental entity or agency (based on requested function) and integrate fully into an existing Incident Command System structure to perform disaster response functions.
Non-Government Organization (NGO)
Team Rubicon is a voting member of the National Voluntary Organizations Active in Disaster (NVOAD). Team Rubicon can integrate into national, state, or community VOAD efforts to provide its services to survivors, free of charge.
Service is the driving principle of Team Rubicon operations and its members.
Team Rubicon focuses on serving vulnerable and at-risk populations affected by disaster. While the initial damage and trauma of natural disasters will impact any population regardless of socioeconomic factors, the financial burden of recovery and rebuilding has dramatic and long-lasting repercussions on many rural and urban populations lacking proper insurance and public and private resources.
All Team Rubicon services are provided free of charge.
In 2016, 62 percent of all homes Team Rubicon serviced did not have home insurance. An American Progress report noted that the most extreme weather events typically harmed counties with household incomes below the U.S. median annual income of $51,941. Wildfires, tornadoes, and severe thunderstorms devastated areas with households that earned on average three percent less than the U.S. median income. It is easy to imagine the positive, long-term impact Team Rubicon's free assistance provided to these families.

Source: Team Rubicon, VOAD	**Type: Volunteer Assistance in Response and Recovery**
Cost Sharing:	Not required.
Application Timeframe:	Contact Representative.
Amount Available:	Contact Representative.

For More Information:
Website: https://teamrubiconusa.org/relief/
Team Rubicon National Headquarters
6171 W. Century Blvd., Suite 310
Los Angeles, CA 90045
310.640.8787

State of Idaho Hazard Mitigation Plan

Appendix J. Authorities and Assurances

J. AUTHORITIES AND ASSURANCES

This appendix expands on the assurances in Section 0.

AUTHORITIES

The authority to adopt the 2018 Idaho State Hazard Mitigation Plan (SHMP) is provided in Idaho Code, Title 46, Chapter 10. Other related authorities include:

Federal

- Public Law 93-288, as amended, Robert T. Stafford Disaster Relief and Emergency Assistance Act
- Public Law 93-234, as amended, Flood Disaster Protection Act of 1973
- FEMA Regulations at 44 CFR 9, Floodplain Management
- FEMA Regulations at 44 CFR 10, National Environmental Policy Act
- FEMA Regulations at 44 CFR 13, Uniform Administrative Requirements for Grants and Cooperative Agreements to State and Local Governments
- FEMA Regulations at 44 CFR 206, Subparts M and N
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Protection of Wetlands
- Executive Order 12612, Federalism
- Executive Order 12699, Seismic Safety of Federal and Federally Assisted or Regulated New Building Construction
- Hazard Mitigation Assistance Unified Guidance

State

- Idaho Code 4610 et seq., Disaster Preparedness Act of 1975, as amended
- Governor’s Executive Order 2006-10

ASSURANCES AND COMPLIANCE WITH FEDERAL AND STATE REGULATIONS

The Idaho SHMP meets the standard requirements of Section 409 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act of 1988, 42 United States Code Sections 5121 and following (commonly referred to as the Stafford Act—Public Law 93-288).

This plan is also intended to meet the requirements of Section 322 of the Stafford Act, which require that States, as a condition of receiving Federal disaster mitigation funds, have a mitigation plan in place that describes the planning process for identifying hazards, risk and vulnerabilities; identifies and prioritizes mitigation actions; encourages the development of local mitigation; and provides technical support for these efforts. In addition, the Act requires local and Tribal governments to have mitigation plans as a condition of receiving disaster mitigation funds.

Federal regulations at 44 CFR 201.4(c)(7) indicate that the SHMP must include assurances that the State will comply with all applicable Federal statutes and regulations in effect with respect to the periods for which it receives grant funding, in compliance with CFR 13.11(c). The State will amend its plan whenever necessary to reflect changes in State or Federal laws and statutes, as required in CFR 13.11(d).

Through the development and enforcement of this plan, the State of Idaho will comply with all provisions in 44 CFR § 13, as well as Subchapter B – Insurance and Mitigation, Subchapter D – Disaster Assistance, and Subchapter F – Preparedness. Additionally, the assurances listed below are provided as documentation that the State or any subsequent sub-grantee (recipients) that receive Federal grant funds will comply with all applicable Federal statutes and regulations. The State will amend the plan whenever necessary to reflect changes in Federal statutes and regulations or material changes in State law, organization, policy or State agency operations. BHS continuously monitors proposed and pending State bills that may impact the Plan.

To the extent the following provisions apply to the award of assistance:

1. Recipient possesses legal authority to enter into agreements and to execute the proposed programs;
2. Recipient’s governing body has duly adopted or passed as an official act a resolution, motion or similar action authorizing the execution of hazard mitigation agreements, including all understandings and assurances contained therein, and directing and authorizing the Recipient’s chief administrative officer or designee to act in connection with any application and to provide such additional information as may be required;
3. No member of or delegate to the Congress of the United States, and no Resident Commissioner, shall be admitted to any share or part of any agreement or to any benefit to arise from the same. No member, officer, or employee of the Recipient or its designees or agents, no member of the governing body of the locality in which the program is situated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the program during his tenure or for one year thereafter, shall have any interest direct or indirect, in any contract or subcontract, or the proceeds thereof, for work to be performed in connection with the program assisted under this plan. The Recipient shall incorporate or cause to be incorporated, in all such contracts or subcontracts, a provision prohibiting such interest pursuant to the purpose state above;
4. Recipient will comply with:
   a. Contract Work Hours and Safety Standards Act of 1962, 40 USC 327 et seq., requiring that mechanics and laborers (including watchmen and guards) employed on federally assisted contracts be

paid wages of not less than one and one-half times their basic wage rates for all hours worked in excess of forty hours in a work week; and

b. Federal Fair Labor Standards Act, 29 USC Section 201 et seq., requiring that covered employees be paid at least the minimum prescribed wage, and also that they be paid one and one-half times their basic wage rates for all hours worked in excess of the prescribed work-week.

