2008

TETON COUNTY MULTI-JURISDICTION ALL HAZARD MITIGATION PLAN

DECEMBER 9, 2008

Preface

The Teton County All Hazard Mitigation Plan was developed in late fall of 2006 through the spring of 2008. It contains information relative to the hazards and vulnerabilities facing Teton County. The jurisdictions participating in this Plan include Teton County and the cities of Victor, Driggs, and Tetonia.

This Plan is designed to interface with the State of Idaho Multi-Hazard Mitigation Plan published in November 2007.

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TETON COUNTY IDAHO
MULTI-JURISDICTIONAL

ALL HAZARD MITIGATION PLAN

PROMULGATION OF ADOPTION

Be it known that the Teton County Idaho Board of County Commissioners do hereby approve the Adoption of the Teton County Idaho Multi-Jurisdictional All Hazard Mitigation Plan and direct its implementation through the Teton All Hazard Mitigation Planning Committee.

Be it also known that the Board of County Commissioners hereby directs the Coordinator of Emergency Services, to continue to lead the implementation of this Plan as the Teton County All Hazard Mitigation Committee Chair.

This Plan has been developed in the interest of providing all hazard mitigation protection to populations living in Teton County and the incorporated Cities within its boundary. Through adoption of this Plan, all county and city agencies are requested to develop directives, Standard Operating Procedures, checklists or other supplemental guidance to ensure its maximum effectiveness.

Teton County Commissioner — Date: 12-11-08

Teton County Commissioner — Date: 12-11-08

Teton County Commissioner — Date: 12-11-08

BOARD OF COUNTY COMMISSIONERS TETON COUNTY IDAHO

Attest:

Teton County Clerk — Date: 12-11-08

Endorsed:
Greg Adams, Emergency Management Coordinator — Date: 12-11-08

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U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021-9796

FEMA

December 18, 2008

Honorable Larry Young
Chair, Teton County Board of Commissioners
89 North Main
Driggs, Idaho 83422

Dear Chair Young:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has approved the ***Teton County Multi-Jurisdiction All Hazard Mitigation Plan*** as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants and Flood Mitigation Assistance project grants through December 18, 2013:

Teton County

The plan's approval provides the above jurisdictions eligibility to apply for hazard mitigation projects through your State. All requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs.

Over the next five years, we encourage your communities to follow the plan's schedule for monitoring and updating the plan, and to develop further mitigation actions. The plan must be reviewed, revised as appropriate, and resubmitted for approval within five years in order to continue project grant eligibility.

If you have questions regarding your plan's approval or FEMA's mitigation grant programs, please contact our State counterpart, Idaho Bureau of Homeland Security, which coordinates and administers these efforts for local entities.

Sincerely,

Mark Carey, Director
Mitigation Division

Enclosure

cc: David Jackson, Idaho Bureau of Homeland Security

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Notice of Endorsement and Participation In the Teton County Multi-Jurisdiction All Hazard Mitigation Plan

I, Louis B. Christensen, Mayor for the City of Driggs do hereby endorse and agree to participate in the implementation of the Teton County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Driggs.

DATED this 20 day of January, 2009

CITY OF DRIGGS

By: Louis B Christensen

Mayor

Received by the City Clerk this 20 day of January 2009

Signature:
Clerk Donya Adams

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Notice of Endorsement and Participation In the Teton County Multi-Jurisdiction All Hazard Mitigation Plan

I, Don Thompson, Mayor for the City of Victor do hereby endorse and agree to participate in the implementation of the Teton County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Victor.

DATED this 28th day of January, 2009

CITY OF VICTOR

By: Don K Thompson

Mayor

Received by the City Clerk this 28th day of January 2009

Signature:
Clerk Craig Thomas

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Notice of Endorsement and Participation In the Teton County Multi-Jurisdiction All Hazard Mitigation Plan

I, Rex Jardine, Mayor for the City of Tetonia do hereby endorse and agree to participate in the implementation of the Teton County Multi-Jurisdiction All Hazard Mitigation Plan as it applies to the City of Tetonia.

DATED this 11 day of February, 2009

CITY OF TETONIA

By: Rex Jardine

Mayor

Received by the City Clerk this 9 day of Feb 2009

Signature: Clerk Lyndsey A Anderson

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Section 1 Planning Process

Introduction

Teton County Idaho and the incorporated Cities that lie within the County boundaries are vulnerable to natural, technological, and man-made hazards that have the possibility of causing serious threats to the health, welfare, and security of its residents. The cost of response to and recovery from the potential disasters, in terms of potential loss of life or property, can be lessened when attention is turned to mitigating their impacts and effects before they occur or re-occur.

This All Hazard Mitigation Plan seeks to identify the County"s and Cities" hazards and understand their impact on vulnerable populations and infrastructure. With that understanding the Plan sets forth solutions that if implemented, have the potential to significantly reduce threat to life and property. The Plan is based on the premise that hazard mitigation works! With increased attention to managing natural hazards, communities can reduce the threats to citizens and through proper land use and emergency planning to avoid creating new problems in the future. Many solutions can be implemented at minimal cost and social impact.

This is not an emergency response or management plan. Certainly, the Plan can be used to identify weaknesses and refocus emergency response planning. Enhanced emergency response planning is an important mitigation strategy. However, the focus of this Plan is to support better decision making directed toward avoidance of future risk, and the implementation of activities or projects that will eliminate or reduce the risk for those that may already have exposure to a natural hazard threat.

Plan Organization

- Section 1 of the Plan provides a general overview of the process, the scope, purpose, and overall goals of the plan.
- Section 2 of the Plan gives a general background or description of the County"s demographic, economic, cultural, and physiographic characteristics.
- Section 3 summarizes the public involvement component of the Plan.
- Section 4, the Risk Assessment section, provides a brief profile for each natural hazard. All hazards identified as affecting the County will be analyzed at the County and incorporated City level and then summarized.
- Section 5 provides a review of the County Land Use Ordinances and Comprehensive Plan and provides suggestions for integration between the AHMP and the Land Use Planning efforts in the County.
- Section 6 presents Mitigation Goals and Objectives along with selected Mitigation Alternatives with supporting project descriptions and a "roadmap" to implementation for the highest priority projects.

Plan Use

The Plan should be used to help County and City officials plan, design, and implement programs and projects that will help reduce the jurisdictions vulnerability to natural, technological, and man-made hazards. The Plan should also be used to facilitate inter-jurisdiction coordination and collaboration related to all hazard mitigation planning and implementation within the County and at the Regional level. Lastly, the Plan should be used to develop or provide guidance for local emergency response planning. If adopted, this Plan will achieve compliance with the Disaster Mitigation Act of 2000.

Hazard Mitigation

Hazard mitigation is defined as any cost-effective action(s) that has the effect of reducing, limiting, or preventing vulnerability of people, culture, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures which can be used to eliminate or minimize the risk to life, culture and property, fall into three categories:

1) Keep the hazard away from people, property, and structures.
2) Keep people, property, or structures away from the hazard.
3) Reduce the impact of the hazard on victims, i.e., insurance.

Hazard mitigation measures must be practical, cost effective, and culturally, environmentally, and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the anticipated damages.

The primary focus of hazard mitigation planning must be at the point at which capital investment and land use decisions are made, based on vulnerability. Capital investments, whether for homes, roads, public utilities, pipelines, power plants, or public works, determine to a large extent the nature and degree of hazard vulnerability of a community. Once a capital facility is in place, very few opportunities will present themselves over the useful life of the facility to correct any errors in location or construction with respect to the hazard vulnerability. It is for this reason that zoning and other ordinances, which manage development in high vulnerability areas, and building codes, which ensure that new buildings are built to withstand the damaging forces of the hazards, are often the most useful tool in mitigation that a jurisdiction can implement.

Since the priority to implement mitigation activities is usually very low in comparison to the perceived threat, some important mitigation measures take time to implement. Mitigation success can be achieved, however, if accurate information is portrayed through complete hazard identification and impact studies, followed by effective mitigation management.

The Federal Emergency Management Agency has identified hazards to be analyzed by each jurisdiction, completing an all hazard mitigation plan as part of the process. The hazards analyzed include the following:

<u>Natural Hazards</u>

Weather: Drought
Extreme Heat
Extreme Cold
Severe Winter Storm

Lightning
Hail
Tornado
Straight Line Wind
Flooding: Flash Flood
River Flooding
Dam Failure
Geologic: Earthquake
Landslide/Mudslide
Other: Wildfire
Biological
Pandemic/Epidemic
Bird Flu
SARs
West Nile

Technological (Manmade) Hazards

Structural Fire
Nuclear Event
Hazardous Material Event
Riot/Demonstration/Civil Disorder
Terrorism

Purpose

The purposes of this plan are:

- Fulfill Federal and local mitigation planning responsibilities;
- Promote pre- and post-disaster mitigation measures with short/long range strategies to minimize suffering, loss of life, impact on traditional culture, and damage to property and the environment;
- Eliminate or minimize conditions that would have an undesirable impact on the people, culture, economy, environment, and well being of the County at large.
- Enhance elected officials", departments", and the public"s awareness of the threats to the community"s way of life, and of what can be done to prevent or reduce the vulnerability and risk.

Scope

This plan covers the areas within Teton County Idaho including the incorporated cities of Victor, Driggs, and Tetonia.

Mission Statement

The Teton County All Hazards Mitigation Plan sets forth public policy designed to protect citizens, critical facilities, infrastructure, private and public property, the local economy, and the environment from risks associated with natural and manmade hazards.

Goals

AHMP Goals describe the broad direction that Teton County and Incorporated City agencies, organizations, and citizens will take to select mitigating projects which are designed specifically to address risks posed by natural and manmade hazards. The goals are stepping-stones between the mission statement and the specific objectives developed for the individual mitigation projects.

Severe Weather

- Teton County will develop methods to mitigate the losses due to severe weather in the County.

Flooding

- Teton County will continue to participate in the National Flood Insurance Program and develop actions that will reduce the damage to County infrastructure due to flash and stream flooding.

Geological

- Teton County will reduce potential damage to County infrastructure and structures through implementation of earthquake mitigation techniques.
- Teton County will reduce the potential damage to property from Landslides by adopting codes and standards for construction in landslide prone areas.

Wildfire

- Teton County will reduce the losses caused by wildfire by continuing the Wildland Urban Interface Mitigation Program.

Biological

- Teton County will seek to reduce the exposure of humans and animals to the West Nile Virus.

Structural Fire

- Teton County will seek to reduce losses from Structure fires.

Nuclear Event

- Teton County will examine the risks posed to the County from Nuclear Facilities and Improvised Nuclear Devices.

Hazardous Material Event

- Teton County will seek to identify hazardous material flow through the County.

Riot/Demonstration/Civil Disorder

- Teton County will develop methods to identify and report Civil Disobedience activities.

Terrorism

- Teton County will identify measure to protect critical County infrastructure and facilities from potential terror incidents.

Participating Jurisdiction Goals

City of Driggs

Severe Weather

- The City of Driggs will develop methods to protect the life safety of its citizens from harm due to severe weather events.

Flooding

- The City of Driggs will develop actions that will reduce the damage to City property and infrastructure due to flooding.

Geological

- The City of Driggs will reduce potential damage to City infrastructure and structures through implementation of earthquake mitigation techniques.

Structural Fire

- The City of Driggs will seek to reduce losses from Structure fires.

City of Tetonia

Severe Weather

- The City of Tetonia will develop methods to protect the life safety of its citizens from harm due to severe weather events.

Flooding

- The City of Tetonia will develop actions that will reduce the damage to City property and infrastructure due to flooding.

Geological

- The City of Tetonia will reduce potential damage to City infrastructure and structures through implementation of earthquake mitigation techniques.

Structural Fire

- The City of Tetonia will seek to reduce losses from Structure fires.

City of Victor

Severe Weather

- The City of Victor will develop methods to protect the life safety of its citizens from harm due to severe weather events.

Flooding

- The City of Victor will continue to participate in the NPIF and protect City owned and private property from the effects of Flooding.

Geological

- The City of Victor will reduce potential damage to City infrastructure and structures through implementation of earthquake mitigation techniques.

Structural Fire

- The City of Victor will seek to reduce losses from Structure fires.

Teton All Hazard Mitigation Planning Committee

The Teton All Hazard Mitigation Planning Committee was formed on November 2, 2006. Committee membership is comprised of representatives from the Teton County Local Emergency Planning Committee, Teton County Department heads, representatives from the incorporated cities, representatives from the major utility providers, interested media, and members of the public. Minutes of the committee meetings are provided in Attachment 1.

The Committee Roster is provided below:

All Hazard Planning Committee Members

Agency	Representative	Position	E-mail
Teton County Emergency Management	Greg Adams	Coordinator	tetonemc@silverstar.com
Teton County Sheriff	Kim Cooke	Sheriff	
Idaho State Police	Terry Anderson	HAZMAT Specialist	terry.anderson@isp.idaho.gov
East Idaho Health	Mike Dronen	Env. Health	mdronen@silverstar.com
Eastern Idaho Health	Tamara Cox	HPPS Coordinator	tcox@phd7.idaho.gov
Teton Valley Ambulance	Ken Schwab	Coordinator	kschwab@tetonvalleyhospital.com
Teton Fire District	Mike Hoyle	Fire Chief	firechief@tetontel.com
KCHQ	Dave Plourde	Media	dave@q102fm.net
TCRB	Ralph Egbert	R&B Supervisor	
Teton Road and Bridge	Clay Smith	Foreman	
Teton Valley Hospital	*Susan Kunz		skunz@tetonvalleyhospital.com
Teton Fire	Bret Campbell	Assistant Chief	firemarsh@tetontel.com
Teton County SAR	Kelly Circle	Commander	circle@tetontel.com
City of Victor	Craig Sherman	Administrator	victcity@tetontel.com
Teton County Sheriff	Valee Wells	Supervisor	vwells@co.teton.id.us
BHS Regional Exercise Coordinator	*Val Judy	NE Area	vjudy@co.Teton.id.us
	(*indicates retired since start of plan)		
LEPC/TVH	Bonnie Burlage	RN	bburlage@tvhcare.org
City of Driggs	Louis B Christensen	Mayor	
Teton Fire	Bret Campbell	Assistant Chief	firemarsh@tetontel.com

Teton County Search & Rescue	Kelly Circle	Commander	circle@tetontel.com
Teton Valley Hospital	Susan Kunz	CEO	skunz@tetonvalleyhospital.com
Teton Valley Hospital	Floyd Bounds	CEO	fbounds@tvhcare.org
City of Driggs	Jared D Gunderson	Public Works	pwdriggs@pdt.net
Teton County	Bruce Nye	Building Official	bnye@co.teton.us
Teton County	Tom Davis	Building Inspector	tdavis@co.teton.us
City of Tetonia	Lyndsy Anderson	Clerk	tetoniagov@tetontel.com
City of Victor	Dan Thompson	Mayor	victorcity@tetontel.com
Teton Valley Alliance	Barbara Boyle	Asst. Coordinator TVA	barbboyle@gmail.com
Teton Valley Alliance	Nolan Boyle	Executive Coordinator TVA	nolanboyle@gmail.com
Teton School District	Gordon Wooley	Superintendent	gowool@d401.k12.id.us
Teton County	Louis Simonet	Engineer	lsimonet@co.teton.id.us
Teton Valley News	Garrett Woodward	Reporter	reporter@tetonvalleynews.net
Teton County	Larry Young	Commissioner	lyoung@co.teton.id.us
Teton County	Alice Stevenson	Commissioner	astevenson@co.teton.id.us
Teton County	Mark Trupp	Commissioner	mtrupp@co.teton.id.us
Teton County	Phillip Fox	Search and Rescue	pfox@silverstar.com

Planning Process

One of the key, necessary steps of this Planning Process was the organization of a Teton County Hazard Mitigation Committee. The Committee was established under the direction of the Teton County Emergency Management Coordinator. Figure 1.1 illustrates the Fifteen Step Planning Process that was used in the development of the Teton AHMP.

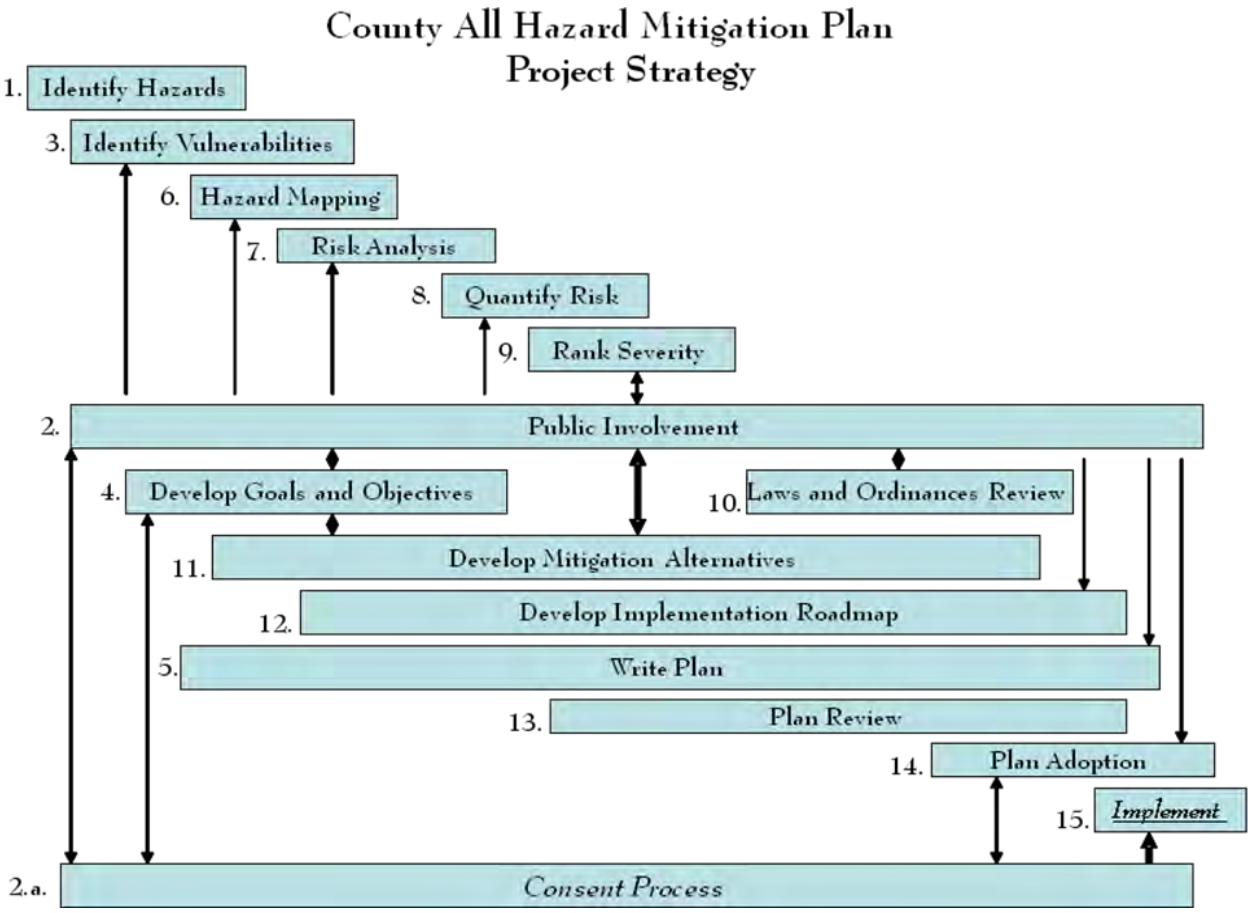

Figure 1.1 AHMP Planning Process

Step 1 Identify Hazards

Teton County hazards were identified and their frequency of occurrence evaluated using a number of resources including:

- Hazard planning documents developed by State, Federal and private agencies,
- National Weather Service weather data from the past 50 years,
- Data from the United States Geological Survey (USGS) and the Idaho State Geological Survey (ISGS), and
- 100 year historical analysis of hazardous event occurrences published local newspapers (archived on microfilm at Idaho State University).

Step 2 Public Involvement

A community survey was mailed to 200 residents of Teton County. A copy of the Survey and results is located in Attachment 2 and summarized in Section 3. Additionally the members of the committee were requested to provide, through a short worksheet instrument, their opinions regarding the risk posed to the County as private citizens. This was done at the first AHMP Committee meeting.

Additional Public Involvement has taken place as the Plan is reviewed. A local mitigation workshop has taken place. Those invited included all members of the AHMP Committee as well as members of City Councils and other appropriate City Agency Heads. The meeting was held as an open public meeting and announced in the local news media and posted as per open meeting laws.

Step 3 Identify Vulnerabilities

The Committee examined the effects of the raw hazard list on the County by identifying vulnerable populations, infrastructure, critical services, facility, and the environment. Vulnerabilities will be geographically identified using Geographical Information System (GIS) technology and then linked to a GIS data base, describing the vulnerable target including potential damage and estimates of losses.

Step 4 Develop Goals and Objectives

FEMA requires that the planning effort be centered on community supported hazard reduction goals, and that those goals be implemented and evaluated based on measurable objectives. Mitigation projects are then assessed against the established goals and objectives to ensure that the selected projects reduce risk as desired

Step 5 Write Plan

The Plan outline meets and in some instances exceeds, the requirements set forth by FEMA in the FEMA PDM Criteria Crosswalk. Plan drafts were presented in hard and electronic copy as requested by the Committee. The finished Plan includes information on Plan adoption, including a promulgation page for the County and an agreement to endorse and participate for each incorporated City.

Step 6 Hazard Mapping

As described in Steps 1 and 4 Hazard Maps were extremely important in illustrating hazard and vulnerability locations. In addition, information used to conduct the risk assessment and the loss estimates were linked electronically to the maps using GIS technology. The electronic versions of these maps were provided to the Committee and other reviewing agencies.

Step 7 Hazard Analyses

A risk analysis was conducted using the information gathered in steps 1-4 and 6. For each hazard, two kinds of information are required in order to assess risk; information concerning the potential amount of damage a hazard event can cause (hazard magnitude), and that pertaining to how frequently such events are likely to occur (hazard frequency). To the extent that such data can be obtained quantitatively, risk may then be determined as the product of the hazard‟s magnitude and its frequency. In practice, precise quantitative data of both kinds is often difficult or impossible to obtain.

Frequency of occurrence for a given hazard may be estimated using historical records. The value of frequency estimates obtained in this way is subject to the existence of such records, their availability, and their accuracy. Even with good historical records, however, projections of future frequency may not be valid because of changing conditions. Long- and short-term climate cycles (among other factors) affect weather events, economic conditions and technical advances affect man-made hazards, land use and the passage of time affect geological hazards, etc. For this reason, scientific projections, when available, are also used to modify, enhance or replace those made from historical data. For any given location, however, historical records are often scarce and/or unreliable, and scientific projections methods either do not exist or require data that has not been, or cannot be gathered. Thus, a third source of frequency data is utilized in this Plan; the subjective judgments of the location"s inhabitants. While semi-quantitative at best, and subject to biases, data of this sort may well be as reliable as any other. It reflects, in any event, the perceived needs of those for whom the planning is being done. Frequency projection data from all three sources was used, as appropriate in this plan. Because all are subject to considerable uncertainty, the composite data was examined and assigned a relative level based on the criteria shown in Table 1.1 Frequency Level Criteria.

	Frequency
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Table 1.1 Frequency Level Criteria

Repetitive Loss designations are used to eliminate or reduce the damage to property and the disruption of life caused by repeated damage, such as flooding, of the same properties. The criteria to determine repetitive loss includes the following:

- Four or more losses of more than $1,000 each in a 5 year period; or
- Two losses within a 10-year period that, in the aggregate, equal or exceed the current value of the ensured property; or
- Three or more paid losses that, in the aggregate, equal or exceed the current value of the ensured property.

Hazard magnitude estimates, too, must rely on data gathered from a number of sources, none of which may be precise. Historical data, scientific projections, and inhabitants" subjective judgments are, again, used for this purpose. Magnitude estimates are generally based on the severity of potential impact on three critical vulnerabilities: human life, property, and the environment. FEMA has, however, recognized that there are other issues tied to community support of risk mitigation including social, cultural, and economical issues. Composite data from all sources including the vulnerabilities identified in Section 4.6 have been utilized to assign a quantitative magnitude for each hazard for the County and for each local jurisdiction, based on the criteria shown in Table 1.2.

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Table 1.2 Hazard Magnitude Criteria

A hazard‟s total magnitude is the sum of the values for each of the six categories. Thus, a hazard event that is expected to require Reconstruction Assistance from the State government (Value = 4), affect an area consisting of Multiple Sections (Value = 4), cause Little to No Injury and No Deaths (Value = 1), require Little Sheltering (Shelter = 2) or cause Some Economic Loss (Value = 2), and have a Warning Lead Time of Hours (Value = 4), would be assigned a magnitude value of 15 (4+4+1+2+2+4=17).

Risk assessment methods included the use of FEMA‟s HAZUS Risk Assessment software. Risk assessment activities also included the mapping of hazard occurrences, at-risk structures including critical facilities, and repetitive flood loss structures, land use, and populations.

Step 8 Quantify Risk

Once a hazard‟s magnitude and its frequency have been evaluated, a picture of the over-all risk severity associated with that hazard emerges. Because the values are necessarily imprecise and subjective, the risk is visualized by plotting them as shown in Figure 1.2. Here, the frequency is plotted on the vertical axis (Low at the top to High at the bottom), and magnitude in on the horizontal axis (Low = 6 to 12, Medium = 13 to 20, and High = 21 to 48). Hazards with the most severe associated risk, therefore, appear toward the lower right while lowest severity risk hazards appear near the upper left.

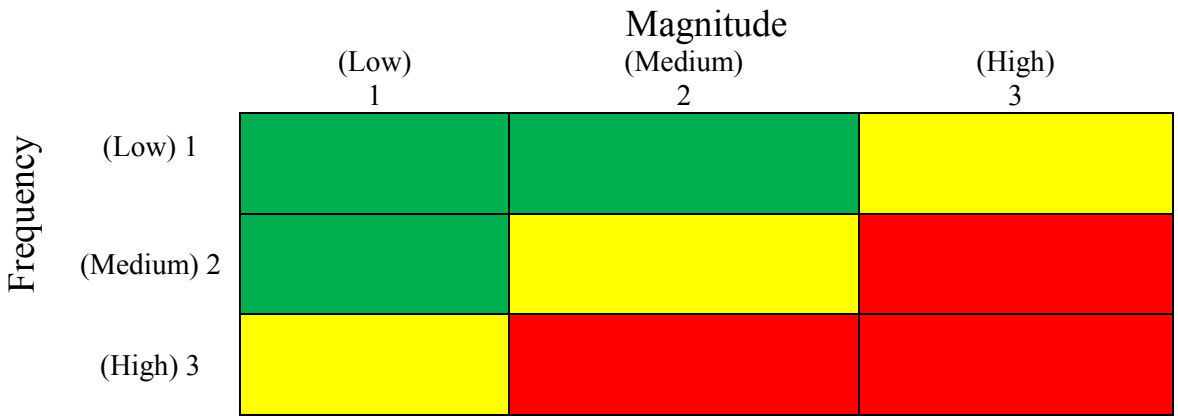

Figure 1.2
Risk Ranking Plot

Step 9 Rank Severity

To assist in prioritizing mitigation activities, the severities of all hazards considered in the Plan are ranked relative to one another using the above plotting scheme. Prioritization is also based on goals and objectives developed and approved by the Teton County Board of County Commissioners.

Step 10 Laws and Ordinances Review

The Teton Comprehensive Plan and other applicable codes, standards, ordinances, and laws were reviewed against the list of ranked hazards to determine if there were any restrictions to, or enabling powers that impact possible hazard mitigation alternatives. A report of this action is provided in Section 5, Land Use Planning.

Step 11 Develop Mitigation Alternatives

Potential projects to address identified risk are developed and listed in Section 6. The project descriptions and associated roadmap have addressed approximate costs, possible returns on investments, environmental and socio-economic benefits. Engineering cost estimates based on the conceptual design will be included if provided by the County.

Step 12 Develop Implementation Roadmap

Roadmapping is essentially a development of a high level project schedule. The Mitigation Roadmap in Section 6 of the Plan will provide necessary steps to be taken and the order in which they should occur to ensure project implementation. The Implementation Roadmap will address the four highest priority mitigation projects identified during the planning effort including possible funding options. All other possible mitigation projects were identified in list form linking them to the Plan Goals and Objectives, desired outcome, and assigned agency or department.

Step 13 Plan Review

Plan review occurred at two distinctly different times. The initial plan review was conducted by the Committee during development. The Committee will assess the Plan using the most current FEMA PDM Criteria Cross Walk. Once the Plan is completed, it will be submitted along with

the completed Cross Walk to the Idaho Bureau of Homeland Security‟s Hazard Mitigation Officer, and then to FEMA Region 10‟s Hazard Mitigation Officer for review. The Teton County Board of County Commissioners also reviewed the Plan in a parallel time frame.

Step 14 Plan Adoption

The Consultant will make formal public presentation to the Teton County Board of County Commissioners seeking their approval of the Plan. A letter of Promulgation is provided in the Plan. Additionally each participating jurisdiction will be requested to adopt the Plan by resolution with the respective mayors signing the appropriate multi-jurisdiction participation document.

Step 15 Implement

As this process is followed, the Teton Mitigation Committee and partnering stakeholders will be able to present to the County Board of Commissioners and Mayors an implementable All Hazard Mitigation Plan.

Plan Maintenance

The Teton County AHMP maintenance process includes a schedule for monitoring and evaluating the programmatic outcomes established in the Plan annually and producing a Plan revision every five years.

Formal Review Process

The Plan may be reviewed on an annual basis by the Coordinator and reviewed and revised every five (5) years by the committee to determine the effectiveness of programs and to reflect changes that may affect mitigation priorities.

The Emergency Management Coordinator or designee will be responsible for contacting the Mitigation Committee members and organizing the review. Committee members will be responsible for monitoring and evaluating the progress of the mitigation strategies in the Plan. The Committee will review the goals and action items to determine their relevance to changing situations in the County as well as changes in Federal policy, and to ensure they are addressing current and expected conditions. The Committee will also review the risk assessment portion of the Plan to determine if this information should be updated or modified, given any new available data. The organizations responsible for the various action items will report on the status of the projects, the success of various implementation processes, difficulties encountered, success of coordination efforts, and which strategies should be revised or removed.

The Coordinator or designee will be responsible to ensure the update of the Plan. The Coordinator will also notify all holders of the County AHMP and affected stakeholders when changes have been made. Every five years the updated plan will be submitted to the State of Idaho Bureau of Homeland Security‟s Mitigation Program and the Federal Emergency Management Agency for review.

Continued Public Involvement

Teton County Emergency Management is dedicated to involving the public directly in the review and updates of the Plan. The Coordinator is responsible for the review and update of the Plan. The public will also have the opportunity to provide input into Plan revisions and updates. Copies of the Plan will be kept by appropriate County departments and outside agencies.

A public meeting will be held when deemed necessary by the Coordinator. The meetings will provide the public a forum where they can express concerns, opinions, or new alternatives that can then be included in the Plan. The Board of County Commissioners will be responsible for using County resources to publicize the public meetings and maintain public involvement.

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Section 2 Teton County Description

Teton County ranks 35th among Idaho counties in population and 43rd in area. Incorporated cities include Driggs, Tetonia and Victor. Unincorporated areas include, but are not limited to Bates, Cache, Cedron, Chapin, Clawson, Clementsville, Darby, Felt, Fox Creek, Judkins, Sam, The String, Twin Forks, and Two Forks. Driggs is the County seat. Teton County is near the popular tourist locations of Jackson Hole, Wyoming and Grand Targhee Ski Resort in Wyoming. Its proximity to these locations as well as the pristine landscape makes it ideal for many people who own second homes. The summertime residents and vacationers increase the total population by about 30-50%[1] . In 2000, roughly 35% of the workers in the County commuted to Teton County, Wyoming for work and another 5% commuted elsewhere out of the County.

Location

Teton County is located in eastern Idaho. It is bordered on the north by Fremont County and Bitch Creek, on the east by Wyoming and the Teton Mountains, on the south by Bonneville County, and the west by Madison County. There are 450 square miles in Teton County.

Topography and Geography

The topography in Teton County is comprised of parts of two mountain ranges and one valley. On the east side of the County is the Teton Range which rises to a height of 12,605 at Mt. Moran; however, the border lies at the foothills of this range. On the southwest is the Big Hole Mountains (part of the Snake River Range) that rise to an elevation of 9,016 at Garns Mountain. The valley that lies between these mountain ranges is called the Teton Basin. The valley is about 15 miles wide in the central part, 8-10 miles wide at both ends and 30 miles long. The Teton River runs nearly its entire length from south to north. The elevation at Victor on the south end of the Teton Basin is 6,207.

Elevation slowly decreases northward toward Driggs which sits at 6,116 and Tetonia at 6,060. The map on Figure 2.11 illustrates this topography.

Vegetation

Teton County is predominantly a high elevation valley habitat. There are riparian areas of grasses, sedges and low brushes on the valley floor. Sagebrush communities are common at lower elevations and on south or southwest facing slopes. The lower elevations transition to mixed conifer forests in most of the County with mixed fir at higher elevations on north and east aspects. Spruce/fir and Lodgepole pine forests are also common at higher elevations[2].

Geology

Most of the soils of the valley area formed in alluvium washed from the surrounding mountains. The alluvium was deposited as large, gently sloping, coalescing alluvial fans. As is usual with water-transported material, the sediments are coarser textured on the upper part of the alluvial fans and finer textured near the bottom of the valley. In many places, loess overlies the alluvium.

The alluvium is derived from rocks of different mineral composition, some of which comes from granite and gneiss of the Teton peaks. Other minerals include, mica flakes, sandstone, quartzite,

[1] Dynamac Corporation, 2004
[2] Dynamac Corporation, 2004

rhyolite, limestone, dolomite, and other rocks[3]. The northern section of the Big Horn Mountains as well as the northeast section of the County contains mostly felsic pryoclastic rock with mafic volcanic flow northwest of Tetonia. The southern section of the Big Horn Mountains is a mix a miogeosynclinal, carbonate, shale and mudstone. The map in Figure 2.2 illustrates the lithology of Teton County.

There is at least one hot spring located in Teton County just west of Victor called Taylor Spring. It has a temperature of 68 degrees Fahrenheit[4].

Land Ownership

There are a total of 294,012 acres in Teton County. Private land makes up most of Teton County at 191,275 acres. The Federal Government owns 95,131 acres which is 33% of total land acres in the County (Figures 2.3 and 2.4). The Targhee National Forest makes up most of the Federal land at 88,013 acres. The BLM owns 6,080 acres. The State of Idaho owns 1,644 acres which is only about .6% of total land acres. Endowment Land makes up most of the state land with 1,169 acres. Fish and Game owns the other 475 acres.