5. Recipient will comply with:

    a. Title VI of the Civil Rights Act of 1964 (Public Law 88-352), and the regulations issued pursuant thereto, which provides that no person in the United States shall on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity for which the Recipient receives Federal financial assistance and will immediately take any measures necessary to effectuate this assurance. If any real property or structure thereon is provided or improved with the aid of Federal financial assistance extended to the Recipient, this assurance shall obligate the Recipient, or in the case of any transfer of such property, any transferee, for the period during which the real property or structure is used for a purpose for which the Federal financial assistance is extended, or for another purpose involving the provision of similar services or benefits;
    b. Any prohibition against discrimination on the basis of age under the Age Discrimination Act of 1975, as amended (42 U.S.C.: 6101-6107), which prohibits discrimination on the basis of age or with respect to otherwise qualified handicapped individuals as provided in Section 504 of the Rehabilitation Act of 1973;
    c. Executive Order 11246 as amended by Executive Orders 11375 and 12086, and the regulations issued pursuant thereto, which provide that no person shall be discriminated against on the basis of race, color, religion, sex or national origin in all phases of employment during the performance of Federal or federally assisted construction contracts; affirmative action to insure fair treatment in employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff/termination, rates of pay or other forms of compensation; and election for training and apprenticeship;

6. The Recipient agrees to comply with the Americans With Disabilities Act (Public Law 101-336, 42 USC Section 12101 et seq.), where applicable, which prohibits discrimination by public and private entities on the basis of disability in the areas of employment, public accommodations, transportation, State and local government services, and in telecommunications;

7. Recipient will comply with Title IX of the Education Amendments of 1972, as amended (20 USC: 1681-1683 and 1685-1686), which prohibits discrimination on the basis of sex;

8. Recipient will comply with the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970, (42 USC 4521-45-94) relating to nondiscrimination on the basis of alcohol abuse or alcoholism;

9. Recipient will comply with 523 and 527 of the Public Health Service Act of 1912 (42 USC 290 dd-3 and 290 ee-3), as amended, relating to confidentiality of alcohol and drug abuse patient records;

10. Recipient will comply with Title VIII of the Civil Rights Act of 1968, 42 USC 2000c and 42 3601-3619, as amended, relating to non-discrimination in the sale, rental, or financing of housing, and Title VI of the Civil Rights Act of 1964 (Public Law 88-352), which prohibits discrimination on the basis of race, color or nation origin;

11. Recipient will comply with the Intergovernmental Personnel Act of 1970, 42USC 4728-4763;

12. Recipient will comply with the Rehabilitation Act of 1973, Section 504, 29 USC 794, regarding non-discrimination;

13. Recipient will establish safeguards to prohibit employees from using positions for a purpose that is, or gives the appearance of, being motivated by a desire for private gain for themselves or others, particularly those with whom they have family, business, or other ties pursuant to Section 112.313 and Section 112.3135, FS;
14. Recipient will comply with the Anti-Kickback Act of 1986, 41 USC Section 51 which outlaws and prescribes penalties for “kickbacks” of wages in federally financed or assisted construction activities;
15. Recipient will comply with the Hatch Act (18 USC 594, 598, 600-605), which limits the political activities of employees;
16. Recipient will comply with the flood insurance purchase and other requirements of the Flood Disaster Protection Act of 1973 as amended, 42 USC 4002-4107, including requirements regarding the purchase of flood insurance in communities where such insurance is available as a condition for the receipt of any Federal financial assistance for construction or acquisition purposes for use in any area having special flood hazards. The phrase “Federal financial assistance” includes any form of loan, grant, guaranty, insurance payment, rebate, subsidy, disaster assistance loan or grant, or any other form of direct or indirect Federal assistance;
17. Recipient will require every building or facility (other than a privately owned residential structure) designed, constructed, or altered with funds provided under a grant agreement to comply with the “Uniform Federal Accessibility Standards,” (AS) which is Appendix A to 41 CFR Section 101-19.6 for general type buildings and Appendix A to 24 CFR 40 for residential structures. The Recipient will be responsible for conducting inspections to ensure compliance with these specifications by the contractor;
18. Recipient will, in connection with its performance of environmental assessments under the National Environmental Policy Act of 1969, comply with Section 106 of the National Historic Preservation Act of 1966 (USC 470), Executive Order 11593, 24 CFR 800, and the Preservation of Archaeological and Historical Data Act of 1966 (16 USC 469a-1, et seq.) by:
    a. Consulting with SHPO to identify properties listed in or eligible for inclusion in the *National Register* of Historic Places that are subject to adverse effects (see 36 CFR Section 800.8) by the proposed activity; and
    b. Complying with all requirements established by the State to avoid or mitigate adverse effects upon such properties.
    c. Notifying FEMA and the State if any project may affect a historic property. When any of Recipient’s projects funded under a grant agreement may affect a historic property, as defined in 36 CFR 800.(2)(e), FEMA may require Recipient to review the eligible scope of work in consultation with SHPO and suggest methods of repair or construction that will conform with the recommended approaches set out in the Secretary of Interior’s Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings 1992 (Standards), the Secretary of the Interior’s Guidelines for Archeological Documentation (Guidelines) (48 Federal Register 44734- 37), or any other applicable Secretary of Interior standards. If FEMA determines that the eligible scope of work will not conform with the Standards, Recipient agrees to participate in consultations to develop, and, after execution by all parties, to abide by, a written agreement that establishes mitigation and recondition measures, including but not limited to, impacts to archeological sites, and the salvage, storage, and reuse of any significant architectural features that may otherwise be demolished.
    d. Notifying FEMA and the State if any project funded under a grant agreement will involve ground disturbing activities, including, but not limited to: subsurface disturbance; removal of trees; excavation for footings and foundations; and installation of utilities (such as water, sewer, storm drains, electrical, gas, leach lines and septic tanks) except where these activities are restricted solely to areas previously disturbed by the installation, replacement or maintenance of such utilities. FEMA will request the SHPO’s opinion on the potential that archeological properties may be present and be

affected by such activities. The SHPO will advise Recipient on any feasible steps to be accomplished to avoid any *National Register* eligible archeological property or will make recommendations for the development of a treatment plan for the recovery of archeological data from the property. If Recipient is unable to avoid the archeological property, it will develop, in consultation with the SHPO, a treatment plan consistent with the Guidelines and take into account the Advisory Council on Historic Preservation (Council) publication "Treatment of Archeological Properties". Recipient shall forward information regarding the treatment plan to FEMA, the SHPO and the Council for review. If the SHPO and the Council do not object within 15 calendar days of receipt of the treatment plan, FEMA may direct Recipient to implement the treatment plan. If either the Council or the SHPO object, Recipient shall not proceed with the project until the objection is resolved.

e. Notifying the State and FEMA as soon as practicable: (a) of any changes in the approved scope of work for a *National Register* eligible or listed property; (b) of all changes to a project that may result in a supplemental DSR or modify an HMGP project for a *National Register* eligible or listed property; (c) if it appears that a project funded under a grant agreement will affect a previously unidentified property that may be eligible for inclusion in the *National Register* or affect a known historic property in an unanticipated manner. Recipient acknowledges that FEMA may require Recipient to stop construction in the vicinity of the discovery of a previously unidentified property that may be eligible for inclusion in the *National Register* or upon learning that construction may affect a known historic property in an unanticipated manner. Recipient further acknowledges that FEMA may require Recipient to take all reasonable measures to avoid or minimize harm to such property until FEMA concludes consultation with the SHPO. Recipient also acknowledges that FEMA will require, and Recipient shall comply with, modifications to the project scope of work necessary to implement recommendations to address the project and the property.

f. Acknowledging that, unless FEMA specifically stipulates otherwise, it shall not receive funding for projects when, with intent to avoid the requirements of the PA or the National Historic Preservation Act, Recipient intentionally and significantly adversely affects a historic property, or having the legal power to prevent it, allowed such significant adverse effect to occur.

19. Recipient will assist the awarding agency in assuring compliance with the National Historic Preservation Act of 1966, as amended, 16 U.S.C. 270;

20. Recipient will assist the awarding agency in assuring compliance with the Preservation of Archeological and Historical Preservation Act of 1966, 16 U.S.C. 469a, et seq;

21. Recipient will comply with the requirements of Titles II and III of the Uniform Relocation Assistance and Property Acquisition Policies Act of 1970, 42 U.S.C. 4621-4638, which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally assisted programs;

22. Recipient will assure project consistency with the approved State program developed under the Coastal Zone Management Act of 1972, 16 U.S.C. 1451-1464; and

23. With respect to demolition activities, recipient will:

    a. Create and make available documentation sufficient to demonstrate that the Recipient and its demolition contractor have sufficient manpower and equipment to comply with the obligations as outlined in a grant agreement.
    b. Return the property to its natural state as though no improvements had ever been contained thereon.
    c. Furnish documentation of all qualified personnel, licenses and all equipment necessary to inspect buildings located in Recipient's jurisdiction to detect the presence of asbestos and lead in accordance with requirements of the U.S. Environmental Protection Agency, State of Idaho, and the County Health Agency.
    d. Provide documentation of the inspection results for each structure to

e. indicate:

   i. Safety Hazards Present
   ii. Health Hazards Present
   iii. Hazardous Materials Present

f. Provide supervision over contractors or employees employed by Recipient to remove asbestos and lead from demolished or otherwise applicable structures.
g. Leave the demolished site clean, level and free of debris.
h. Notify the department promptly of any unusual existing condition which hampers the contractors work.
i. Obtain all required permits.
j. Provide addresses and marked maps for each site where water wells and septic tanks are to be closed, along with the number of wells and septic tanks located on each site. Provide documentation of closures.
k. Comply with mandatory standards and policies relating to energy efficiency that are contained in the State energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Public Law 94-163).
l. Comply with all applicable standards, orders, or requirements issued under Section 112 and 306 of the Clean Air Act (42 U.S.C. 1857 (h), Section 508 of the Clean Water Act (33 U.S. 1368), Executive Order 11738, and the U.S. Environmental Protection Agency regulations (40 CFR 15 and 61). This clause shall be added to any subcontracts.
m. Provide documentation of public notices for demolition activities.

24. Recipient will comply with Lead-Based Paint Poison Prevention Act (42 U.S.C.: 4821 et seq.), which prohibits the use of lead-based paint in construction of rehabilitation or residential structures;

25. Recipient will comply with the Energy Policy and Conservation Act (Public Law 94- 163; 42 U.S.C. 6201-6422), and the provisions of the State Energy Conservation Plan adopted pursuant thereto;

26. Recipient will comply with the Laboratory Animal Welfare Act of 1966, 7 U.S.C. 2131-2159, pertaining to the care, handling, and treatment of warm-blooded animals held for research, teaching, or other activities supported by an award of assistance under this agreement;

27. Recipient will comply with the Clean Air Act of 1955, as amended, 42 U.S.C. 7401-7642;

28. Recipient will comply with the Clean Water Act of 1977, as amended, 42 U.S.C. 7419-7626;

29. Recipient will comply with the Endangered Species Act of 1973, 16 U.S.C. 1531-1544;

30. Recipient will comply with environmental standards which may be prescribed pursuant to the National Environmental Policy Act of 1969, 42 U.S.C. 4321- 4347;

31. Recipient will comply with the environmental standards that may be prescribed pursuant to the Safe Drinking Water Act of 1974, 42 U.S.C. 300f-300j, regarding the protection of underground water sources;

32. Recipient will comply with the Wild and Scenic Rivers Act of 1968, 16 U.S.C. 1271-1287, related to protecting components or potential components of the national wild and scenic rivers system;

33. Recipient will comply with the following Executive Orders: EO 11514 (National Environmental Protection Act); EO 11738 (violating facilities); EO 11988 (Floodplain Management); EO 11990 (Wetlands); and EO 12898 (Environmental Justice);

34. Recipient will comply with the Coastal Barrier Resources Act of 1977, 16 U.S.C. 3510;

35. Recipient will comply with the Fish and Wildlife Coordination Act of 1958; 16 U.S.C. 661-666.

State of Idaho Hazard Mitigation Plan

Appendix K. Plan Approval and Adoption

STATE OF IDAHO
OFFICE OF EMERGENCY MANAGEMENT
4040 W. GUARD STREET, BLDG. 600
BOISE, IDAHO 83705-5004

BRAD LITTLE
GOVERNOR

MG MICHAEL J. GARSHAK
ADJUTANT GENERAL

BRAD RICHY
DIRECTOR

State of Idaho Hazard Mitigation Plan

Statement of Adoption

Pursuant to 44 CFR 201.4, for Idaho to continue to be eligible for Federal disaster assistance and hazard mitigation funding, the State of Idaho Office of Emergency Management (IOEM) is required to update the State of Idaho Hazard Mitigation Plan (SHMP) every five years. The SHMP was last updated November 1, 2018.

The SHMP is a comprehensive description of the State's commitment to reduce or eliminate the impacts of events caused by natural and human-caused hazards. It is a federal requirement under the Disaster Mitigation Act of 2000 for the State of Idaho to have a current SHMP to receive federal funds for disaster recovery and hazard mitigation. The SHMP is coordinated and maintained by the IOEM, and is the culmination of input and recommendations from numerous stakeholders from local, state and federal government agencies, private sector organizations, and residents of Idaho.

The authority to adopt the 2023 SHMP is provided in Title 46, Chapter I 0, Idaho Code. In adopting the SHMP, the State of Idaho agrees to comply with all applicable state and federal statutes and regulations, as stipulated in previously documented assurances, and to continue to maintain and update the plan as federal regulations require. The SHMP has improved scientific data and assessments to reflect emerging hazard conditions and risks, new or revised state and federal laws, and programs and capabilities, as well as a more robust mitigation strategy.

Brad Richy Director, Idaho Office of Emergency Management	30 Oct 2023 Date
MG Michael J. Garshak Adjutant General, Idaho Military Division	31 OCT 2023 Date
Brad Little Governor, State of Idaho	Nov 9, 2023 Date

U.S. Department of Homeland Security
FEMA Region 10
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

November 13, 2023

Brad Richy, Director
Idaho Office of Emergency Management
4040 Guard Street, Building 600
Boise, Idaho 83705-5004

Reference: Approval of the Idaho State Mitigation Plan

Dear Director Richy:

The United States Department of Homeland Security, Federal Emergency Management Agency (FEMA) Region 10 Mitigation Division, Risk Analysis Branch has approved the updated Idaho State Mitigation Plan effective November 13, 2023. through November 12, 2028. This plan is approved in accordance with applicable mitigation planning regulations and policy requirements[1].