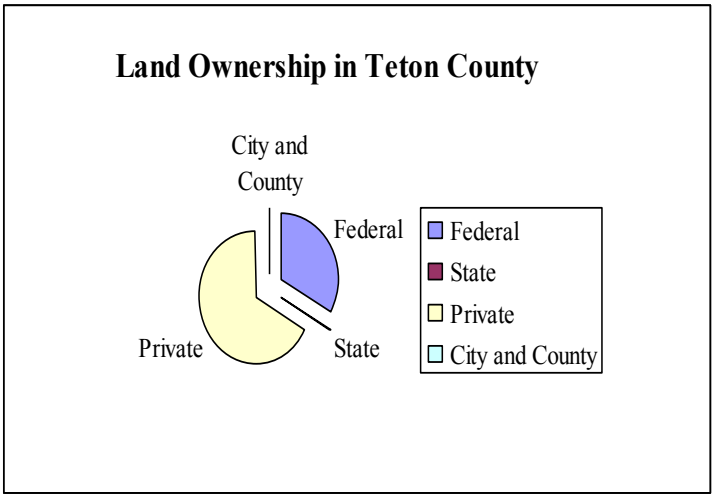


Figure 2.4 Land Ownership in Teton County

[3] City of Driggs Comprehensive Plan, 2006
[4] HSE, 2007

Figure 2.1 Teton County Topography

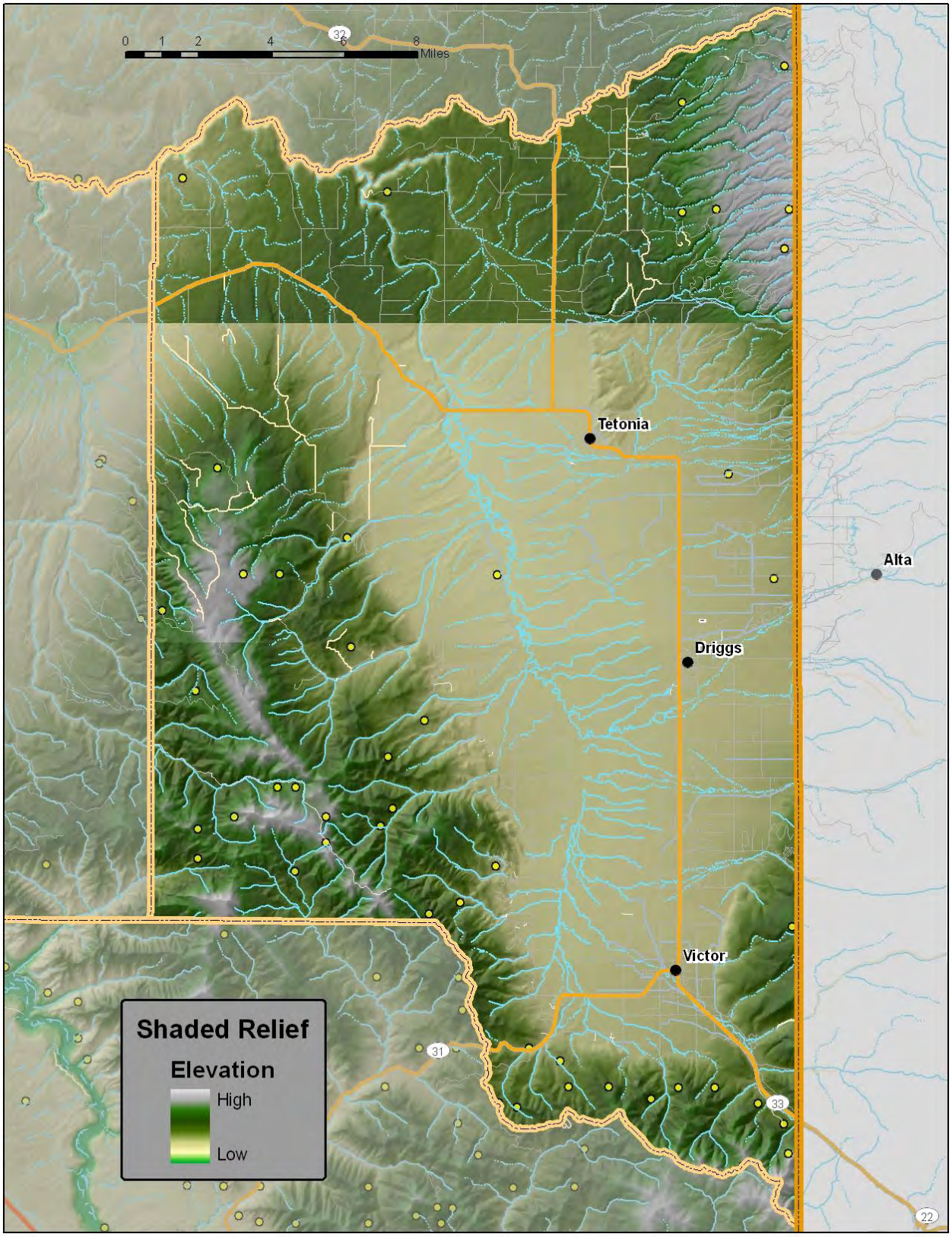


Figure 2.2 Teton County Geology

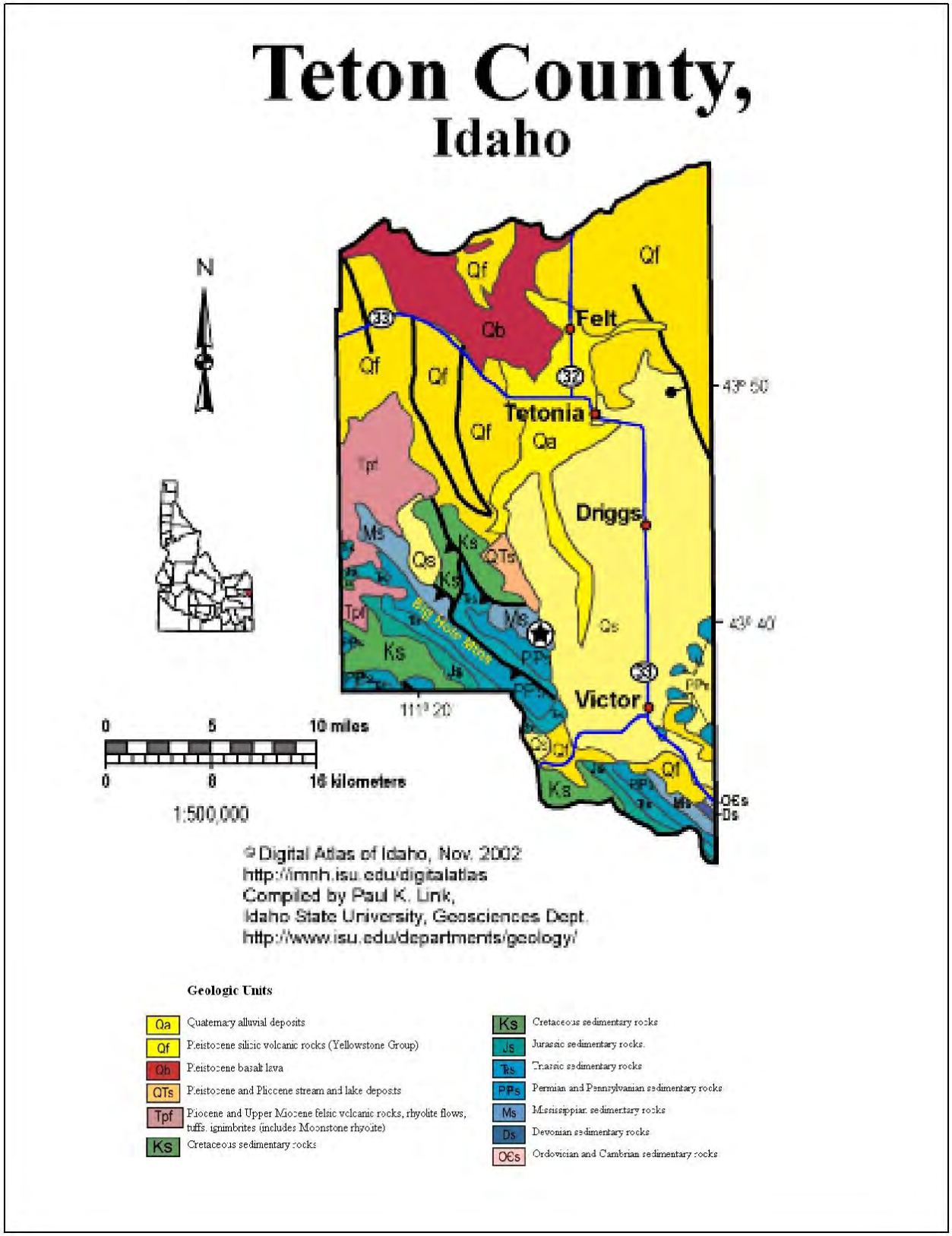
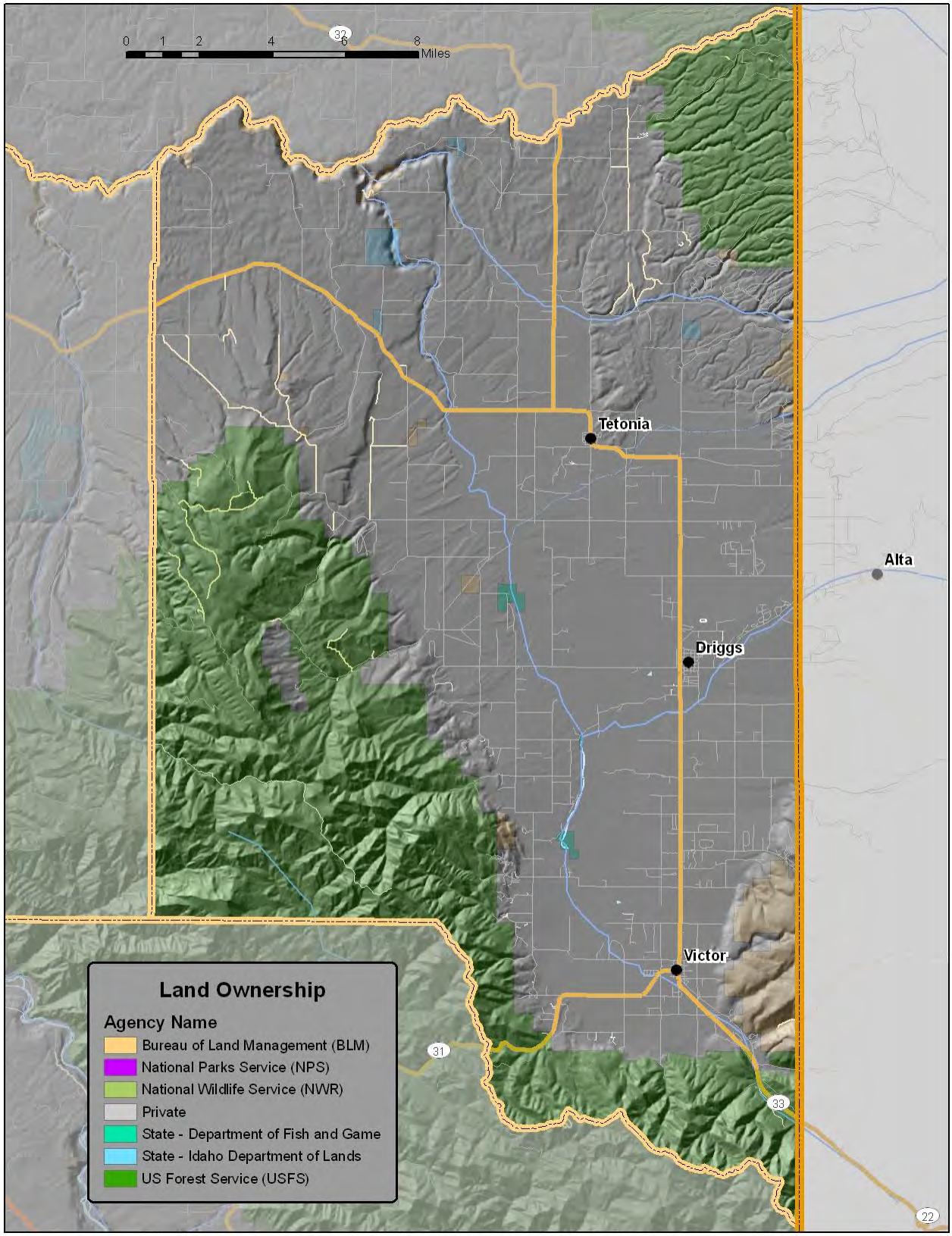


Figure 2.3 Landownership



Land Use and Natural Resources

Agriculture is the dominant land type in Teton County with 120,200 acres with Forest and Rangeland making up most of the remaining acres. Agriculture and Rangeland together make up about 60% of the total acres. Table 2.1 below outlines the distribution of land in Teton County.

Land Use Type in Teton County		
Land Type	**Acres**	**Percent of Total**
Urban	0	0.0%
Agriculture	120,200	40.9%
Rangeland	62,000	21.1%
Forest	95,100	32.4%
Water	1,000	0.3%
Wetland	15,500	5.3%

Table 2.1 Land Type in Teton County
Source: Idaho Commerce and Labor 2006

In 2002 there were 302 farms in Teton County with a total of 124,613 acres. Total acres in farms decreased by 10% since 1997, while number of farms only increased slightly (301 farms in 1997). Average size of farm in 2002 was 413 acres which is also down 10% since 1997[5].

Although not reflected in the table above, recreation is a very common land use in Teton County. Not only is Teton County adjacent to Teton County, Wyoming home to Jackson Hole and Grand Teton National Park, but it also offers many outdoor recreational opportunities within its borders. Recreation and the scenic beauty of the area bring many visitors to Teton County during the summer and winter months.

There are eight mines located in Teton County, seven of which are on Garns Mountain and one on Fourth of July Peak near the Teton/Teton County border. However, none of them are active[6].

The primary extractable resources in Teton County are gravel and timber products[7].

Climate

The climate in Teton County consists of long cold winters and moderately warm summers. Snow cover is continuous on the valley floor for about 140 days each winter. Rain is common in the spring and early summer with dry spells late in summer and early autumn. Freezing weather can occur any month of the year. The prevailing wind in the Teton Valley is from the southwest and has a mean velocity of 10-15 mph [8].

July is the hottest month with January being the coldest month. Average daily high for the County is about 80.6 degrees Fahrenheit and the average daily low is 4.1 degrees Fahrenheit. Average annual precipitation is between 13.8 and 16.7 inches and average annual snowfall is

[5] NASS, 2002
[6] St. Clair, 2006
[7] Teton County Comprehensive Plan
[8] City of Driggs Comprehensive Plan, 2006

73.7 inches. The driest month is November, and the wettest month is June. The map in Figure 2.5 shows annual precipitation for Teton County.

Table 2.2 shows the average maximum temperature recorded at the Tetonia Experimental Station. Figure 2.3 shows the extreme maximums recorded at the Driggs.

Average Maximum Temperature (F)												
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
29.7	34.3	40.6	52.0	62.6	71.1	81.1	79.9	70.4	58.4	41.1	32.0	54.4

Table 2.2
Average Maximum Temperature at Driggs, Idaho
Source: http://www.wrcc.dri.edu/summary/climsmid.html

Average Maximum Temperature (F)												
Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual
28.2	32.7	39.3	50.0	61.5	70.6	80.5	79.1	69.4	56.7	39.4	29.7	53.1

Table 2.3
Average Maximum Temperature at the Tetonia Experimental Station, Idaho
Source: http://www.wrcc.dri.edu/summary/climsmid.html

History

For about a quarter of a century, the Teton Valley was called "Pierre"s Hole" after Vieux Pierre, an Iroquios Indian trapper, found his way with some companion trappers into the valley in 1818. Prior to that, the valley was called the „Broad Valley" by some of the Indians in the area. John Colter was the first white man to enter the valley in 1808. The settlers of the Snake River Valley were the first to call the valley "Teton Basin" after the peaks of the Tetons which were named "Trois Tetons" by Canadian trappers[9].

The first permanent settlers arrived in the area in the mid 1880"s. Significant settlement began in 1888 with the settlement of what later became Driggs by a group of Mormon colonists from Salt Lake City. About that same time, Victor was settled by a group from Cache Valley (on the border of Idaho and Utah). Within a few years the valley was dotted with small farms and communities. In 1912 the Union Pacific Railroad completed a branch line to Driggs. In 1915 the Teton County was created from portions of Madison, Fremont and Teton Counties and Driggs was named the County seat[10].

The City of Driggs was dedicated in 1909. Prior to that the closest town post office was near Rexburg, Idaho and the settlers in the Teton Valley had a difficult time knowing where to designate their address. B.W. Driggs saw the difficulty shortly after arriving in the valley in the spring of 1891; he at once drew up a petition to the postal department at Washington asking for a post office to be established in the Teton Valley. At the time, the majority of those who resided in the area were relatives of B.W. Driggs. The department in Washington, seeing so many by the name of Driggs named the post office the same. The land was entered as a desert entry by Henry Wallace and when he obtained title, he platted it, and on December 21, 1909 dedicated it as the town site of Driggs.

[9] Teton County Comprehensive Plan, 1996
[10] St. Clair, 2006

The original platting of the Driggs town site was in a grid pattern of blocks containing a little over four acres surrounded by streets 82.5 feet in width.

Demographics

In 2005, Teton County had a population of 7,467. This represents a 24.5% increase from 2000 which is faster than the State (10.4%) and the Nation (5.3%)[11]. In the ten year period from 1995-2005 Teton County experienced one of the largest percentage growths in the state at 54.9%[12]. Figure 2.6 shows the population growth between 1980 and 2005. Increases in population are expected to continue. The projected population for the year 2010 is over 12,000[13].

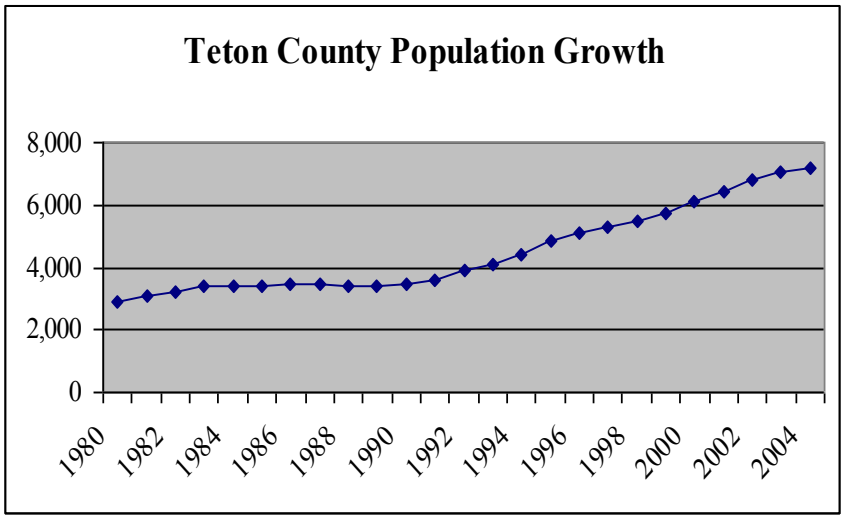


Figure 2.6 Teton County Population Growth

Table 2.4 shows the population growth for the three (3) incorporated cities in Teton County as well as the unincorporated Teton County (shown as "Rest of County" below). Each area experienced a large increase in population between 1990 and 2000. Victor grew the fastest at a 187.7% increase with Driggs growing the slowest at 30%. Between 2000 and 2005 growth slowed down in each area with Tetonia showing a negative growth. During this time, Victor surpassed Driggs in population. Over half the population lives in unincorporated areas of Teton County.

[11] US Census, 2007
[12] Commerce and Labor, 2007
[13] Dynamac Corporation, 2004

Figure 2.5 Teton County Precipitation

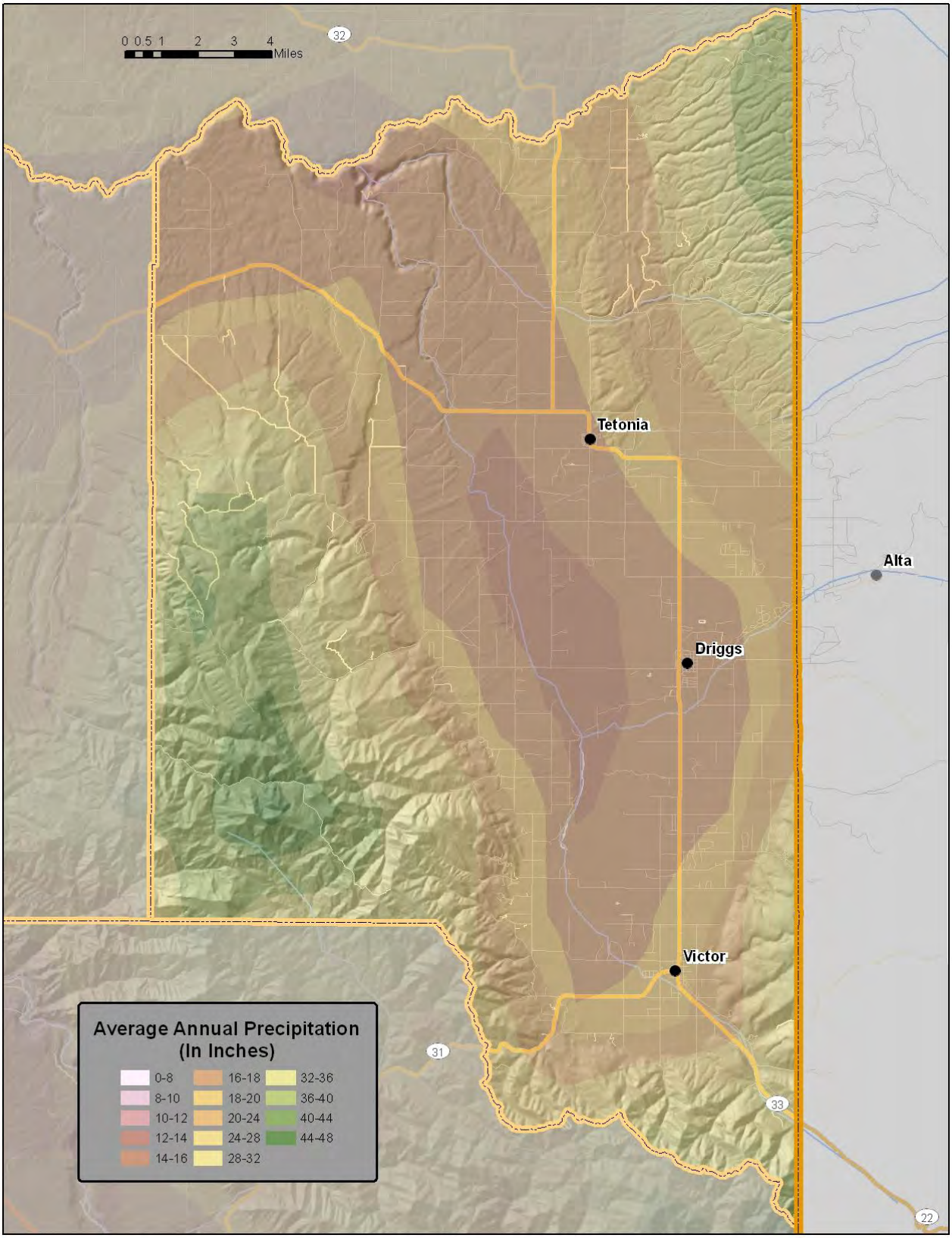
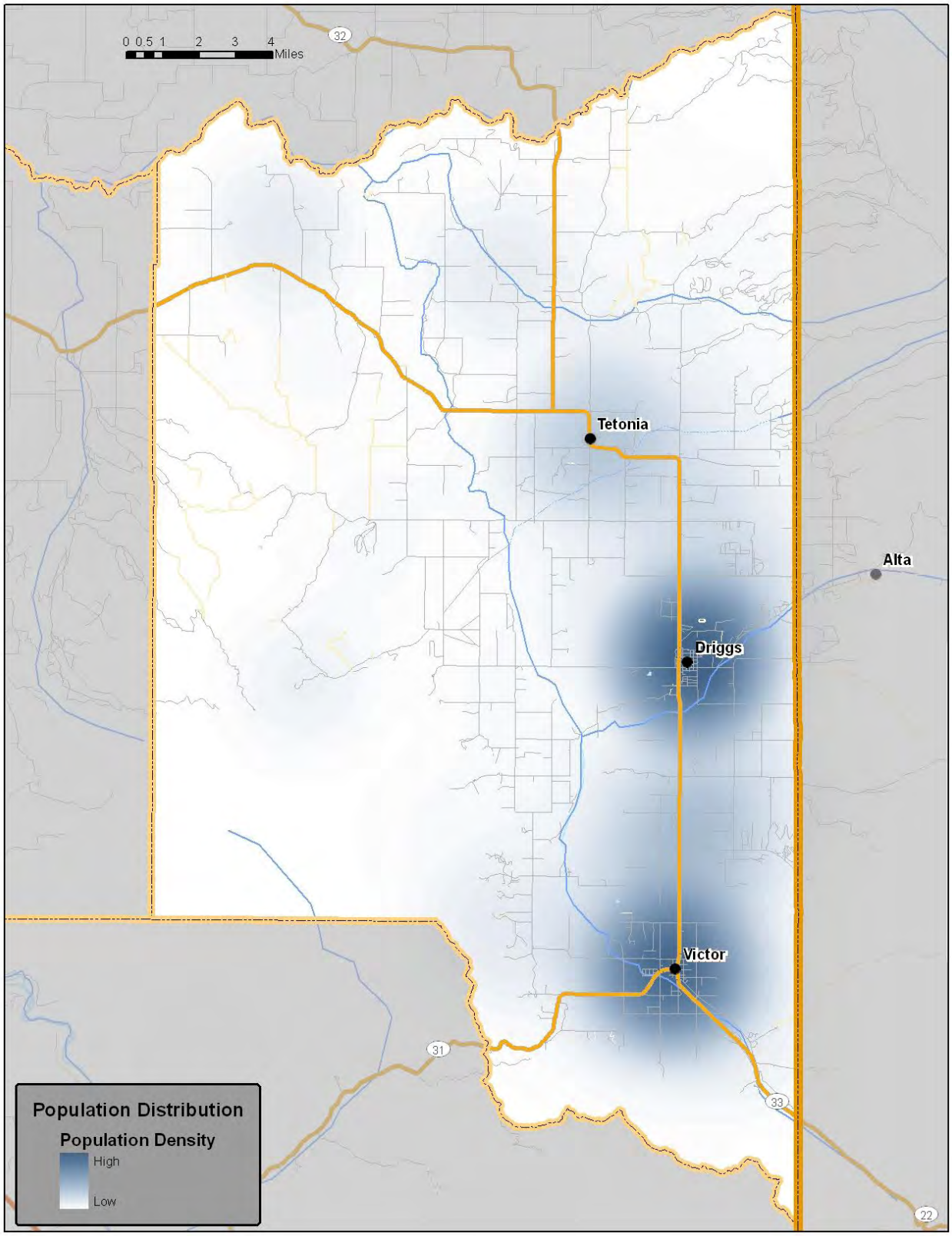


Figure 2.7 Teton County Population Distribution



Population Growth for Each Incorporated City of Teton County					
	1990	**2000**	**2005**	**% change 1990-2000**	**% change 2000-2005**
County	3,439	5,999	7,467	74.4%	24.5%
Driggs	846	1,100	1,197	30%	8.8%
Tetonia	132	247	243	87.1%	(1.6)%
Victor	292	840	1,365	187.7%	62.5%
Rest of County	2,169	3,812	4,662	75.7%	22.3%

Table 2.4: Population Growth for Incorporated Cities in Teton County
Source: Bureau of Economic Analysis and US census Bureau

The County is 100% rural with no large urban centers. In 2006, there were 17.4 persons per square mile. Table 2.5 below shows the racial and ethnic distribution of Teton County for 2005.