In addition, this plan met the requirements to address wildfire risks and mitigation measures. It also met the requirements to address all dam risks.

An approved mitigation plan is a condition of receiving certain FEMA non-emergency assistance and mitigation grants from the following programs:

- Public Assistance Categories C-G (PA C-G),
- Fire Management Assistance Grants (FMAG),
- Hazard Mitigation Grant Program (HMGP),
- Hazard Mitigation Grant Program – Post Fire (HMGP – Post Fire),
- Building Resilient Infrastructure and Communities (BRIC),
- Flood Mitigation Assistance (FMA),
- Rehabilitation of High Hazard Potential Dams Program (HHPD).

Approval of a mitigation plan does not guarantee funding under any FEMA program. Please refer to the individual FEMA non-emergency assistance and mitigation grant program policy and/or annual Notice of Funding Opportunity for specific application and eligibility requirements for the FEMA programs listed above.

State mitigation plans must be updated and resubmitted to the FEMA Region 10 Mitigation Division, Risk Analysis Branch for approval. If the plan is not updated by the date indicated on this

[1] Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act), as amended; the National Flood Insurance Act of 1968, as amended; Title 44 Code of Federal Regulations (CFR) Part 201; and the "Water Infrastructure Improvements for the Nation Act," or the "WIIN Act," on December 16, 2016, which amends the National Dam Safety Program Act (Pub. L. 92-367).

FEMA approval letter, the plan is considered lapsed, and FEMA will not obligate funds until the mitigation plan is approved.

If at any time over the plan approval period, FEMA determines that the State is not complying with all applicable federal statutes and regulations in effect during the periods for which it receives funding or is unable to fulfill mitigation commitments, FEMA may take action to correct the noncompliance (44 Code of Federal Regulations §§ 201.3[b][5] and 201.4[c][7]).

The State is responsible for communicating with local and tribal officials, as applicable, who are interested in applying for FEMA assistance through the State. FEMA encourages States to communicate with the appropriate officials regarding mitigation plan status and eligibility requirements. At a minimum of every six months, FEMA will provide to the State written information on mitigation plans, including, but not limited to:

- Local and tribal, as applicable, mitigation plan expiration dates.
- Consequences of not having an approved local or tribal, as applicable, mitigation plan with respect to eligibility for FEMA mitigation grant programs.
- Availability of mitigation planning training and technical assistance.
- Upcoming funding opportunities.

The State is responsible for reviewing and submitting approvable State and Local Mitigation Plans to FEMA. If the State is not submitting approvable mitigation plans, FEMA will provide feedback as well as technical assistance or training to the State and Local governments, as needed.

In addition, FEMA will provide a reminder at least 12 months before the plan expiration date of the consequences of not having an approved mitigation plan, which is required to apply for and receive funding for FEMA non-emergency assistance and mitigation grant programs. To continue to apply for and receive funding from the programs listed on page one, the State must submit a draft of the next plan update before the end of the approval period and allow sufficient time for the review and approval process. This includes any revisions, if needed, and formal adoption by the State following the determination by FEMA that the plan has achieved a status of "Approvable Pending Adoption."

We look forward to working with you to discuss the status of the State Mitigation Program each year over the approval period. If we can be of assistance, please contact Erin Cooper, Regional Mitigation Planning Program Manager, at 202-856-1927, or erin.cooper@fema.dhs.gov with any questions.

Sincerely,

Digitally signed by WILLIE G NUNN
Date: 2023.11.13 15:36:48 -08'00'

Willie G. Nunn
Regional Administrator

cc: Susan Cleverley, Idaho State Hazard Mitigation Officer
Lorrie Pahl, Idaho State Mitigation Planner

Enclosures

State of Idaho Hazard Mitigation Plan

Appendix L. ClimRR Case Study

ClimRR Case Study

In a unique public-private collaboration, AT&T and the Idaho Office of Emergency Management incorporated projected climate data to prepare Idaho's regions for changing hazards.

Climate Risk and Resilience Portal (ClimRR)

In 2022, AT&T, FEMA, and the U.S. Department of Energy's Argonne National Laboratory launched the Climate Risk and Resilience Portal (ClimRR). The site offers **free** dynamically downscaled climate projections, produced using Argonne's supercomputer to process millions of calculations. ClimRR is based on peer-reviewed climate datasets and gives users highly localized projections in a nontechnical format, putting reliable data and forward-looking climate insights into the hands of those who need them most.

The Challenge: States' Hazard Mitigation Plans Must Account for Future Climate Conditions

To comply with FEMA policy that state and local mitigation plans consider climate change impacts,[1] AT&T and the Idaho Office of Emergency Management collaborated to incorporate ClimRR data into the Idaho Hazard Mitigation Plan (HMP). This project included analysis of localized historical and projected climate data (mid- and end-of-century)[2] for temperature, precipitation, and fire weather under two carbon scenarios (RCP4.5 and RCP8.5). The analysis was provided to the Idaho emergency management team as an ArcGIS StoryMap with extensive graphics and bar charts to convey the changing climate. These visual displays offer immediate insights about coming climate challenges and anchor planning and mitigation strategies. To explore the findings of this report in greater detail, visit the website created to portray climate projections in Idaho.

What are Hazard Mitigation Plans?

> A Hazard Mitigation Plan is a report developed by a state, local, tribal, or territorial government that documents the natural hazards (e.g., flooding, wildfires, hurricanes, etc.) that have the potential to threaten their jurisdiction. It outlines the long-term risk reduction strategies, to be implemented by that government, to protect life and property from these hazards. All state and tribal applicants for any FEMA mitigation plan must have a FEMA-approved Hazard Mitigation Plan. In the past, these plans only included historical data and event summaries as a means of predicting future hazards. Given our changing climate, this historical approach to predicting future hazards is no longer sufficient to meet our planning needs.

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1 Hazard Mitigation Planning | FEMA.gov

2 The timeframes that are referenced in this case study are defined as follows: 1) Historical/baseline period: 1995-2004; 2) Mid-century period: 2045-2054; 3) End-of-century period: 2085-2094

Why do Hazard Mitigation Plans matter?

The answer to this is two-fold. First, it is essential that jurisdictions have a plan in place to reduce the impact of future natural hazards and disasters on populations, buildings, and infrastructure. Disasters will continue to occur, but there are validated measures that can reduce their impact. Second, Hazard Mitigation Plans are necessary to receive government funding. "A state must have a mitigation plan to receive certain kinds of non-emergency disaster assistance, including FEMA's Hazard Mitigation Assistance (HMA) programs, Public Assistance funds (non-emergency permanent work), Fire Management Assistance Grants, and Rehabilitation of High-Hazard Potential Dam grants." Read more on this in the Hazard Mitigation Planning for States (fema.gov) fact sheet from FEMA.

How do changing conditions impact Hazard Mitigation Plans?

FEMA released an updated State Mitigation Planning Policy Guide in 2022 that took effect in April 2023. In this update, FEMA specifically details that all states must now plan for climate change and equitable outcomes. (Find this discussion in Section 1.3 of the updated guide.) This means the Hazard Identification and Risk Assessment section of HMPs must now address future climate, population, and land use projections to be approved by FEMA.

The Solution: ClimRR Provides Downscaled Data on Future Climate

The Climate Risk and Resilience Portal (ClimRR) has been made publicly available at no cost by AT&T, Argonne National Laboratory, and FEMA to enable greater climate resilience among local communities. A unique element of the data analysis in ClimRR is how climate scientists have transformed global climate model data to project future local conditions. Whereas many datasets are the result of statistical downscaling, ClimRR data is produced using dynamical downscaling.

Dynamical downscaling is a process that uses a simulated, physical model of our climate, with over 60 unique climate variables progressed in time until the end of the century. Dynamical downscaling explores interactive climate mechanisms and requires millions of computational hours only achievable with a supercomputer. ClimRR's dynamically downscaled data gives the public the most robust understanding of how and where climate is changing at a local level.

ClimRR currently has climate projection maps available for temperatures, heat index, precipitation/drought, wind, and fire weather for the entire continental United States. Argonne expects to add both coastal and inland flood projections, as well as other climate impacts and analytical capabilities, to the tool in the coming months.

In order to demonstrate the meaningful knowledge that can be derived from the ClimRR data, AT&T collaborated with Idaho to integrate an analysis of this forward-looking data into the state's HMP. The resultant HMP was submitted to FEMA on July 28, 2023. Once this plan is accepted, it will become the state's guiding document for mitigation planning for the next five years.

Key Findings: ClimRR Projections for Idaho

- Most of the state is projected to see increases in precipitation under both the more severe (RCP8.5) carbon emissions scenarios and the less severe (RCP4.5) carbon emissions scenarios that have been analyzed. These precipitation increases are projected to occur primarily in the North, North Central, and Southwestern Regions of the state, reaching increases of 10 or more inches under RCP4.5 at end-of-century.[3] And future precipitation will likely come as more intense, but less frequent events.
- Although precipitation is generally increasing for Idaho, the maximum consecutive days with no precipitation is also projected to increase for almost every county.
- Throughout the century, dangerous Fire Weather Index values are projected to spread eastward from Boise across the Snake River Plain, which could jeopardize crop yields and communities. The Fire Weather Index forecasts weather conditions that make fires more likely, but does not account for vegetation or ignition scenarios.

Statistical vs. Dynamical Downscaling: What's the Difference?

For an analogy, imagine you have two friends telling you how much distance you need to stop your car at a fast-approaching stoplight. One friend says they have analyzed every time you have stopped at a stoplight over the past year and they have determined that, on average, you need 100 yards to stop. Your other friend tells you that they inspected the road conditions and the state of your breaks before they got in the car, and at this speed, they estimate you need 200 yards to stop the car. What the first friend might not be accounting for is the fact that your breaks have been getting thin lately, and there is a bit of ice on the road. The first friend is using statistical methods to estimate the distance you need. The second friend is using dynamical methods.

Statistical Downscaling:
Builds mathematical relationships between the climate factors that we've observed historically at local points across a region, and what a global climate model (GCM) says occurred across that broad region. It then looks at what a GCM says will occur across that same region in the future and applies those relationships to project impacts at a local scale. The problem is, though, that we can't be sure these relationships based on the past will necessarily still hold true in the future as the climate and environment changes.

Dynamical Downscaling:
Takes a different approach by simulating the actual physical processes of climate and how they will evolve through time under a changing climate, by running simulations on supercomputers with millions of computational hours.

[3] The timeframes that are referenced in this case study are defined as follows: 1) Historical/baseline period: 1995-2004; 2) Mid-century period: 2045-2054; 3) End-of-century period: 2085-2094

- By the end of the century under the RCP8.5 climate scenario, 20 of Idaho's 44 counties are projected to experience average summer daily high temperatures of 90 degrees or more, with Payette and Canyon reaching averages of 101 degrees.

What Did We Learn?

- Local data is key – Breaking down the data by region was critical for the state.
- More isn't always better – Data must be selected carefully to highlight important findings.
- Review is essential – Our work had to incorporate feedback from local stakeholders.
- Climate projections need to be linked to population impacts – hazards (and solutions) are more urgent when their human impacts are contextualized. ClimRR is uniquely situated to provide this with FEMA's Resilience Analysis and Planning Tool data on resilience challenges.

Meeting Stakeholder Needs: More Congruent Planning Across Idaho

From the beginning of our engagement with the Idaho Office of Emergency Management (IOEM), we could see their concern for protecting communities, and the industries that are vital to Idaho's economy. We wanted to ensure that the data we provided addressed these concerns. This involved multiple conversations where we learned what data is most helpful to IOEM and about historical extreme events throughout the state. Through these conversations, we were able to create a platform that responds to their specific data needs and a case study that speaks to the impact that data can have when it is transformed into local knowledge.

Together with IOEM, we identified two secondary data requests aside from the primary focus on the state's HMP that made the data more actionable for them. First, IOEM was interested in having more localized data analyses that were divided into the six IOEM regions. This would aid in the shift from the disjointed development of local plans to a more unified regional approach to local plan development. Second, as an extension of the first point, the team wanted to ensure that local plans will align not only with one another but also with the state plan. This second point is also a requirement from FEMA. In response to these needs, we expanded the scope of the project beyond the state-wide analysis of climate projections. The result of the expanded project scope was a web tool that aims to provide IOEM regions and local jurisdictions with a tailored experience to navigate not only the ClimRR data but also the full suite of social metrics used to develop FEMA's Community Resilience Challenges Index. By having a single resource for state, regional, and local stakeholders to reference when developing their HMPs, we can decrease the burden placed on local jurisdictions and promote greater alignment across the state. Some examples of the visuals available in this web tool are shown below.