Teton County Racial and Ethnic Distribution	
White persons	98.3%
Black persons	0.3%
American Indian or Alaska Native	0.6%
Asian	0.2%
Native Hawaiian /Pacific Islander	0.4%
Persons reporting two or more races	0.2%
Persons of Hispanic or Latino origin	13.9%
White persons not Hispanic	85.0%

Table 2.5 Teton County Racial and Ethnic Distribution, 2005
Source: US Census

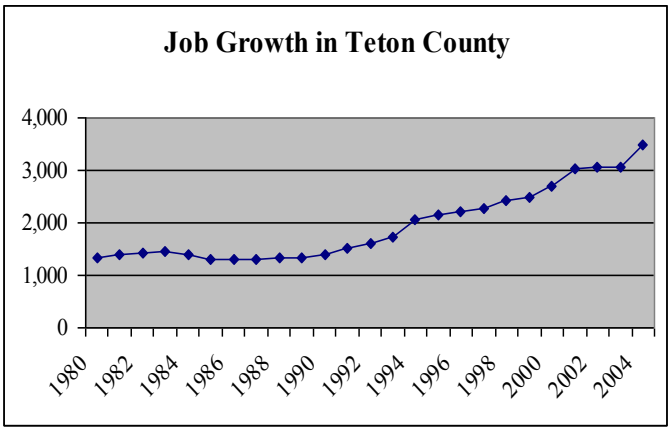


Figure 2.8 Full Time and Part Time Employment Growth in Teton County

Figure 2.7 illustrates the population distribution in Teton County.

The population is getting older. In 1990, the median age was 30.2 and by 2006 had increased to 33.3. The graph in Figure 2.8 below shows the change in age distribution since 1990. The "18-64" age group is growing the fastest while the "under 18" and "65 and over" groups are shrinking.

In 2000 there were 2,632 housing units in Teton County and 2,078 households with 2.87 persons per household. Home ownership rate in 2000 was 73.5% (just higher than the state at 72.4%). In 2005 number of housing units had increased by 1,061 to 3,693 units[14].

The housing stock is growing rapidly. Of the 3,693 housing units in 2005, 30% were built after 2000 and 62% were built after 1990[15]. Only 30% of the housing stock was built before 1969.

Economic Profile

Job growth in Teton County was fairly constant from 1980 to 1990. However, between 1990 and 2004 the number of jobs more than doubled from 1,383 to 3,495. Figure 2.9 shows the job growth in Teton County. Much of the employment is seasonal and depends on tourism.

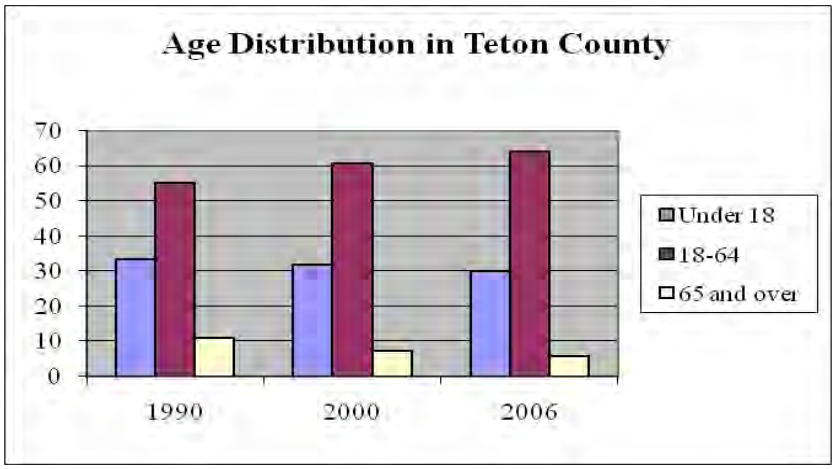


Figure 2.9
Age Distribution for Teton County
Source: Idaho Dept of Labor

Teton County has continually had one of the lowest unemployment rates in the State. In 2006 the unemployment rate in Teton County was 2.1% which was lower than the state (3.4%) and the nation (4.5%)[16] . Figure 2.10 shows the changes in the unemployment rate for Teton County.

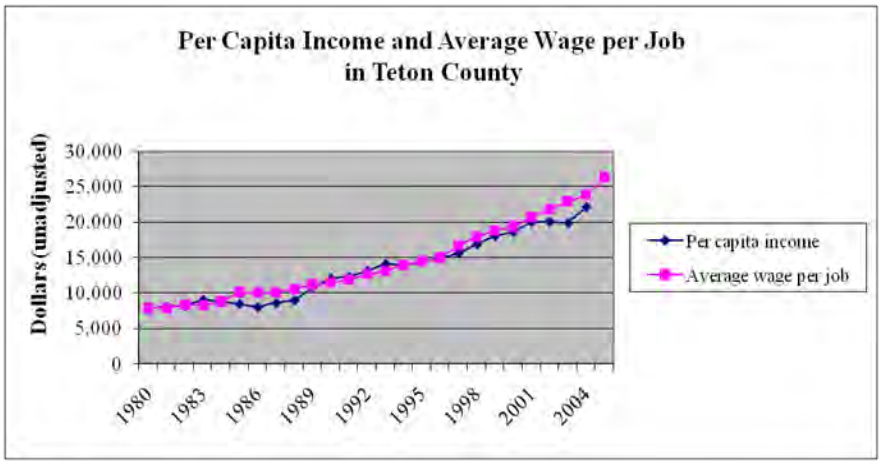


Figure 2.10
Per capita Income and Average Wage Per job
Source: http://www.bea.gov

Average wage per job in 2004 was $23,884 which is lower than the State ($29,423) and the Nation ($38,792). In 2004 Teton County had a per capita personal income of $22,168 which ranked 28th in the state and was 82% of the State average of $26,877[17].
Average wage per job in 2004 was $23,884 which was lower

[14] US Census, 2007; Idaho Commerce and Labor, 2007
[15] Idaho Commerce and Labor, 2007
[16] Idaho Commerce and Labor, 2007
[17] Bea.gov, 2006

than the State ($29,423) and the nation ($38,792). Figure 2.11 shows the growth of both per capita income and average wage per job since 1980.

Figures 2.12 and 13 show each sector of the industry and how they contribute to the economy. Since 1980 Farm employment has decreased while Construction, Retail trade, Services and State and Local Government have all increased. Services and Retail trade have grown because of the tourism market. Construction has increased due to the increase in population and is very strong eight months of the year depending on the weather. Many people travel from other counties in Idaho to work construction in Teton County[18].

Total personal earnings in 2004 were $80,844,000. Average annual growth rate from 1994 -2004 is 11.5% which is higher than the state (5.6%) and the nation (5.5%). This includes proprietor income as well as wage and salary income. The trends for personal earnings by industry have followed the same trends as for employment by industry. Farm earnings have fluctuated considerably, but have ultimately decreased since 1980. Construction, Retail trade, Services and State and local government have all increased.

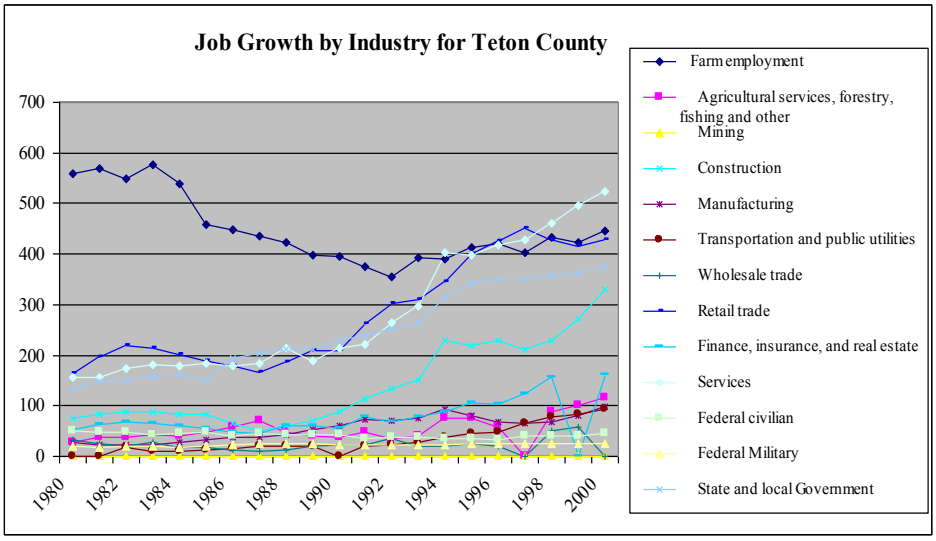


Figure 2.11 Job Growth by Industry for Teton County

Total personal income in 2004 was 159,785,000[19].

Teton County ranks 35th in the State for total personal income. From 1994-2004 the average annual growth rate of personal income for Teton County was 10.1 % while the growth rate for the nation was 5.2%[20]. Figure 2.13 shows total personal income growth from 1980 to 2005. Non-labor sources contributed 31.5% of total personal income in 2004[21].

[18] Commerce and Labor, 2007
[19] bea.gov, 2007
[20] bea.gov, 2007
[21] Rasker, 2006

In 2003, 13.5% of the population was living below poverty. Another measure of poverty is Food Stamp and Medicaid cases. In 1992 the County had only 27 Food Stamp cases which decreased to 26 in 2001. Medicaid, however, increased during the same time from 92 in 1992 to 269 in 200[22].

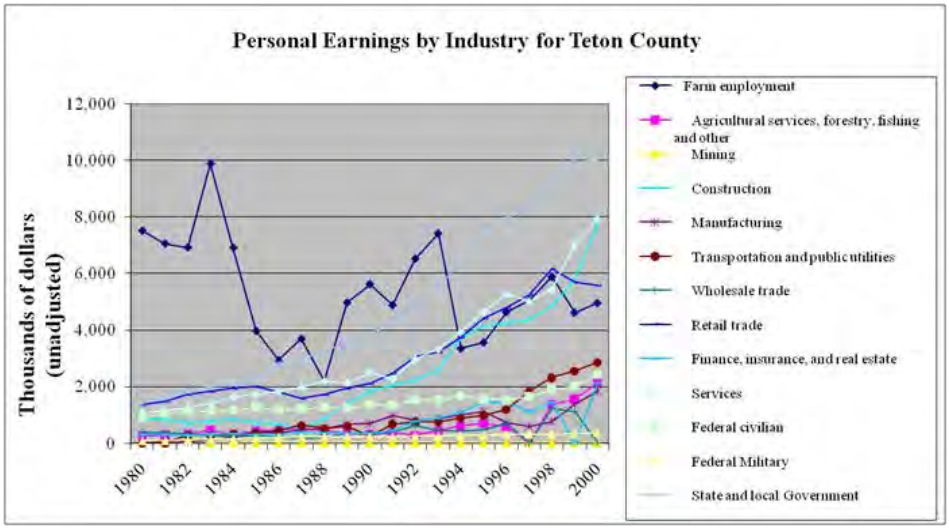


Figure 2.12
Earnings by Industry for Teton County
Source: http://www.bea.gov

The housing affordability index was 122 in 2000, which means the median family can afford the median house. However, since 1990 that has become less affordable. In 2000, a median income of $37,582 was required to qualify for the median house[23]. Housing values have increased in the past decade. Median home value in 2000 was estimated at $136,117 and by 2006 was estimated to be $213,146. The projected 2011 median value is $260,523[24] .

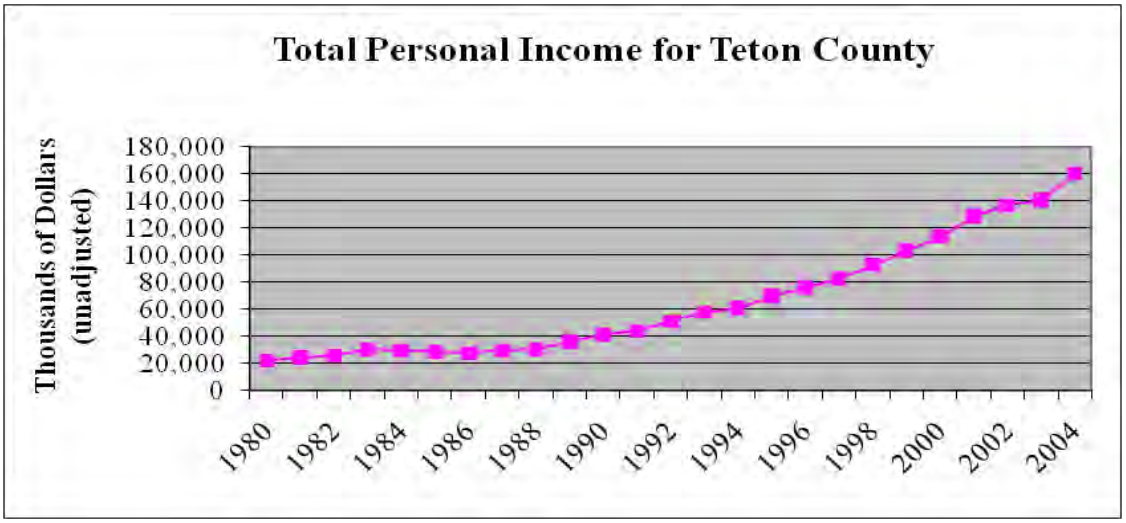


Figure 2.13
Total Personal Income
Source: http://www.bea.gov

[22] Idaho Commerce and
[23] Rasker, 2006)
[24] ESRI Market Profile, 5/15/207

Section 3 Public Involvement

Public Involvement

Public Involvement in the All Hazard Mitigation Process is used for three distinct reasons. The first is risk perception. Risk perception is used to develop a subjective measure of how the public believes the risks impact their community. The second is development of the requirements for risk reduction projects. The third is to solicit support to the elected and appointed officials as they seek to implement the mitigation actions identified in the AHMP.

Risk Perception:

Risk perception is the subjective judgment that people make about the characteristics and severity of a risk. The phrase is most commonly used in reference to natural hazards and threats to the environment or health, such as nuclear power. Several theories have been proposed to explain why different people make different estimates of the dangerousness of risks. Risk Perception is a significant part of the Public Involvement Section of the Teton County All Hazard Mitigation Planning Process. Two distinct tools were used to gather public input and to measure, at least subjectively, the public attitudes towards the risk posed by the hazards in Teton County.

Committee Perception Tool

Members of the All Hazard Mitigation Committee in reality play two important roles; first they represent the agency from which their assignment was derived. That representation brings with it certain roles, ensuring the interests of the agency are expressed and included in the planning process, acting as a subject matter expert on issues and matters managed by the agency, and in identifying methods to reduce or mitigate the risk. Second, each individual on the committee brings to the table certain expertise, but also certain attitudes, knowledge, and bias. These attributes, brought into the process also qualifies them as excellent "expressers" of public perception. A Risk Perception Tool was used in the first committee meeting to measure the committee, as individuals, perception of the hazards posed and their perception of the severity of the impact

	What is the probability (%) that the hazard event will occur in the County in the next ten years? (Mark 1 for each hazard)										What would be the impact or Consequence if the hazard event did Occur? (Mark 1 for each hazard)				
	<10	20	30	40	50	60	70	80	90	100	Low		Med		High
Biological	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Dam failures	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Droughts	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Earthquakes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Extreme heat	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Fires	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Floods	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Hazardous materials events	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Landslides/Mudslides	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Nuclear accidents	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Rioting or Large demonstrations	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Sever winter storms	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Snow avalanches	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Terrorism	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Thunderstorms, Hailstorms, Lightening, High Winds and Tornadoes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Volcanoes	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
Wildland fires	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○

[1] Low = Little or no impact to life or property. Mod = Some property damage or impact to health. High = Significant property damage or loss of life.

from those hazards upon their personal life situations. An example of the Perception Tool is illustrated above.

The results from the applications of this tool are in Attachment 1 Meeting Minutes. The following table demonstrates the perceptions held by the committee.

Hazard Type	Probability of Occurrence in Next 10 Years By Percentage	Level of Impact if Event Occurred
Biological	Low	Medium
Dam Failure	Low	Low-Medium
Droughts	Medium	Medium
Earthquakes	Medium-High	Medium-High
Extreme Heat	Low-Medium	Medium
Fire (Structure)	Medium-High	Medium-High
Floods	Medium	Medium
Hazardous Materials Events	Low-Medium	Low-Medium
Landslides/Mudslides	Low-Medium	Low-Medium
Nuclear Accidents	Low	Low-Medium
Rioting or Large Demonstrations	Low	Low
Severe Winter storm	Medium-High	Medium-High
Snow Avalanches	Medium-High	Low-Medium
Terrorism	Low	Medium
Thunderstorms, Hailstorms, Lightening, High winds, Tornadoes	High	Medium
Volcanoes	Low	Medium-High
Wildland Fires	High	Medium-High

Table 3.1
AHMP Committee Perceptions of Hazards

The Committee"s perceptions of the hazards were expressed as follows:

1. Wildland Fire
2. Thunderstorms, Lightening, Hailstorms, High Winds, Tornadoes
3. Severe Winter Storm
4. Snow Avalanche
5. Earthquake

Note the relationship of the perceived hazards and those listed as the five highest levels of impact. The Committee"s results were expressed as follows:

1. Earthquake
2. Severe Winter Storm
3. Wildland Fires
4. Fire (Structure)
5. Drought

Public Questionnaire

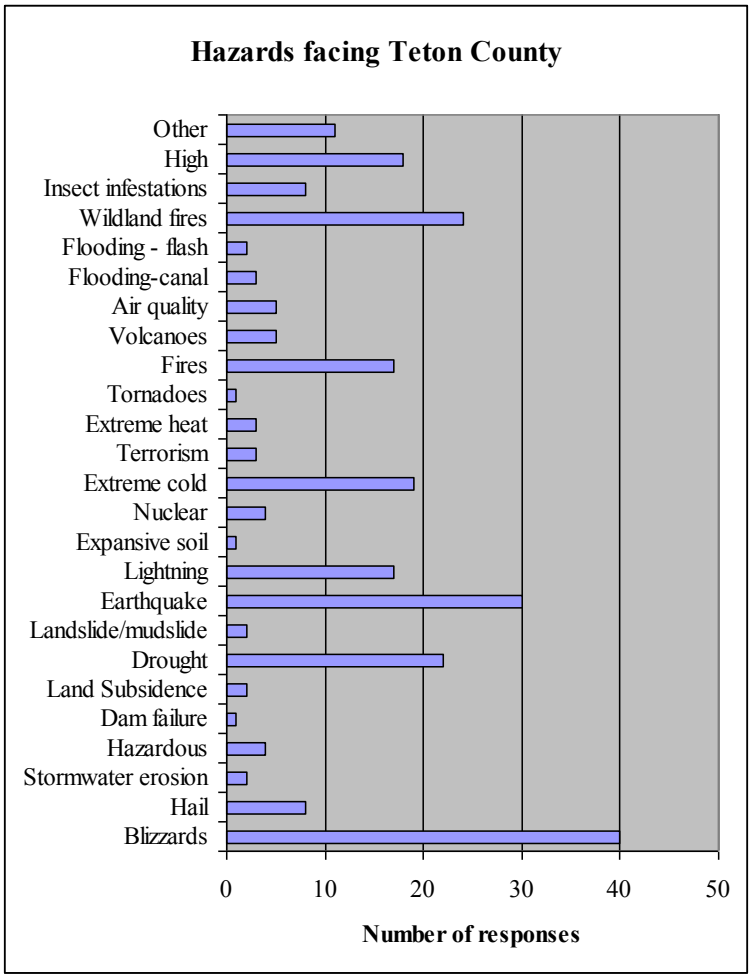
A public questionnaire was provided to two hundred (200) residents of the County. Of the 200 hundred mailed forty-nine (49) were returned for a return rate of twenty-five percent (25%). This return rate is slightly higher than the return rate experienced on twelve other AHMP Projects. The complete questionnaire and the results can be found in Attachment 2. Table 3.2 provides a listing of the five highest ranked hazards according to the public.