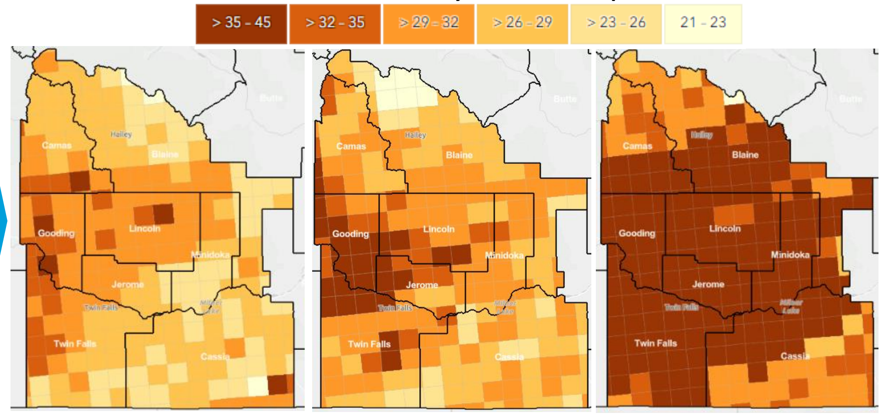
Comparative Visuals to Support Analysis and Planning[4]

[4] The timeframes that are referenced in this case study are defined as follows: 1) Historical/baseline period: 1995-2004; 2) Mid-century period: 2045-2054; 3) End-of-century period: 2085-2094

Max Consecutive Days without Precipitation (Potential Drought Indicator) in IOEM's Central Region under RCP4.5

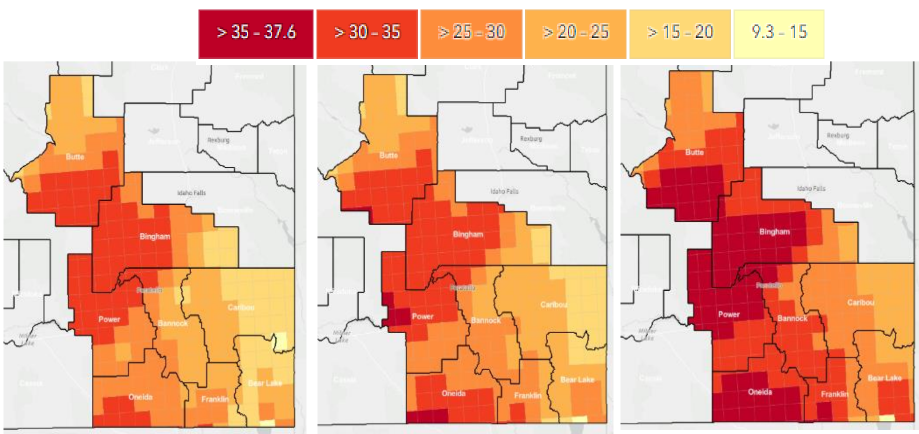
Left to Right: Historical, Mid-Century, and End-of-Century Models

Max Consecutive Days with no Precipitation



What it could mean: Idaho's Central Region economically relies on its agricultural industry. Seeing an increase in the maximum consecutive days with no precipitation should prompt consideration of should prompt consideration of, for example, drought prevention measures as well as investment in water efficiency, storage, and conveyance technologies.

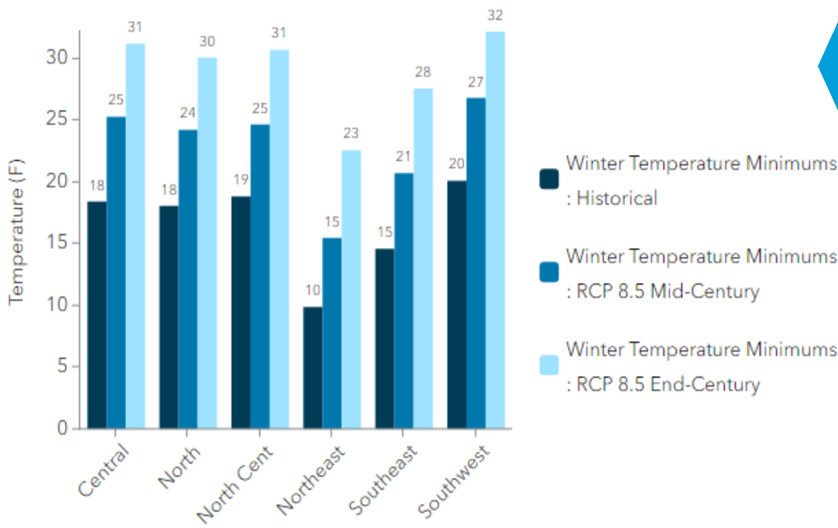
Summer Fire Weather Index



Increased Fire Weather Danger in the Southeast Region under RCP8.5

Left to Right: Historical, Mid-Century, and End-of-Century Models

What it could mean: This projected increase in fire danger due to climate conditions at mid-century and end-of-century has the potential to threaten communities as well as crop yields in Idaho's most agriculturally productive regions, including the Southeast. Some ways to combat this threat across the Snake River Plain may include enhanced vegetation management and ignition prevention measures throughout the summer and autumn.



Regional Winter Average Daily Temperature Minimums: Snowpack and Avalanche Concerns

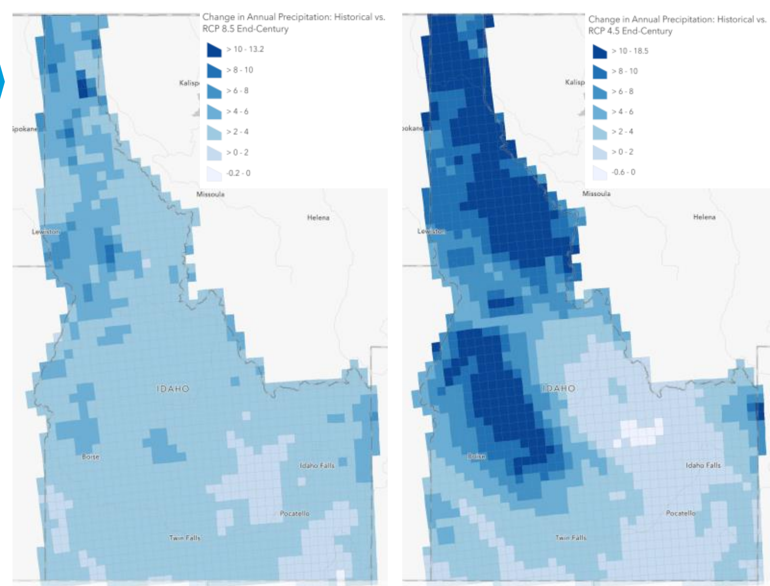
Median Values by IOEM Region

What it could mean:
Under scenario RCP8.5, increasing winter average daily minimum temperatures that barely reach freezing in four of the six regions by the end of the century could represent a shift in the way Idaho is able to rely on snowpack in the future.

Change in Annual Precipitation from Historical to End-of-Century Timeframes

Left: RCP8.5 Scenario
Right: RCP4.5 Scenario

What it could mean:
Under scenario RCP4.5, Idaho's panhandle and the Boise Mountains are projected to see increases in annual precipitation of more than 10 inches by the end of the century. The scale of this increase merits a reexamination of reservoir sizing and other flood prevention measures in the impacted river systems.



Impact

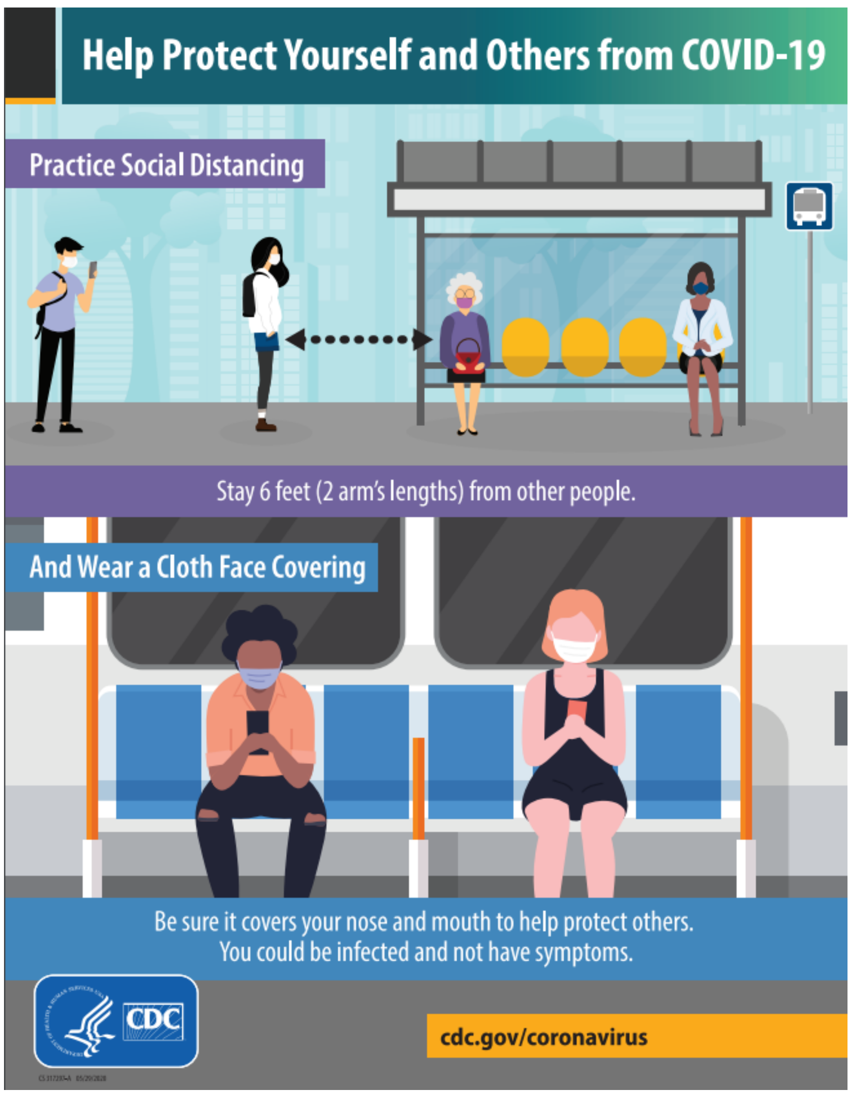
The new requirements from FEMA for HMPs put all states in a position to need the forward-looking data featured in ClimRR. Before ClimRR, many states did not have access to meaningful assessments of future climate conditions so they included high-level, qualitative summaries of how our changing climate will impact hazards in their area. With the free, easy-to-use data available in ClimRR, states, tribes, and local communities can now access the granular data necessary to plan for a different climate future and meet requirements that are tied to grant funding. Furthermore, forward-looking climate projections are necessary to help design our built environment for the future. The science-based projections available in ClimRR can help us understand what our infrastructure will need to endure. In the example above with the increases in precipitation, this may include reconfiguring flood management systems, such as dams, reservoirs, levees, and other similar systems, as well as considering advanced irrigation methods that use less water. Regardless of whether a stakeholder needs future climate projections to develop a hazard mitigation plan that meets new requirements or design an infrastructure project that needs to last for fifty years or more, ClimRR provides robust, reliable, and free localized data. The engagement work that AT&T is doing with ClimRR can help equip stakeholders with meaningful and actionable knowledge about what climate projections look like in their local communities. In turn, stakeholders can take ownership of these projections and decide how they will rise to meet the needs of tomorrow.

Appendix M. June 24, 2020 Idaho EOC Situation Report

Idaho Emergency Operations Center
Situation Report

ID-01-2020 Coronavirus

Date: June 24, 2020   Time: 1100
IDEOC Activation Level 3
*IDEOC Sitreps are published weekly on Wednesdays



Contact
Idaho Emergency Operations Center
Report #30

Incident Overview

IDEOC Sitreps are published weekly on Wednesdays.

- The IDEOC activated on 3/3/2020 for ID-01-2020 Coronavirus.
- The Governor issued a state declaration and the President declared a national emergency for COVID-19 on 3/13/2020.
- *Four tribes and 28 counties are under current emergency orders or declarations for COVID-19.*
- The Governor amended the COVID-19 Emergency Declaration Stay-at-Home order (3/25/20) extending it through 04/30/2020.
- On 04/24/2020, Governor Little announced a data-driven, four stage approach to opening up Idaho's economy.
- Idaho began Stage 1 of Idaho Rebounds on 5/1/20, Stage 2 on 5/16/20, Stage 3 on 5/30/20, and Stage 4 on 6/13.
- *Idaho reports a total of 4,402 COVID-19 cases and 89 deaths. Community spread has been detected in 26 counties.*

In the past week

- IDEOC continued to work requesting supplies, such as PPE, for local jurisdictions and public health districts and planning for potential surges in healthcare facilities. *Ada County returned to Stage 3 of Idaho Rebounds.*

In the next week

- The IDEOC will continue processing requests for assistance and ensuring delivery of supplies when necessary.

Lifeline Status:

Event Needs and Status:

National Numbers[1]		Idaho Numbers[2]	
Confirmed 2019-nCov Infections	*2,348,956 up from 2,137,604*	Confirmed 2019-nCov Infections	*4,402 up from 3,540*
Total Deaths	*121,279 up from 116,964*	Total Deaths	*89 up from 88*
Total Tested in the U.S.	*28,065,065 up from 24,449,307*	Counties with Confirmed Cases	35
		Statewide Laboratory Tests Completed	*77,376 up from 66,441*

[1]Current national numbers as of *06/24/20 @ 0833 hours* (https://coronavirus.jhu.edu/map.html)
[2] Idaho numbers current as of *06/23/20 @ 1700 hours* (https://coronavirus.idaho.gov/). Please note that media might report increased numbers in advance of official postings.