Please select the five (5) highest hazards facing your neighborhood.

1. Blizzards
2. Earthquake
3. Wildfires
4. Drought
5. Extreme Cold

The AHMP committees perception of the top five hazards were similar, but not in the same order.

1. Wildland Fire
2. Thunderstorms, Lightening, Hailstorms, High Winds, Tornadoes
3. Severe Winter Storm
4. Snow Avalanche
5. Earthquake



Public Meetings

Teton County has an outstanding Local Emergency Planning Committee (LEPC) comprised of typical emergency response agencies plus members representing industry and the community at large. The local media is very active in the LEPC and several interviews were conducted during the course of the project by the contract and the LEPC Chairman. Several meetings were held with the Teton County LEPC. The initial meeting included a briefing on the overall AHMP Process as well as several status reports given during subsequent meetings. Participants were asked to fill out the perception tool and were briefed on the Community AHMP Survey. The LEPC was also briefed specifically after the Community Survey was completed. The results were presented and the participants were again asked to fill out the perception tool, the results of which were presented above. For the most part the LEPC filled the role of the AHMP Committee.

The Teton County Commissioners hosted a local community hazard mitigation workshop on May 8, 2008 at 6:00 pm at the County Commission Chambers. The workshop, as scheduled was the culminating event of the County‟s All Hazard Mitigation Planning Project which began in the fall of 2006. Those invited to attend the workshop included the Commissioners, City Council members and Mayors of the three Cities and representatives from other County and City Agencies. The public was also invited as were members of the City and County Planning and Zoning and Public Works Departments.

Whisper Mountain Professional Services, Inc., the County‟s Emergency Management Consultant, facilitated the workshop. Whisper Mountain presented the hazard profiles completed for the County along with potential impacts to County, city, and private property.

The attendance at the workshop was excellent. All members of the County Commission plus other County elected and appointed officials were in attendance. Other attendees include the invited elected City officials. No members of the general public attended. Since the meeting each City has provided a list of desired mitigation projects to be included in the Plan.

A draft of the Teton County Multi-Jurisdiction All Hazard Mitigation Plan was posted on the Whisper Mountain website at http://www.whispermountain.net/TetonCountyAHMPDraft.pdf for community review. No Comments were received via the internet on the Plan.

Teton County Holds Local Community Hazard Mitigation Workshop

Press Release

The Teton County Commissioners will be hosting a local community hazard mitigation workshop on May 8, 2008 at 6:00 pm at the Teton County Commissioner Chambers. The workshop, as scheduled, will be the culminating event of the County‟s Multi-jurisdiction All Hazard Mitigation Planning Project which began in the fall of 2006. Expected attendees at the workshop include the commissioners, City Council, the Mayors of all of the Cities, and representatives from County and City Planning and Zoning, Road & Bridge, Public Works, and Community Development departments. The public is also invited to attend.

Whisper Mountain Professional Services, Inc., the County‟s Emergency Management Consultant, will be facilitating the workshop. Whisper Mountain will present the hazard profiles completed for the County along with potential impacts to county, city, and private property. Each jurisdiction will then be requested to identify goals and objectives to lessen impacts on the community from the risks posed by the hazards. The overall goal of hazard mitigation is to save lives and reduce property damage. Hazards identified in the County, such as earthquake, flood, and wildfire will be examined and goals established which when implemented will reduce the risk to the greater Teton County communities.

A draft of the Teton County Multi-jurisdiction All Hazard Mitigation Plan can be found on the Whisper Mountain website at: http://www.whispermountain.net/TetonCountyAHMPDraft.pdf.

Questions regarding this project should be directed to Greg Adams, Teton County Emergency Services Coordinator.

Section 4 Risk Assessment

Hazard Definitions

Hazards that pose a threat to human life, health, and well-being are myriad and no attempt is made here to compile an exhaustive list. Those that are addressed in disaster planning are generally categorized as "natural" or "technological" (sometimes "manmade"). The FEMA website[25] contains a thorough discussion of hazards in the section entitled "FEMA's Multi-Hazard Identification and Risk Assessment (MHIRA)"[26]. Some hazards are a threat to all geographic areas while others (e.g. Tsunami in coastal regions) are more limited in their extent. Studies were conducted to determine which hazards are of concern in Teton County. Hazards that have been identified as significant in this County and that will be considered in this plan are:

Natural Hazards

- Weather: Drought
  - Extreme Heat
  - Extreme Cold
  - Severe Winter Storm
  - Lightning
  - Hail
  - Tornado
  - Straight Line Wind
- Flooding: Flash Flood
  - River Flooding
  - Dam Failure
- Geologic: Earthquake
  - Landslide/Mudslide
  - Snow Avalanche
- Other: Wildfire
  - Biological
    - Epidemic/Pandemic
      - Bird Flu
      - SRS
    - West Nile

Technological (Manmade) Hazards

- Structural Fire
- Nuclear Event
- Hazardous Material Event
- Riot/Demonstration/Civil Disorder
- Terrorism

[25] http://www.fema.gov/index.shtm
[26] http://www.fema.gov/plan/prevent/fhm/ft_mhira.shtm

Section 4.1 Weather Hazards

The impact of weather hazards may be widespread (drought) or more localized (lightning), but all have the potential to be severe and directly life-threatening. Historical weather data is generally available in good detail over long time periods, allowing for reasonably accurate risk assessment for planning purposes.

Drought

Description

Drought is an expected phase in the climactic cycle of almost any geographical region. Certainly that is the case in 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 is entirely satisfactory. According to the National Drought Mitigation Center, 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." What is clear is that 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.

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. According to the NOAA National Climactic Data Center, much of the State of Idaho most recently experienced moderate to extreme drought conditions from the years 2000 through 2005. Drought Emergency Declarations were issued for various counties by the Idaho Department of Water Resources in the years 2002 through 2005. Idaho"s only Federal Drought Emergency Declaration was issued in 1977.

Figure 4.1.1 illustrates the precipitation conditions for Teton County using the Palmer Modified Drought Index. The data depicted is from the National Weather Service (NWS) and covers the years 1970 to the present. The Palmer Modified Drought Index (PMDI) is a means of quantifying drought

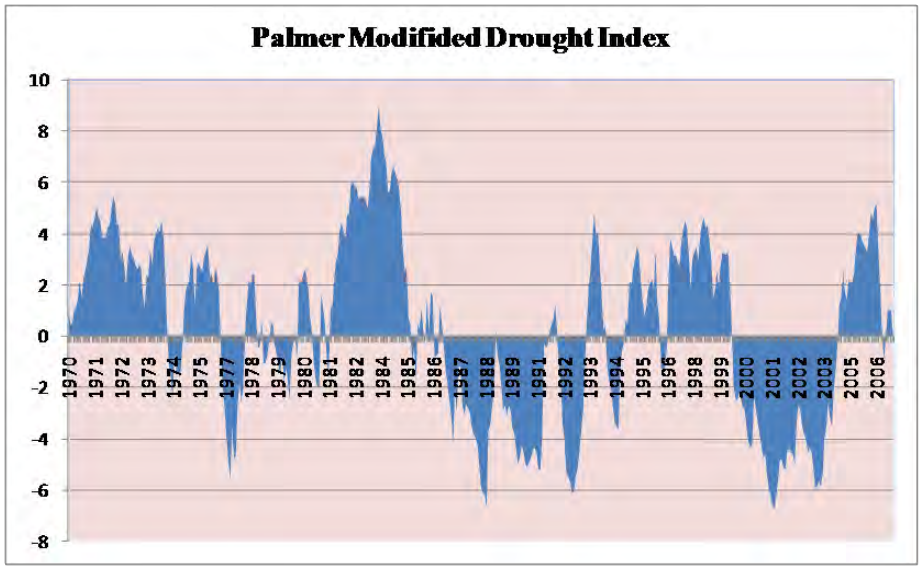


Figure 4.1.1
Palmer Modified Drought Index for Teton County

in terms of moisture demands versus moisture supply. Moisture demands include plant requirements and water needed for recharge of soil moisture supplies. An allowance is also included for runoff amounts necessary for

recharging both ground water and surface water supplies such as rivers, lakes, aquifers and reservoirs. The PMDI balances the moisture demands against the moisture supply available.

The PMDI expresses this comparison of moisture demand to moisture supply on a numerical scale that usually ranges from positive six to negative six. Positive values reflect excess moisture supplies while negative values indicate moisture demands in excess of supplies.

Approximate Cumulative Frequency %	Category	PMDI Range
> 96	Extreme Wetness	> 3.50
90-95	Severe Wetness	2.50 – 3.49
73 – 89	Mild to Moderate Wetness	1.00 – 2.49
28 – 72	Near Normal	-1.24 - .099
11 -27	Mild to Moderate Drought	-1.25 - -1.99
5 – 10	Severe Drought	-2.00 – 2.74
1 – < 4	Extreme Drought	< -2.75

Table 4.1.1-
PMDI Classes for Wet and Dry Periods

Historical Frequencies

The Idaho Department of Water Resources reports that meteorological drought conditions (a period of low precipitation) existed in the State approximately 30% of the time during the period 1931-1982. Principal drought in Idaho, indicated by stream flow records, occurred during 1929-41, 1944-45, 1959-61, 1977, and 1987-92. The most prolonged drought in Idaho was during the 1930s. For most of the State, that drought lasted for 11 years (1929-41) despite greater than average stream flows in 1932 and 1938. In 1977, the worst single year on record, a severe water shortage occurred throughout Idaho and the West. Stream flows were below normal from 1979 to 1981. A federal declaration was issued in 1977 for the State of Idaho and counties neighboring Teton County.[27]

According to the Idaho Department of Water Resouces (IDWR) the following Drought Emergency Declarations were issued for Teton County since 2002:

- August 6, 2003
- June 17, 2004
- June 13, 2007

Impacts

Drought is agriculture"s most expensive, frequent, and widespread form of natural disaster. The current drought in the interior West is part of a multi-year drought that began in 1999, worsened

[27] http://www.bhs.idaho.gov/bhslibrary/SHMP2004.pdf

in 2000, and has continued, with some interruptions through 2004. As a result, the drought in the West was slow to develop, and likewise, will be slow to recede.

One important aspect of reducing vulnerability is to understand the impacts of drought. Each drought produces a unique set of impacts, depending not only on the drought‟s severity, duration, and spatial extent but also on ever-changing social conditions. These impacts are often symptoms of other underlying problems (vulnerabilities). So, in order to understand vulnerability, a good place to start is to investigate drought impacts.

Drought produces a complex web of impacts that spans many sectors of the economy and reaches well beyond the area experiencing physical drought. This complexity exists because water is integral to our ability to produce goods and provide services.

Impacts are commonly referred to as direct or indirect. Reduced crop, rangeland, and forest productivity; increased fire hazard; reduced water levels; increased livestock and wildlife mortality rates; and damage to wildlife and fish habitat are a few examples of direct impacts. The consequences of these impacts illustrate indirect impacts. For example, a reduction in crop, rangeland, and forest productivity may result in reduced income for farmers and agribusiness, increased prices for food and timber, unemployment, reduced tax revenues because of reduced expenditures, increased crime, foreclosures on bank loans to farmers and businesses, migration, and disaster relief programs. Direct or primary impacts are usually biophysical. Conceptually speaking, the more removed the impact from the cause, the more complex the link to the cause. In fact, the web of impacts becomes so diffuse that it is very difficult to come up with financial estimates of damages. The impacts of drought can be categorized as economic, environmental or social.

Many economic impacts occur in agricultural and related sectors because of the reliance of these sectors on surface and subsurface water supplies. In addition to obvious losses in yields in crop and livestock production, drought is associated with increases in insect infestations, plant disease, and wind erosion. Droughts also bring increased problems with insects and diseases to forests and reduce growth. The incidence of forest and range fires increases substantially during extended droughts, which in turn places both human and wildlife populations at higher levels of risk.

Loss Estimates

Income loss is another indicator used in assessing the impacts of drought because so many sectors are affected. Reduced income for farmers has a ripple effect. Retailers and others who provide goods and services to farmers face reduced business. This leads to unemployment, increased credit risk for financial institutions, capital shortfalls, and loss of tax revenue for local, State, and Federal government. Less discretionary income affects the recreation and tourism industries. Prices for food, energy, and other products increase as supplies are reduced. In some cases, local shortages of certain goods result in the need to import these goods from outside the stricken region. Hydropower production may also be curtailed significantly.

The following charts in Figures 4.1.3 and 4.1.4 illustrate the net income for both individual as well as corporate farms in the Region from 1970 through 2006. Note the income drops during the late 1970‟s when Idaho declared a drought disaster as well as counties neighboring Teton County. There are also significant income drops beginning in the early 1990‟s when a severe drought hit central and southwest Idaho.

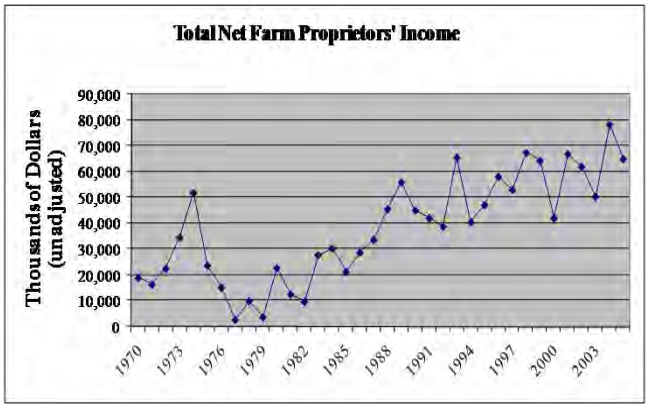


Figure 4.1.3 -
Total Net Farm
Proprietor"s Income

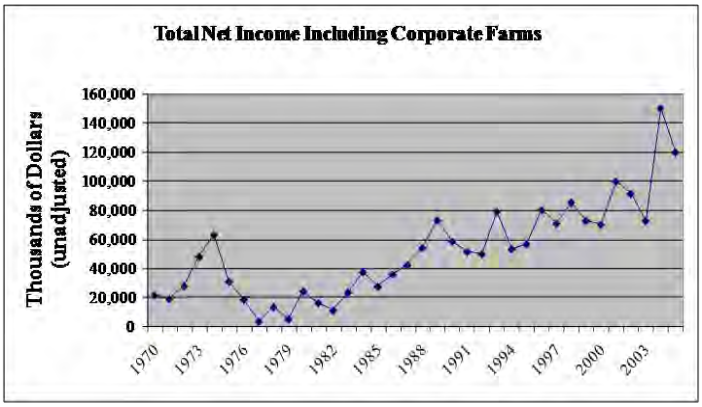
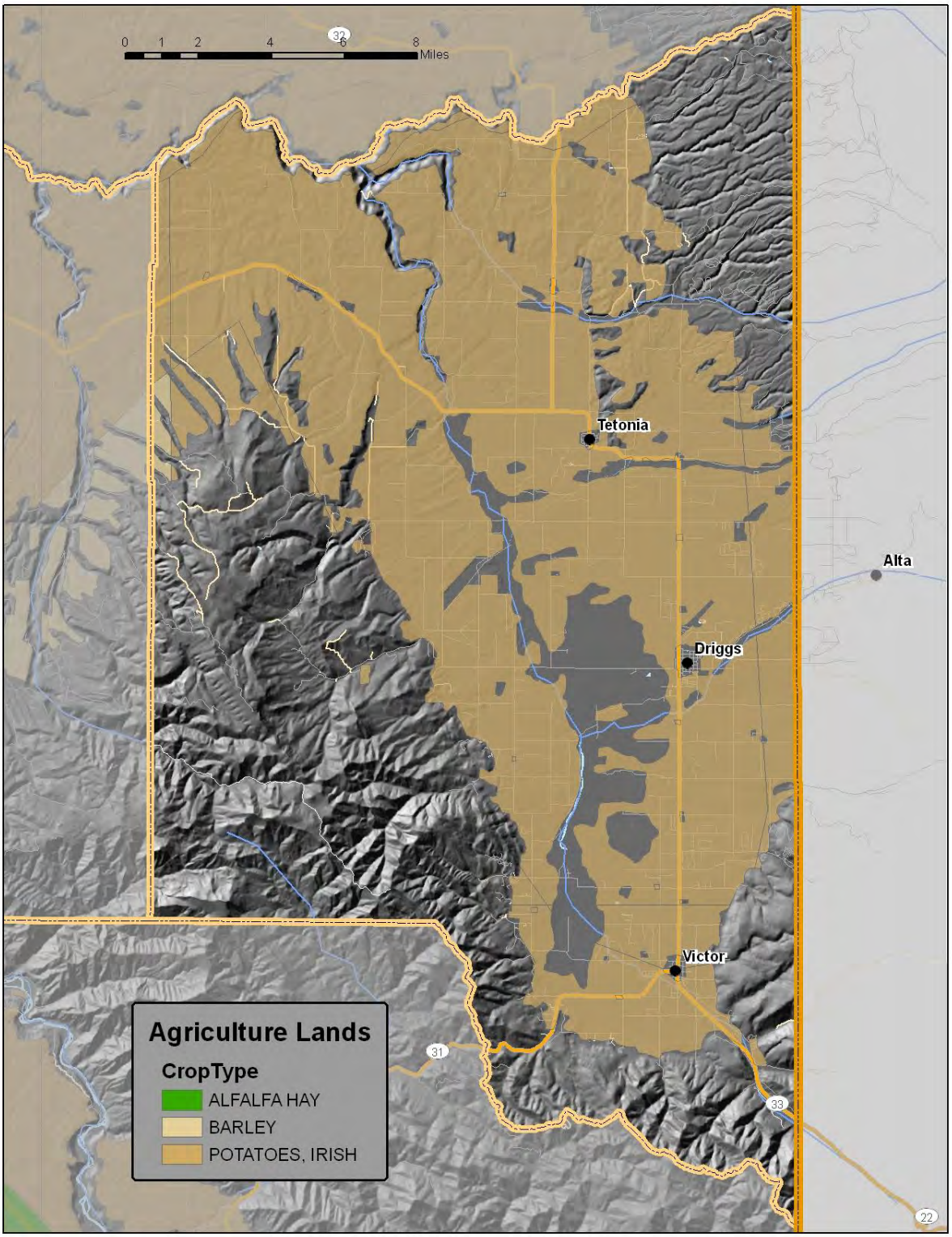


Figure 4.1.4 -
Total Net Income Including
Corporate Farms

Figure 4.1.2 Agricultural Lands in Teton County



Hazard Evalution

The effects of drought on Teton County are moderate. Rural Teton County is built around an agricultural economy and tourism. Farming, including the row crops of potatoes and grains, is extremely vulnerable to drought.