Safety and Security	**Safety and Security**		
Community Services	GR	*Idaho Rebounds*	*On 6/22, Central District Health (CDH) announced that Ada County will be moving back into Stage 3 of reopening due to a spike in COVID-19 cases. Bars and nightclubs will be closed, gatherings of more than 50 people are prohibited, visits to long-term care and congregate facilities are prohibited, large venues will be closed, and visitors to Idaho from another country or an area outside Idaho with substantial community spread or case rates higher than Idaho are encouraged to self-quarantine for 14 days.* *The order takes effect on 6/24; there is no timeline for returning to Stage 4.* *Some business owners, managers, and employees expressed concern about customers and visitors not wearing face coverings or adhering to social distancing recommendations. Patrons are encouraged to follow these public health guidelines in order to keep workers safe and businesses open.*

Food, Water, Shelter	**Food, Water, Shelter**		
	GR		Nothing new to report.

Health and Medical	**Health and Medical**		
Public Health	YW	*Cases*	*The majority of new cases of COVID-19 reported in many states, including Idaho, are in younger adults, aged 20-40. Data suggests young people are more likely to hold front-line service jobs that put them at risk and are more likely to engage in social activities in close quarters, such as visiting bars and nightclubs. Additionally, younger adults may be more likely to ignore some of the social distancing practices advised by public health officials.*
Medical Care	GR	*Telehealth*	*On 6/22, Governor Little announced an Executive Order aimed at permanently eliminating healthcare rules temporarily waived earlier this year in response to COVID-19. Waiving many of these rules will make it easier for Idahoans to access healthcare services, such as through telehealth. This move makes healthcare more accessible and affordable to residents across Idaho.*

Energy (Power & Fuel)

	GR		Nothing new to report.

Communications

	GR		Nothing new to report.

Transportation

	GR	*Trucking*	*The Federal Motor Carrier Safety Administration extended a previous notice relieving specified Federal Motor Carrier Safety Regulations (FMCSR) for commercial license permit holders, commercial driver license holders, non-CDL drivers, and motor carriers. Due to the closure of many state driver licensing agencies nationwide, social distancing requirements, and medical providers canceling scheduled physical examinations to dedicate resources to COVID-19, drivers are experiencing difficulties complying with the FMCSR. The extension, applicable through September 30, allows for the continued transportation of essential supplies, equipment, and persons.*

Hazardous Waste

	GR		Nothing new to report.

Weather Outlook

It will be hot in the lower valley locations across Idaho today, and the atmosphere will be quite unstable in the afternoon causing scattered showers and thunderstorms to develop this afternoon and evening in many areas of the state. Some of these thunderstorms will be capable of producing very heavy rain and very strong winds. Peak wind gusts with the stronger storms will be around 50 mph with a slight chance that some wind gusts could briefly reach 60 mph. Outdoor COVID-19 operations and screening tents may be impacted by these strong winds, and lightning associated with thunderstorm activity is always dangerous for outdoor operations.

The atmosphere is expected to be more stable Thursday through Saturday with typical warm and dry weather for this time of year.

Another storm system and associated cold front will move into Idaho on Sunday bringing another round of showers and thunderstorms with gusty winds to the state. Expect much cooler temperatures behind the cold front with scattered rain showers and isolated thunderstorms continuing early next week on Monday, June 29th and Tuesday, June 30th.

Helpful Links/Publications

- Idaho Coronavirus Information https://coronavirus.idaho.gov/
- Idaho economy opening guidelines https://rebound.idaho.gov/
- Whitehouse Guidelines for Opening America https://www.whitehouse.gov/wp-content/uploads/2020/04/Guidelines-for-Opening-Up-America-Again.pdf
- Idaho COVID-19 Guide https://healthandwelfare.idaho.gov/Portals/0/Medical/Mental%20Health/COVID-19InteractiveConsumerGuide.pdf
- Vendors and Donors can find resources for how to assist with the COVID-19 effort in Idaho https://coronavirus.idaho.gov/how-to-help/
- Idaho Department of Labor https://www.labor.idaho.gov/dnn/COVID-19,
- Idaho Foodbank www.idahofoodbank.org
- Help dispel prevalent rumors related to COVID-19
  https://twitter.com/IdahoOEM/status/1240726877603422208 or
  https://www.facebook.com/IdahoOEM/posts/3358457010837014?__tn__=-R
  https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/share-facts.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fabout%2Fshare-facts.html
  https://www.fema.gov/coronavirus-rumor-control
- Individuals experiencing high levels of anxiety, https://store.samhsa.gov/
- CDC guidance Discontinuation of Home Isolation for Persons with COVID-19.
- Borrowers with USDA single-family housing Direct and Guaranteed Loans relief opportunities
- FSA Farm Loan, Disaster, Conservation, and Safety Net Programs
- OSHA and CDC Interim Guidance to Protect Workers in Meatpacking and Processing Industries
- Best Practices for Retail Food Stores, Restaurants, and Food Pick-Up/Delivery Services During the COVID-19 Pandemic
- National Restaurant Association COVID-19 Reopening Guidance
- CARES Act Amended: Agricultural Operations Now Eligible for SBA Loans Up to $2 million
- Coronavirus (COVID-19) Pandemic: Addressing PPE Needs in Non-Healthcare Setting
- https://rebound.idaho.gov/idaho-rebound-cash-grants-for-small-businesses/
- Coping with Stress During Infectious Disease Outbreaks, Spanish
- How to Cope with Sheltering in Place, Spanish

- Taking Care of Your Behavioral Health: Tips for Social Distancing, Quarantine, and Isolation During an Infectious Disease Outbreak, Spanish
- Talking with Children: Tips for Caregivers, Parents, and Teachers During Infectious Disease Outbreaks, Spanish
- Reopening Guidance for Communities, Schools, Workplaces, and Events
- Idaho Rebound Cash Grants for Small Businesses
- Resources for Long-Term Care (coronavirus.idaho.gov/ltc)
- Idaho Rebounds: Business-Specific Protocols for Opening
- Idaho Housing and Finance Association

Public Health District Call Center Information

PHD1 Level 2 activation
Call center active 0800-1700, Monday-Friday
Call center number 1-877-415-5225

PHD2 – Activated, M-F 8am-5pm,
Ops as needed Sat –Sun & on call 24/7
Call center number 866-736-6632
7 AM- 7 PM M-F 8am-5pm Sat & Sun

PHD3 Level 1 activation
Call center active 0800-1700, Monday-Friday
Call center number 208-455-5411

PHD4 Level 1 activation
Call center active 0830-1630 Monday - Friday, 1000-1400 Saturday
Call Center Hotline 208-321-2222

PHD5 Level 2 activation
Call center active 0830-1730, Monday-Friday
Hotline Number: 208-737-1138
Spanish hotline number: 208-737-5965

PHD6 Level 2 activation
Call center has been deactivated. Staff will answer calls Monday-Friday, 0900-1630 at 208-234-5875

PHD7 Level 2 activation (MWF)
Hotline number: 208-522-0310 or 855-533-3160

Public Information Line:
211 Idaho Careline, call 211

Idaho Department of Health and Welfare
Public Information: (208) 334-066