Wildfires are a significant risk to the rural areas as well. Drought, coupled with dry lighting, is a major source of wildfires in the County. Drought is also impacting the forested areas of Teton County. The Lodge Pole Pine Beetle infestation in the area is exacerbated by prolonged drought.

The magnitude of drought was determined based on the scoring below. The County receives drought disaster assistance through the State of Idaho through a Drought Declaration facilitated through the Idaho Department of Water Resources. Areas impacted typically include the entire County. Drought brings about little bodily harm. The potential economic loss in Teton County is significant. Even though the County has a significant economic base associated tourism, agriculture still plays a vital role in the County"s total economic picture. Warning lead times for Drought are usually in months as the National Weather Service is fairly accurate in climate predictions however, the effects of drought decrease the warning lead times for impacts such as wildfire to minutes.

The frequency of drought cycles in Teton County is between five (5) to twenty –five years. Drought cycles last an average of seven years.

Repetitive Loss - Drought has occurs in cycles on the high desert plains of Idaho. The losses are significant and repetitive.

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Drought has a magnitude score of 13.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

By its nature, drought develops slowly (Warning Lead Times = 1), and affects wide geographical areas (Geography Affected = 4) but is the direct cause of little or no death or injury (Bodily Harm = 1). Because agriculture is a large component of Teton County"s economy economic loss could be sustained (Economic Loss = 2). In practice, drought recovery is generally managed at the State level (Reconstruction Assistance = 4). There is no need for sheltering or relocation of individuals (Sheltering = 1). The total Magnitude score is, therefore, thirteen (13) which, for Teton County, is in the "Medium" range. Historical records for drought are available and reliable, indicating that drought occurs in the five to twenty-five year range in Teton County (Frequency = Medium).

Extreme Heat

Description

The term "extreme heat," sometimes called "heat wave," is to some extent a relative one describing a period when weather conditions include temperatures and humidity significantly higher than those usual for a particular geographic area. The National Weather Service (NWS) issues alerts to the public based on its Heat Index which takes both temperature and humidity into account (see Figure 4.1.6). The NWS will initiate alert procedures when the HI is expected to exceed 105°- 110°F (depending on local climate) for at least two consecutive days. The effects of extreme heat are often exacerbated in large urban areas due to the heat island effect and because stagnant atmospheric conditions may trap pollutants. Extreme heat conditions are not common in Teton County.

Historical Frequencies

Teton County has never had an extreme heat event as described above however, the potential remains. Record high temperatures for Teton County were determined by looking at climatology records from 1930 to 2006 for two meteorological sites in the County which include Driggs and the Tetonia Experimental Station. The record high for the County was 98 F recorded on July 15, 1955 at Tetonia. [28]

Figure 4.1.6 and 4.1.7 shows the extreme maximum temperatures recorded at the Driggs and the Tetonia Experimental Station

[28] http://www.wrcc.dri.edu/summary/climsmid.html

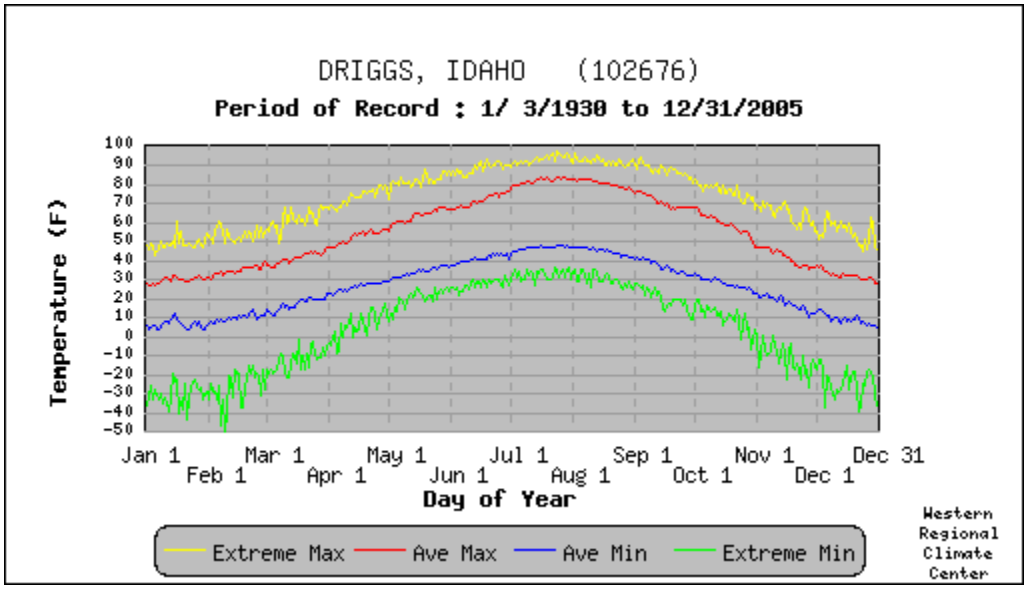


Figure 4.1.6 Driggs Extreme Temperatures

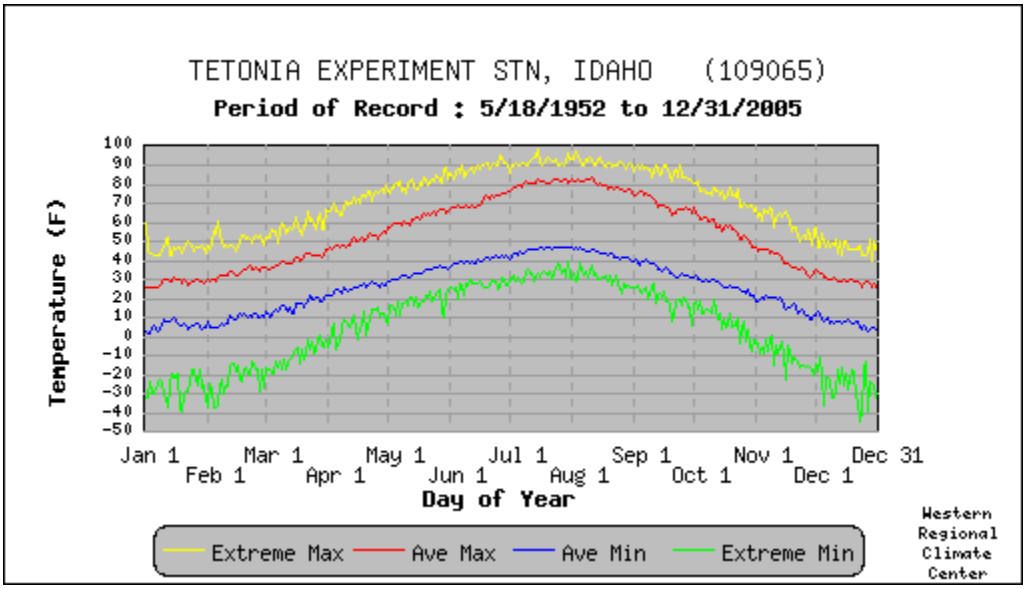


Figure 4.1.7 Tetonia Extreme Temperatures

Impacts

The primary impact of extreme heat is on human health causing such disorders as sunstroke, heat exhaustion, and heat cramps. Particularly susceptible are the elderly, small children, and persons with chronic illnesses. There are also undoubtedly indirect and chronic health effects from extreme heat the magnitude of which are difficult or impossible to estimate. Environmental effects can include loss of wildlife and vegetation and increased probability of wildfires.

Loss Estimates

Extreme heat places high demands on electrical power supplies that can lead to blackouts or brownouts. Economic impacts result from such factors as increased energy prices, loss of business as people avoid leaving their homes to avoid the heat, and agricultural losses. The magnitude of these and other, more indirect impacts is, again, difficult to assess but for severe heat waves have been estimated to be in the billions to hundreds of billions of dollars.

Hazard Evaluation

The magnitude or effects from extreme heat are centered on the individual citizen. The individual citizen is responsible for their own care and sheltering in these events. Shelters could be opened up for the elderly and/or homeless that does not have a means of relief from the heat. Heat related illnesses could cause death if shelter and hydration are not provided. The effects of extreme heat would most likely only affect a portion of the County primarily the lower elevations. The higher elevations are typically 5-10 degrees cooler that the valley. Economic loss would be a function of the cost of energy consumption and the impacts on agriculture. The National Weather Service is fairly accurate in providing extreme weather warnings of this type within days of occurrence. Extreme heat would exacerbate drought conditions and make the response to wildfire more hazardous.

Teton County has not had an extreme heat event however, the potential exists.

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Extreme Heat has a magnitude score of 11.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Warning times for extreme heat are subject to the limitations of short-term weather forecasting (Warning Lead Times = 2). The geographical areas affected are somewhat limited (Geography Affected = 4) and while injuries may occur, deaths are not expected in Teton County (Bodily Harm = 1). Because the duration of extreme heat events is usually only a few days, agriculture is seldom significantly affected and economic loss is usually small (Economic Loss = 1). Because extreme heat usually affects a few, scattered individuals, assistance is seldom required or available from governmental entities however, relocation of individuals who are affected by the heat may be required (Reconstruction Assistance = 1, Sheltering = 2). The total Magnitude score is, therefore, eleven (11) which, for Teton County, is in the "Low" range. Historical records for extreme heat are available and reliable, indicating that no extreme heat event has occurred in Teton County (Frequency = Low).

Extreme Cold

Description

"Extreme cold" is another of the terms describing hazardous that must be defined relative to what is considered normal in a given locale. What might be considered extreme cold varies considerably in the State of Idaho where normal winter temperatures in the southwest are appreciably more moderate than those in the northwest and far north. Very cold temperatures become a particular hazard when accompanied by winds of 10 mph or greater. The NWS has developed a formula for calculating "wind chill" based on temperature and wind speed (see Figure 4.1.6) and in this region issues wind chill advisories when the wind chill temperature are predicted to be -10^{o}F or less with winds of 10 mph or higher for one hour or more. Wind chill warnings are issued when wind chill temperature will be -20^{o}F or less with winds of 10 mph or higher for one hour or more. As with extreme heat, extreme cold is of greatest concern when the condition persists for an extended period of time.

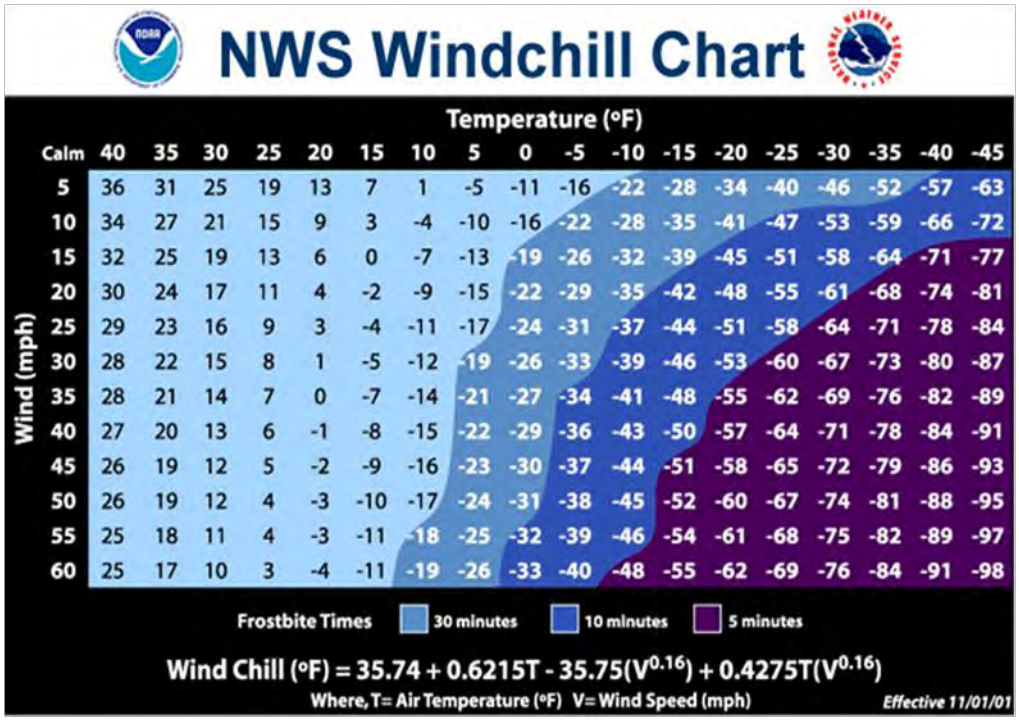


Figure 4.1.8
National Weather Service Windchill Chart
http://www.weather.gov/om/windchill/index.shtml

Historical Frequencies

Record low temperatures for Teton County was determined by looking at climatology records from 1930 to 2006 for three meteorological sites in the County which include Driggs and the Tetonia Experimental Station. The record low for the County was -50 F recorded on February 9, 1933 at Driggs. [29]

Figure 4.1.6 and 4.1.7 above shows the extreme minimum temperature recorded at the Driggs Airport and Tetonia.

Impacts

Health effects of exposure to extreme cold include hypothermia and frostbite, both of which can be life-threatening. Infants and the elderly are most susceptible. In the United States, nearly 700 deaths are directly attributed to hypothermia annually.

Loss Estimates

Extreme cold may cause loss of wildlife and vegetation, kill livestock and other domestic animals. Economic loss may result from flooding due to burst pipes, large demands on energy resources, and diminished business activity. River flooding may take place as a result of the formation of ice jams.

[29] http://www.wrcc.dri.edu/summary/climsmid.html

Hazard Evaluation

Extreme cold affects the individual, families, cities, and the County. Damage typically occurs to individual properties; however, city water systems are usually vulnerable to extreme cold. Repairs to water line freeze ups and breaks typically require the roadways to be excavated necessitating additional maintenance and repairs during the warmer months. The record low temperature in Teton County is -50 degrees recorded at the Driggs Airport.

Extreme Cold can cause death and injury especially to those working or stranded outside for prolonged periods. Economic loss is related to private individuals, businesses, and government agencies in heating of homes and facilities. Additional losses can be expected to the livestock industry. During extreme cold periods the schools are closed to protect children traveling to and from school.

During the spring and early summer, temperatures can drop low enough to produce frost. While such temperatures are not low enough to damage infrastructure or require extra heating costs, it can be devastating to crops. Warning lead times in Teton County usually are a day or two based on forecasts made by the National Weather Service in Pocatello.

Repetitive Loss – Extreme cold occurs frequently in Teton County and losses due to freezing and breaking of pipes occurs annually. Other losses have includes death of livestock and business closure due to loss of electricity during extreme cold events. The loss of electricity due to extreme cold is the largest single contributor to the economic loss.

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Extreme Cold has a magnitude score of 20.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Warning times for extreme cold are subject to the limitations of short-range weather forecasting (Warning Lead Times = 2). The geographical area affected is generally the entire County (Geography Affected = 8). Because very cold weather is common during the winter in Teton County, citizens are prepared. There is, however, some potential for visitor and tourist injuries and deaths (Bodily Harm = 2). The duration of extreme cold events is generally a few days, but the County reports that, if coupled with other severe weather events, economic effects could be devastating. (Economic Loss = 4). The extent and severity of extreme cold is generally quite limited, but some relocation or sheltering from outside the County might be required (Sheltering = 4). Assistance in the event of damage due to extreme cold is provided at the County level (Reconstruction Assistance = 2). The total Magnitude score is, therefore, twenty (20) which, for Teton County, is in the "High" range. Historical records for extreme cold are available and reliable, and indicate that extreme cold events occur frequently in Teton County (Frequency = High).

Winter Storm

Description

The NWS describes "Winter Storm" as weather conditions that produce heavy snow or significant ice accumulations. For purposes of this analysis Severe Winter Storm is defined as any winter condition where the potential exists for a blizzard (winds >= 35mph and falling/drifting snow frequently reduce visibility < ¼ mile, for 2 hrs or more) heavy snowfall (valleys 6 inches or more snowfall in 24 hrs mountains 9 inches or more snowfall in 24 hrs), ice storm, and/or strong winds.

Historical Frequencies

The following tables list heavy snow events (6 inches or more in a 24 hour period) for two weather stations in Teton County; one at Driggs and the other at the Teton Experimental Station.

Heavy Snowfall at Driggs			
Date	**Snowfall (inches)**	**Date**	**Snowfall (inches)**
January 1, 2004	7.2	April 14, 1970	8
January 2, 1961	6	April 17, 1941	8
January 4, 1976	7	April 25,1991	10
January 5, 1976	6	April 26, 1976	7
January 6, 1989	7	April 30, 1995	7
January 7, 1995	7	May 5, 1942	6.5
January 9, 1990	12	May 6, 1975	7
January 10, 1989	10	May 7, 1988	6
January 16, 1933	6	September 21, 1961	11
January 17, 1931	6	October 3, 1994	6
January 20, 1964	8	October 15, 1994	7
January 21, 1993	6	October 22, 1935	7
January 22, 1989	6	October 28, 1989	7

January 23, 1989	7	October 31, 1977	6
January 24, 1996	7	November 5, 1990	8
January 26, 1997	7	November 12, 1994	6
January 27, 1968	12	November 14, 1930	7
January 29, 1937	7	November 16, 1939	8
January 31, 1974	8	November 17, 1986	7
February 3, 1961	6	November 18, 1941	6
February 4, 1937	7	November 19, 1941	7
February 8, 1994	6	November 20, 1931	8
February 10. 1984	9	November 22, 1977	7
February 12, 1975	8	November 25, 1984	7.5
February 13, 1975	9	November 26, 1975	7
February 20, 2001	6	November 28, 1988	7
February 24, 1994	8	November 30, 1984	7
February 25, 1934	8	December 2, 1991	7
February 26, 1996	7	December 4, 1972	10
February 27, 1997	6	December 5, 2001	9
March 2, 1997	18	December 9, 1936	7.5
March 3, 1997	15	December 13, 1999	10.8
March 7, 1988	7	December 19, 1941	8
March 9, 1974	8	December 20, 1932	8
March 14, 1989	8	December 22, 1984	9
March 15, 1971	6	December 23, 1986	6
March 17, 1989	6	December 26, 1936	8
March 26, 1935	14	December 27, 1932	8
March 29, 1966	7.5	December 28, 1978	6
March 30, 1936	8	December 29, 2003	6

Table 4.1.6
Teton County Heavy Snow Events Driggs, Idaho
Source: http://www.wrcc.dri.edu/summary/climsmid.html

Heavy Snowfall at Tetonia Experimental Station			
Date	**Snowfall (inches)**	**Date**	**Snowfall (inches)**
January 19,, 1996	6	November 22, 1977	8
January 26, 1978	9	November 26, 1975	6
January 28, 1988	6	November 27, 1975	8
January 30, 1996	7.2	November 30, 1975	6
February 8, 1965	7	December 14, 1996	6
April 12, 1974	6	December 21, 1996	6
September 21, 1961	6	December 22, 1977	8
October 22, 1975	8	December 30, 1965	8
November 19, 1960	6		

Table 4.1.7
Teton County Heavy Snow Events Tetonia Experimental Station
Source: http://www.wrcc.dri.edu/summary/climsmid.html

Impacts

The impacts of the very cold temperatures that may accompany a severe winter storm are discussed above. Other life threatening impacts are numerous. Motorists may be stranded by road closures or may be trapped in their automobiles in heavy snow and/or low visibility conditions. Bad road conditions cause automobiles to go out of control. People can be trapped in homes or buildings for long periods of time without food, heat and utilities. Those who are ill may be deprived of medical care by being stranded or through loss of utilities and lack of personnel at care facilities. Use of heaters in automobiles and buildings by those who are stranded may result in fires or carbon monoxide poisoning. Fires during winter storm conditions are a particular hazard because fire service response is hindered or prevented by road conditions and because water supplies may be frozen. Disaster Services may also not be available if telephone service is lost. People who attempt to walk to safety through winter storm conditions often become disoriented and lost. Downed power lines not only deprive the community of electricity for heat and light, but pose an electrocution hazard. Death and injury may also occur if heavy snow accumulation causes roofs to collapse. Fatalities in Idaho due to winter storms are somewhat unusual with ten being reported during the ten year period from 1995 through 2004.

Loss Estimates

Economic impacts arise from numerous sources including: hindered transportation of goods and services, flooding due to burst water pipes, forced closing of businesses, inability of employees to reach the workplace, damage to homes and structures, automobiles and other belongings by downed trees and branches, loss of livestock and vegetation and many others.

Hazard Evaluation

Repetitive Loss – Severe Winter Storms occur several times a year. There is some repetitive loss to structures however; it is almost always to private property as government entities appear to take actions to "storm proof" their facilities. There is also some loss of business revenue associated with the closure of roads and business.

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Severe Winter Storms have a magnitude score of 20.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Conditions leading winter storms are usually forecast at least 24 hours in advance. (Warning Lead Times =2). All of Teton County is vulnerable to winter storms (Geography Affected = 8) and deaths and major injuries are possible (Bodily Harm = 2). The duration of a winter storm is generally a few days or less and Teton County agricultural practices generally takes harsh winter conditions into account but, losses and business interruptions are possible (Economic Loss = 2). Sheltering of stranded individuals may be necessary if of major roadways are closed due to severe winter storms (Sheltering = 2). Winter storms can, in some cases, require somewhat extensive recovery and reconstruction resources requiring State assistance (Reconstruction Assistance = 2). The total Magnitude score is, therefore, twenty (20) which, for Teton County, is in the "High" range. Historical records for winter storms are available and reliable, indicating that they occur frequently in Teton County (Frequency = High).

Lightning

Description

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 five miles in length, generate temperatures upwards of 50,000^{o}F, and carry 50,000 volts of electrical potential. Lightning is most often associated with thunderstorm clouds but lightning can strike as far as five to ten miles from a storm. Thunder is caused by the rapid expansion of air heated by a lightning strike. Cloud-to-ground lightning strikes occur with much less frequency in the northwestern U.S. than in other parts of the country.

Historical Frequencies

Place	Date	Time	Event	Details	Reported Damage
Cache	7/15/1940		Lightning	Two people struck killed	unk
Driggs	9/28/1947		Lightning	88 sheep killed when lightning struck the field	$20/head
12 miles east of Driggs	8/1/1951		Lightning	5 people killed when lightning struck, 36 injured	unk
Bates	5/215/1917		Lightning	Man struck and killed, 2 horses killed	unk
Driggs	5/15/1917		Lightning	Woman struck and injured	unk
Lamont	7/4/1929		Lightning	Man struck and killed	unk
Victor	6/17/1937		Lightning	Man struck and killed, one injured	unk
Driggs	6/22/1945		Lightning	A cow and 2 goats struck and killed	unk
Victor	7/18/1921		Lightning	Young man struck and injured severely	unk
Teton County	7/29/1909		Lightning	Woman struck and killed, others injured	unk
Driggs	7/18/1999	6:00 PM	Lightning	15 head of cattle killed when lightning struck nearby tree	21 K

Table 4.1.8
Teton County Lightning Events

Impacts

Lightning is the second most deadly weather phenomenon in the U.S., being second only to floods. On average, sixty to seventy deaths per year are attributed to lightning nationally and in Idaho the average is less than one per year. Despite the enormous energy carried by lightning, only about 10% of strikes are fatal. Injuries include central nervous system damage, burns, cardiac effects, hearing loss, and trauma. The effects of central nervous system injures tend to be long-lasting and severe, leading to such disorders as depression, alcoholism, and chronic fatigue and in some cases to suicide. Lightning also strikes structures causing fires and

damaging electrical equipment. Wildland fires are often initiated by lightning strikes as are petroleum storage tank fires. About one third of all power outages are lightning-related.

Loss Estimates

The magnitude of economic losses is difficult to estimate. Government figures suggest annual national costs at around $30 million but some researchers find evidence that losses may be in the billions of dollars.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Lightning has a magnitude score of 10.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Conditions leading lightning may arise quickly and unpredictably but the NWS usually predicts the occurrence with hours (Warning Lead Times =4). Lightning strikes are highly localized in Teton County (Geography Affected = 1) and fatalities and injuries are rare (Bodily Harm = 1). Economic loss due to lightning is usually limited to a single structure (Economic Loss = 1). There is no need for public sheltering (Shelter = 1) and government resources are not available for reconstruction (Reconstruction Assistance = 1). The total Magnitude score is, therefore, ten (10) which, for Teton County, is in the "Low" range. Historical records for lightning strikes are available and reliable, indicating that lightning events occur relatively frequently in Teton County (Frequency = High).

Hail

Description

The NWS definition of "hail" is: Showery precipitation in the form of irregular pellets or balls of ice more than 5 mm in diameter, falling from a cumulonimbus cloud. Its size can vary from the defined minimum, a little over a quarter of an inch, up to 4.5 inches or larger. "Severe hail" is defined as being 0.75 inches or more in diameter. The largest hailstones are formed in supercell thunderstorms because of their sustained updrafts and long duration. Hail and severe hail are relatively uncommon in Idaho. In the ten year period from 1986 to 1995 the national weather service recorded severe hail in Idaho on 113 occasions while in the same time period severe hail was recorded in Colorado nearly 1,400 times.[30]

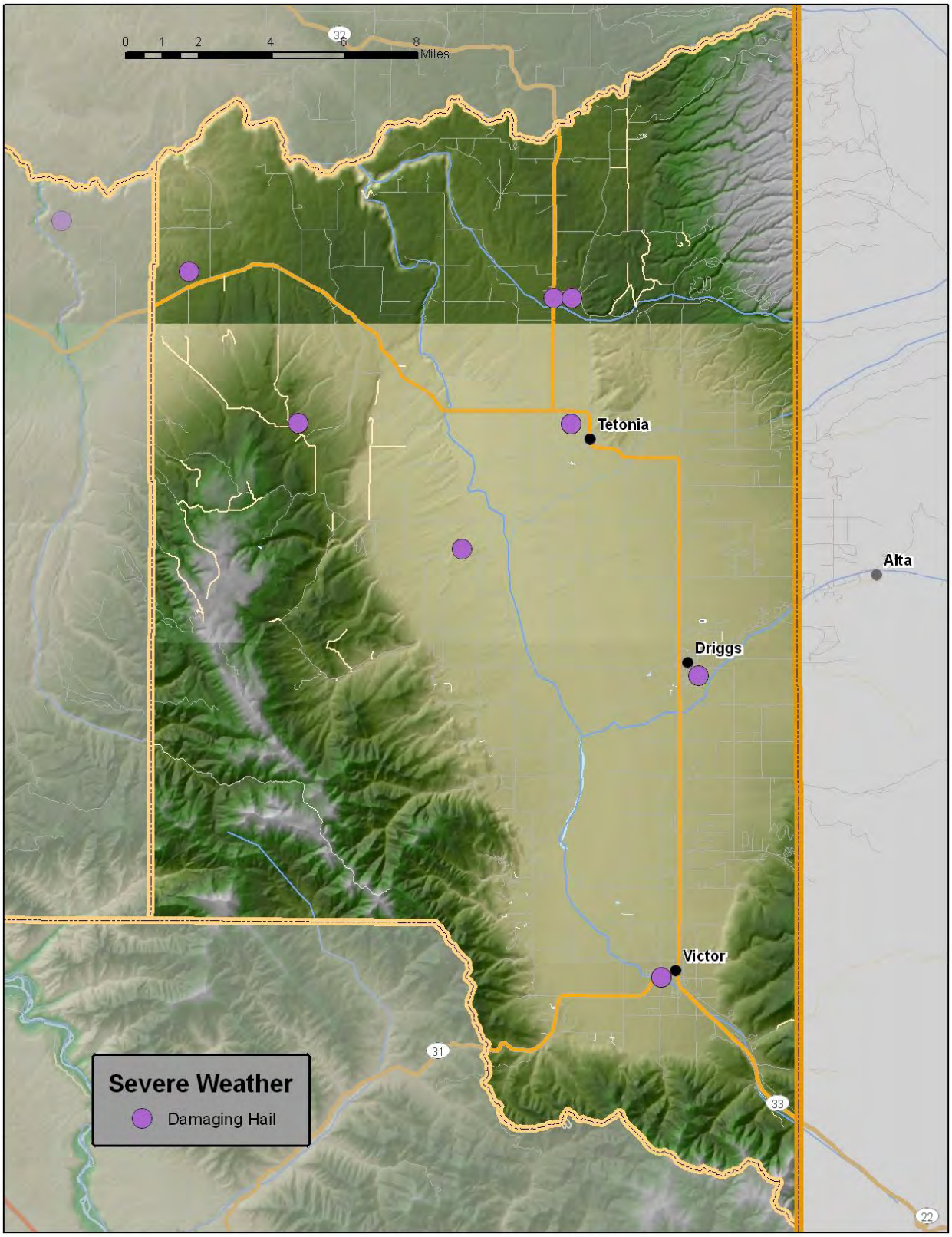
Historical Frequencies

Place	Date	Time	Event	Magnitude	Reported Damage
Felt, Clementsville	8/24/1922		Hail	unk	Destroyed grain crops
Driggs	7/22/1937		Hail	unk	Destroyed several crop fields
Teton	7/14/1975	10:00 PM	Hail	.75 in	
Teton	7/9/1983	3:15 PM	Hail	1.75 in	
Victor	6/3/1996	5:47 PM	Hail	.25 in	
Tetonia	6/22/1996	1:50 AM	Hail	.75 in	
Victor	6/17/1997	9:18 PM	Hail	unk	
Tetonia	6/14/1998	8:18 PM	Hail	1.00 in	
Tetonia	8/4/2000	6:13 PM	Hail	.75 in	
Tetonia	9/13/2001	4:30 PM	Hail	.88 in	
Driggs	7/23/2002	2:25 PM	Hail	.75 in	
Victor	7/4/2004	7:43 PM	Hail	.75 in	
Victor	7/9/2004	4:15 PM	Hail	1.00 in	
Driggs	6/14/2006	9:12 AM	Hail	.75 in	

Table 4.1.9
Teton County Hail Events

[30] http://www.ems.psu.edu/~nese/ch9web.htm

Figure 4.1.9 Damaging Hail Events



Impacts

Deaths and injuries due to hail have occurred but are rare.

Loss Estimates

Economic loss can be extensive, especially to agricultural based economies. Hail is very damaging to crops. Severe hail may cause extensive property damage including damage to vehicle paint and bodywork, glass, shingles and roofs, plastic surfaces, etc. Hail loss nationally is estimated at over one billion dollars annually.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Hail has a magnitude score of 11.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Conditions leading hail may arise quickly. National Weather Service predictions usually provide a few hour warning. (Warning Lead Times =4). Hail events are relatively localized (Geography Affected = 2) and when they occur fatalities very rare and injuries uncommon (Bodily Harm = 1). Economic loss due to hail has not been extensive in Teton County (Economic Loss = 2), and reconstruction resources are generally left to individuals and families (Reconstruction Assistance = 1). There is no need for public sheltering (Shelter = 1). The total Magnitude score is, therefore, eleven (11) which, for Teton County, is in the "Low" range.

Historical records for hail storms are available and reliable, indicating that such events occur relatively frequently in Teton County (Frequency = High).

Tornado

Description

The NWS describes tornado as, "a violently rotating column of air, usually pendant to a cumulonimbus, with circulation reaching the ground. It nearly always starts as a funnel cloud and may be accompanied by a loud roaring noise. On a local scale, it is the most destructive of all atmospheric phenomena." Like hail, most tornadoes are spawned by supercell thunderstorms. They usually last only a few minutes, although some have lasted more than an hour and traveled several miles. Wind speeds within tornadoes are estimated based on the damage caused and expressed using the Enhanced Fujita (EF) Scale (Table 4.1.10)

EF scale	Class	Wind speed		Description
		mph	km/h	
F0	weak	65-85	105-137	Gale
F1	weak	86-110	138-177	Moderate
F2	strong	111-135	178-217	Significant
F3	strong	136-165	218-266	Severe
F4	violent	166-200	267-322	Devastating
F5	violent	> 200	> 322	Incredible

Table 4.1.10
Enhanced Fujita (EF) Scale for Estimation of Tornado Wind Speeds
Source: http://www.srh.noaa.gov/srh/jetstream/mesoscale/tornado.htm

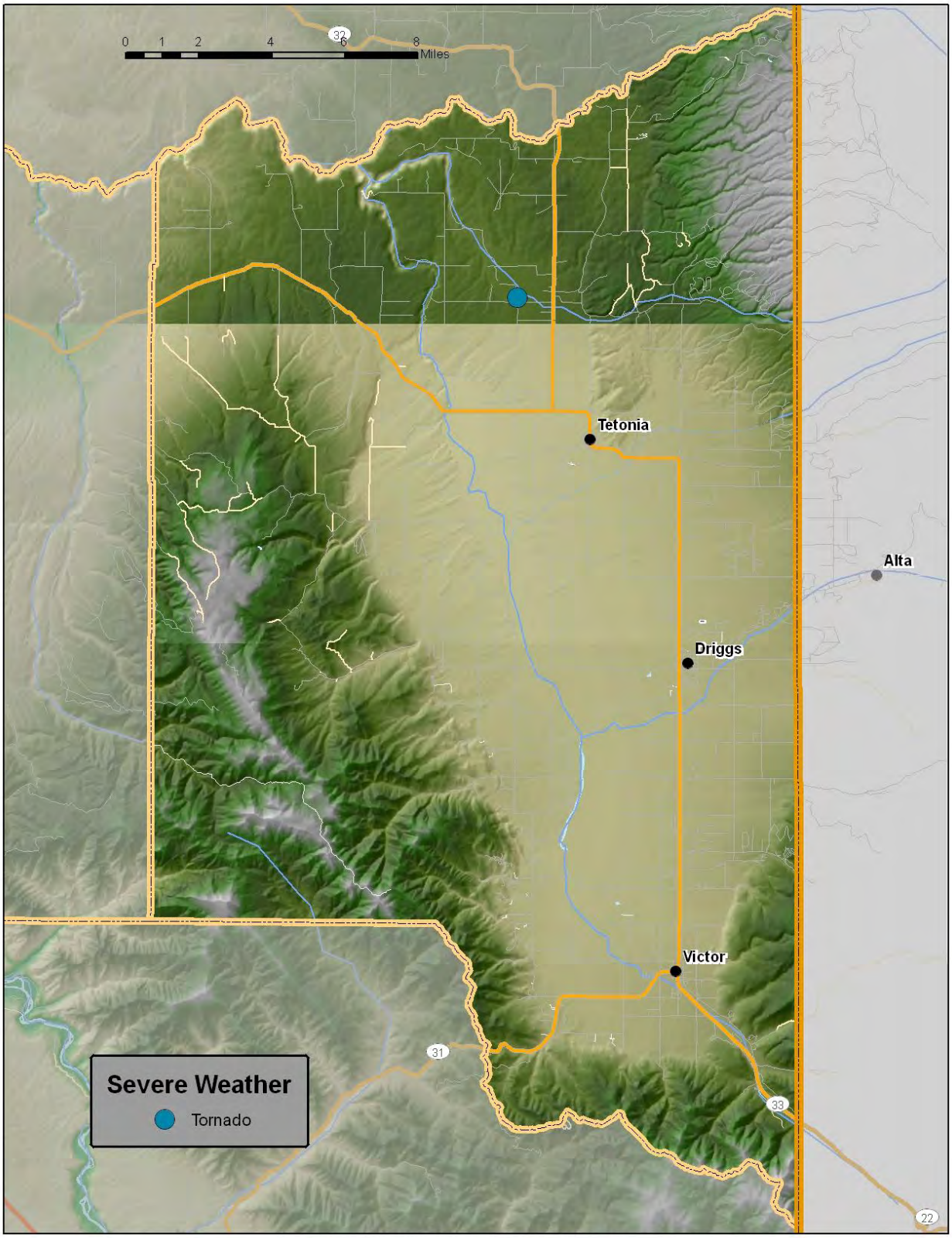
Idaho has relatively few tornadoes, averaging three reported per year between 1953 and 2004. Tornadoes of F2 strength or greater are extremely rare in Idaho.

Historical Frequencies

Location	Date	Time	Event	Magnitude	Reported Damage
Driggs	5/19/1932		Tornado	unk	Boy killed, grandstand at ball park destroyed
Teton	6/9/1954	4:00 PM	Tornado	unk	
Driggs	5/31/1997	11:07 AM	Funnel Cloud	n/a	
Driggs	9/1/2000	12:10 PM	Funnel Cloud	n/a	

Table 4.1.11
Teton County Tornado Events

Figure 4.1.11 Location of Tornado Events



Impacts

Loss of utilities (primarily due to fallen trees) is common following tornadoes and, depending on circumstances, communities might be deprived of almost any kind of goods and services including food, water and medical care. Agriculturally, crop and livestock loss is also possible as is loss of timber production.

Loss Estimates

There is no record of actual dollar losses in Teton County due to Tornados. There was a death record in 1945 as well as damage. Depending on location it is possible that extreme damage could be possible due to a Tornado.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Tornados have a magnitude score of 12.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Conditions leading to tornado formation may arise quickly and unpredictably. The NWS generally provides warnings of potential tornado activity within hours of the event (Warning Lead Times = 4). The path of a tornado is usually relatively localized (Geography Affected = 2) and given their historically low F-scale magnitude in Teton County, fatalities and injuries are unlikely (Bodily Harm = 1). Economic loss due to structural damage is possible (Economic Loss = 2), but only County resources would be required

for reconstruction (Reconstruction Assistance = 2). Public Sheltering would not be required (Shelter = 1). The total Magnitude score is, therefore, twelve (12) which, for Teton County, is in the "Low" range. Historical records for tornadoes are available and reliable, indicating that tornadoes occur in the five to twenty-five year range in Teton County (Frequency = Medium).

Straight Line Wind

Description

The term "straight line wind" is used to describe any wind not associated with rotation, particularly tornadoes. Of concern is "high wind," defined by the NWS as, "Sustained wind speeds of 40 mph or greater lasting for 1 hour or longer, or winds of 58 mph or greater for any duration."

Like tornadoes, strong, straight line winds are generated by thunderstorms and they 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 "down-bursts" and "derechoes." A down-burst is a small area of rapidly descending rain and rain-cooled air beneath a thunderstorm. The winds produced from a down-burst often travel in one direction, and the worst damage is usually on the forward side of the down-burst. Derechoes 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 they are also capable of producing small tornadoes. Damaging, straight line winds are much more common than tornadoes and their damage is often incorrectly attributed to tornadoes. Derechoes are not common in Idaho, averaging less than one per year, while downburst associated straight line winds occur more frequently.

Historical Frequencies

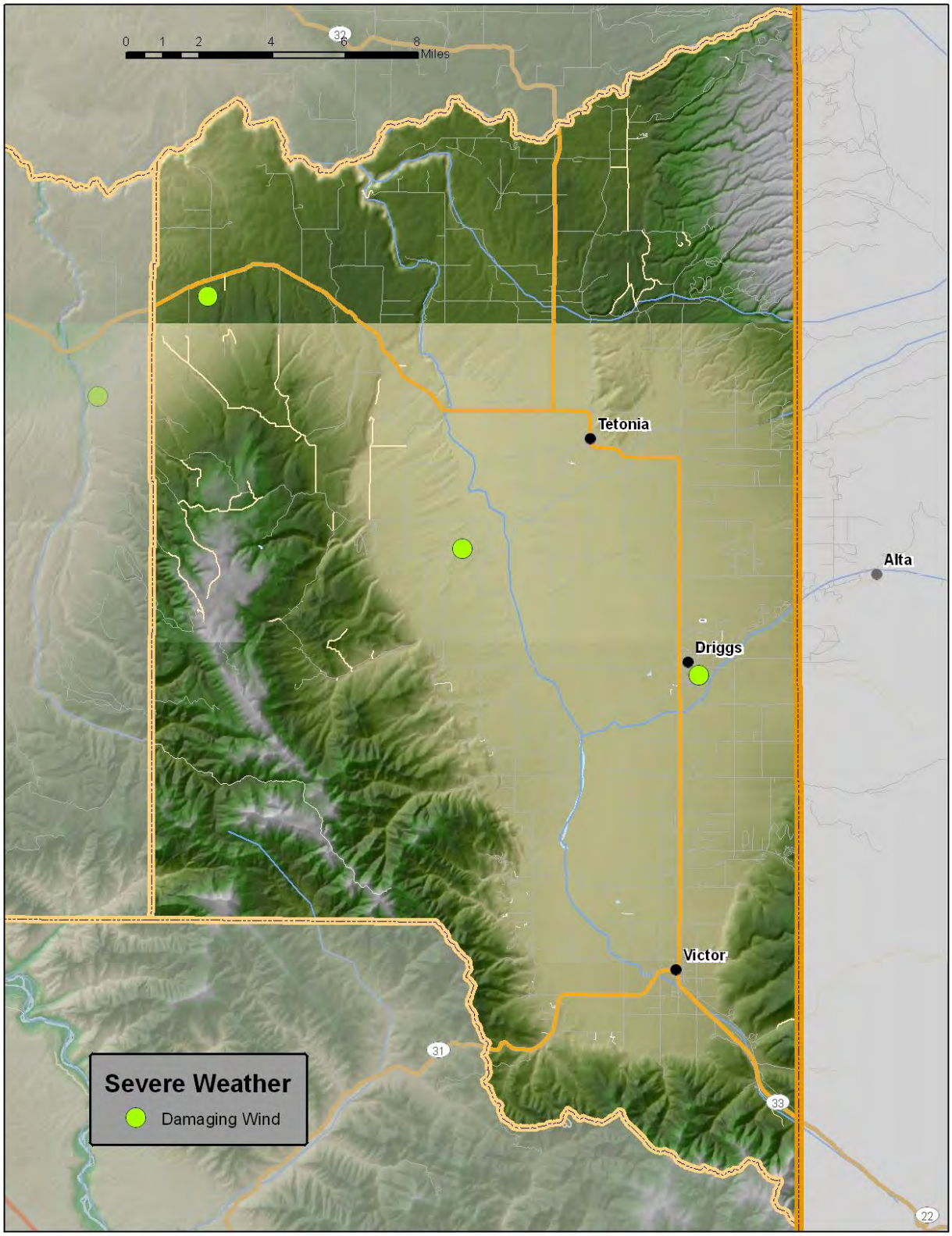
Place	Date	Time	Event	Magnitude	Reported Damage
Teton	7/9/1983	3:15 PM	Tstm Wind	unk	
Victor	6/17/1997	9:18 PM	Tstm Wind	43 kts	
Clementsville	5/29/2003	3:15 PM	Tstm Wind	60 kts	1 K
Driggs	8/22/2003	4:55 PM	Tstm Wind	60 kts	

Table 4.1.12
Teton County Wind Events

Impacts

The impacts of straight line winds are virtually the same as those from tornadoes with similar wind speeds. The damage is distinguishable from that of a tornado only in that the debris generally deposited in nearly parallel rows. Downbursts are particularly hazardous to aircraft in flight.

Figure 4.1.12 Damaging Straight Line Wind Events



Loss Estimates

Since 1932 there has been a $1000 reported loss due to straight line or downburst damage in Teton County.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Straight Line wind has a magnitude score of 11.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Conditions leading to straight line winds typically develop with days of warning (Warning Lead Times = 2). As with other thunderstorm-related events geographical area affected somewhat limited (Geography Affected = 4). Death or injury is rare in Teton County (Bodily Harm = 1) but some economic loss due to structure damages can occur (Economic Loss = 2). Reconstruction from such damage is left to the individual or family (Reconstruction Assistance = 1). There would be no need for public sheltering (Shelter = 1). The total Magnitude score is, therefore, eleven (11) which, for Teton County, is in the "Low" range. Historical records for straight line winds are available and reliable, indicating that they occur yearly to several times a year in Teton County (Frequency = High).

Section 4.2 Flooding

Flooding is defined by NWS as "the inundation of normally dry areas as a result of increased water levels in an established water course." River flooding, the condition where the river rises to overflow its natural banks, may occur due to a number of causes including prolonged, general rainfall, locally intense thunderstorms (see Flash Flood above), snowmelt, and ice jams. In addition to these natural events, there are a number of factors controlled by human activity that may cause or contribute to flooding. These include dam failure (discussed below), levee failure, and activities that increase the rate and amount of runoff such as paving, reducing ground cover, and clearing forested areas. Flooding is a periodic event along most rivers with the frequency depending on local conditions and controls such as dams and levees. The land along rivers that is identified as being susceptible to flooding is called the floodplain. The Federal standard for floodplain management under the National Flood Insurance Plan (NIFP) is the "100-year floodplain." This area is chosen using historical data such that in any given year there is a one percent chance of a "Base Flood" (also known as "100-year Flood" or "Regulatory Flood"). A Base Flood is one that covers or exceeds the 100-year floodplain. In Idaho, flooding most commonly occurs in the spring of the year and is caused by snowmelt. Floods occur in Idaho every one to two years and are considered the most serious and costly natural hazard affecting the State. In the twenty-five years from 1976 to 2000 there were five Federal and twenty-eight State disaster declarations due to flooding. The amount of damage caused by a flood is influenced by the speed and volume of the water flow, the length of time the impacted area is inundated, the amount of sediment and debris carried and deposited, and the amount of erosion that may take place.

Flooding is a dynamic natural process. Along rivers, streams and coastal bluffs a cycle of erosion and deposition is continuously rearranging and rejuvenating the aquatic and terrestrial systems. Although many plants, animals and insects have evolved to accommodate and take advantage of these ever-changing environments, property and infrastructure damage often occurs when people develop coastal areas and floodplains and natural processes are altered or ignored.

Flooding can also threaten life, safety and health and often results in substantial damage to infrastructure, homes, and other property. The extent of damage caused by a flood depends on the topography, soils and vegetation in an area, the depth and duration of flooding, velocity of flow, rate of rise, and the amount and type of development in the floodplain.

Flood Terminology

A number of flood-related terms are frequently used in this plan and are defined below.

Flood Insurance Study (FIS): A *Flood Insurance Study* is the official report provided by the Federal Insurance Administration, which provides flood profiles, the flood boundary-floodway map, and the water surface elevation of the estimated 100-year base flood.

Flood Insurance Rate Map (FIRM): The Flood Insurance Rate Maps (FIRM) are the official maps on which the Federal Insurance Administration has delineated both the areas of special flood hazards and the risk premium zones applicable to the community.

100-year Base Flood: Base Flood means the flood having a 1% chance of being equaled or exceeded in any given year. Also referred to as the "100-year flood".

Floodplain: A floodplain is land adjacent to a lake, river, stream, estuary or other water body that is subject to flooding. If left undisturbed, the floodplain serves to store and discharge excess floodwater. In riverine systems, the floodplain includes the floodway.

Floodway: "Floodway" means the channel of a river or other watercourse and the adjacent areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot.

Types of Flooding

Flooding can occur in a number of ways, and many times are not independent of each other and can occur simultaneously during a flood event: The Types of Flooding considered for this Plan include:

- heavy rainfall;
- urban storm water overflow;
- rapid snowmelt;
- rising ground-water (generally in conjunction with heavy prolonged rainfall and saturated conditions);
- riverine ice jams;
- flash floods;
- fluctuating lake levels;
- alluvial fan flooding

Floodplain Management

Teton County participates in the National Flood Insurance Program as well as the City of Victor. The Cities of Driggs and Tetonia do not participate in the NFIP.

Teton County has no communities within the 100 year floodplain hazard areas that are not participating in the NFIP, however, the City of Driggs and Tetonia have a potential for flooding from intermittent streams have experienced losses related to flash flooding and spring runoff. The Teton County Floodplain Administrator will work with the Cities to encourage their participation in the NFIP.

Teton County has no communities under suspension or revocation of participation in the NFIP[31]. The Teton County Flood Plain Administrator is the Planning and Zoning Department Coordinator.

An important part of being an NFIP community is the availability of low cost flood insurance for those homes and business within designated floodplains, or in areas that are subject to flooding, but that are not designated as Special Flood Hazard Areas.

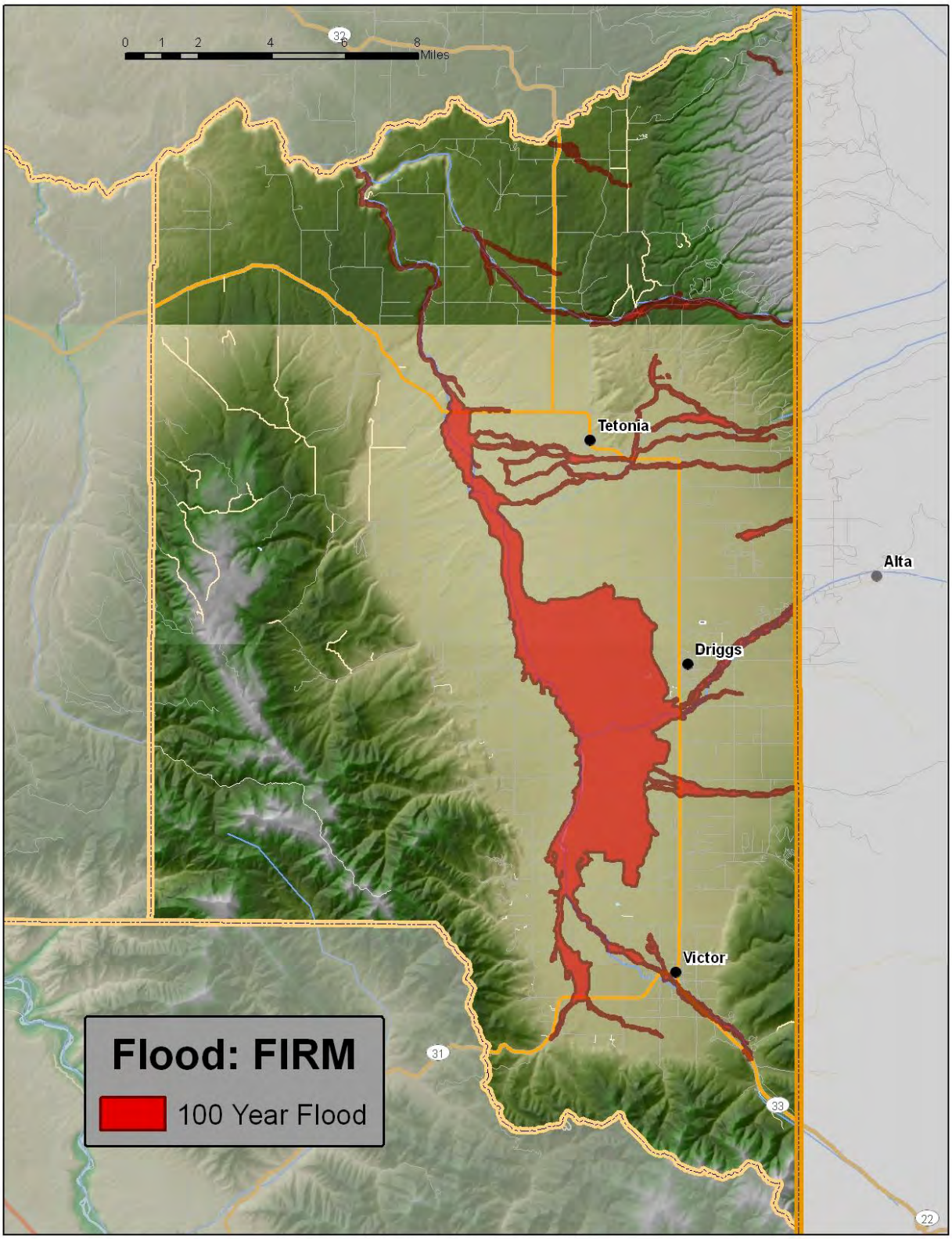
As evidenced in the Community Questionnaire, overall participation by individuals and business in the NFIP appears to be low. Potential reasons for continuing low participation in the program are:

- Current cost of insurance is prohibitive.
- A lack of knowledge about the existence of the availability of low cost flood insurance.
- Home and business owners unaware of their vulnerability to flood events.

[31] IDWR 2004

The last two reasons can be addressed through public education. The first could be addressed by all communities in the County taking advantage of the Community Rating System (CRS). To encourage communities to go beyond the minimum requirements and further prevent and protect against flood damage, the NFIP established the CRS. To qualify for CRS, communities can do things like make building codes more rigorous, maintain drainage systems, and inform residents of flood risk. In exchange for becoming more flood ready, the CRS community's residents are offered discounted premium rates. Based on the community's CRS ratings, they can qualify for up to a 45% discount of annual flood insurance premiums. Neither the County, nor any of the incorporated cities participate in the Community Rating System.

Figure 4.2.1 Teton County FIRM Map



Flash Flood

Description

Flash flood is defined by NWS as, "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). Ongoing flooding can intensify to flash flooding in cases where intense rainfall results in a rapid surge of rising flood waters." Flash floods differ from floods (discussed below under River Flooding) in the rapidity with which they develop. Floods generally develop over a period of several days, providing more warning time and time for preparation and evacuation. Flash floods occur with little or no warning. They may occur during thunderstorms due to rapid runoff from steep terrain, from areas where the soil is already saturated, or in urban areas where vegetation has been removed and pavement has replaced exposed soil. Flash floods may also arise as the result of dam failure (discussed below) or the breakup of ice jams.

Historical Frequencies

Place	Date	Time	Event	Details	Reported Damage
Driggs	6/22/1945		Flash Flood	Streets flooded with 14" of water.	unk

Table 4.2.1 Teton County Flash Flood Events

Impacts

Because flash floods develop so rapidly, people on foot or in automobiles may be stranded or may be swept away and injured or drowned. They are characterized by high velocity water flow and large amounts of debris, both of which cause damage to or destroy structures and other objects in their path. Other impacts are discussed below under River Flooding.

Loss Estimates

Historical loss estimates due to Flash Flooding have been from several thousands of dollars to hundreds of dollars however, with the growth being experienced in Teton County losses due to flash flooding have the potential to significantly increase due to the building of new subdivisions and the related increased of impervious surfaces that are created. The population growth in Teton County between 2000 and 2006 was 14.7% which has increased the amount of impervious surfaces in the Teton County significantly.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Flash Flood has a magnitude of 13.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Conditions leading to flash flooding may arise quickly. National Weather Service forecasts generally provide warnings within hours of the event. (Warning Lead Times = 4). The vulnerability to flash flooding in Teton County is reasonably limited (Geography Affected = 2). Fatalities and injuries are improbable (Bodily Harm = 1) but some economic loss due to structural damage is possible (Economic Loss = 2) and may be extensive enough to require county resources for reconstruction (Reconstruction Assistance = 2). Depending on the location and amount of damage associated with the event public sheltering may be required (Shelter = 2). The total Magnitude score is, therefore, thirteen (13) which, for Teton County, is in the "Medium" range. Historical records for flash flooding are available and reliable, indicating that flash floods occur in the five to twenty-five year range in Teton County (Frequency = Medium).

River or Stream Flooding

Description

River or Stream flooding, the condition where the river rises to overflow its natural banks, may occur due to a number of causes including prolonged, general rainfall, locally intense thunderstorms, snowmelt, and ice jams.

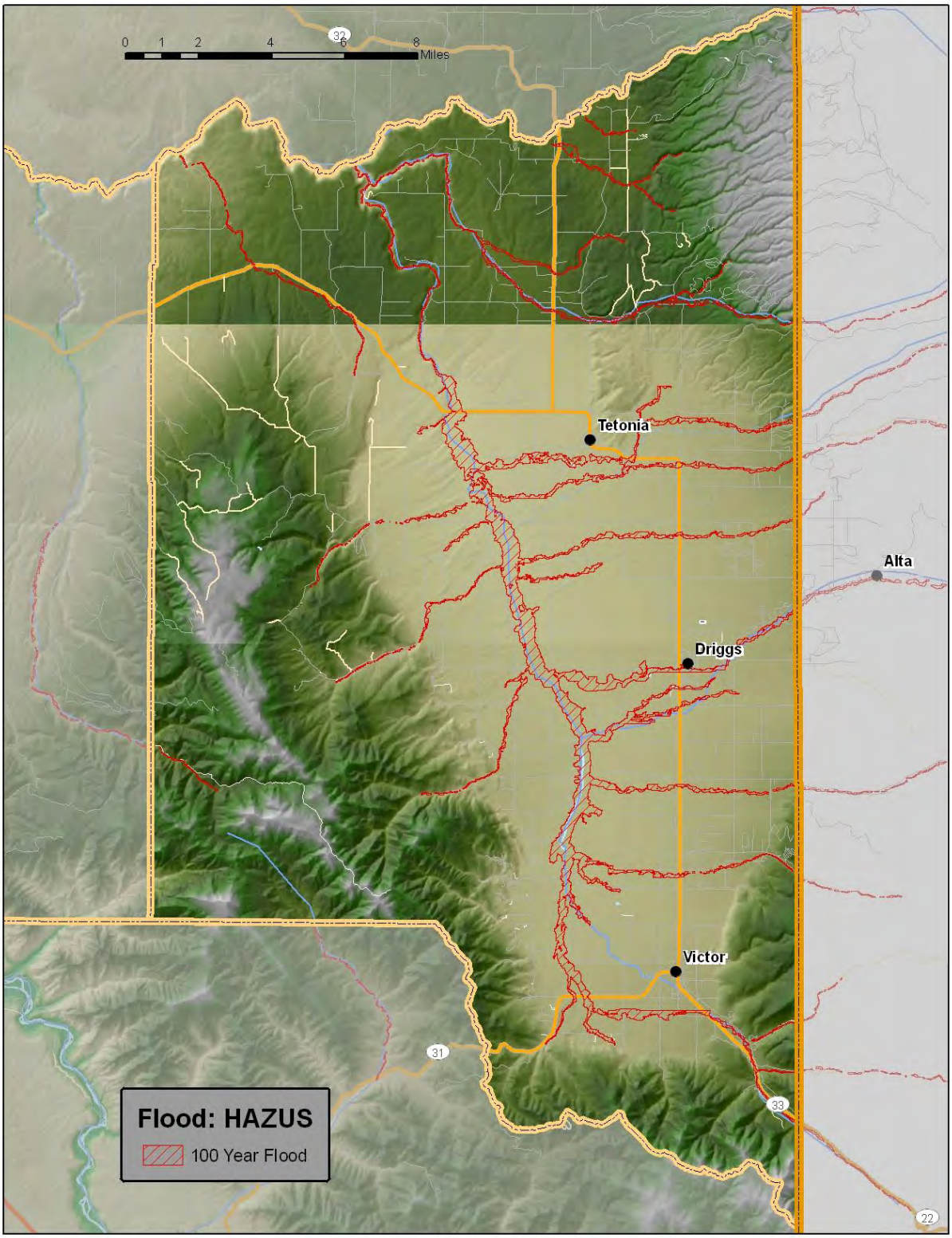
Historical Frequencies

There are no reported flooding stream or river flooding events in the historical records reviewed for Teton County however, annual spring runoff from snow melt almost always does some damage in Teton County. The pictures provided below illustrate some flooding that occurred during the spring of 2008 along the Badger Creek Road. *This is an annual occurrence and is considered repetitive loss.*

Impacts

Human death and injury sometimes occur as a result of river flooding but are not common. Human hazards during flooding include drowning, electrocution due to downed power lines, leaking gas lines, fires and explosions, hazardous chemicals and displaced wildlife. Economic loss and 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, and many other community services including medical care, and may do so for long periods of time.

Figure 4.2.2 HAZUS 100 Year Floodplain



Loss Estimates

The valuation of the all properties, according to the Teton County GIS parcel data within the 100 year Flood Plain as defined by FEMA"s HAZUS program is provided Table 4.2.3.

Year	Number of Parcels	Value of Parcels	Max Parcel Value
2007	1672	$106,062,833	$3,520,000

Table 4.2.3
Loss Estimates for Flood Events

Using the State and Local Mitigation Planning how-to- guide the estimate is refined as follows:

Based on a 1 foot average flood depth in the total HAZUS floodplain the loss for structures would be ~ $15,909,300. The loss to contents would be ~ $23,863,950 for a total loss estimate of ~ $39,773,250.

Business within the floodplain would expect to have a functional down time, or the time it takes to relocate and restart their business, of 23 days. The rebuilding time for businesses, or the time it takes to rehab their buildings and move back in, is estimated to take as much as 134 days.

Hazard Evaluation

Repetitive Loss – As described above there is repetitive flood loss in the Badger Creek area. The loss as illustrated is primarily to county and privately owned roadways. This loss has been chosen as a high priority mitigation project.

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

River/Stream Flooding has a magnitude score of 19.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

Conditions leading to river/stream flooding usually develop over a period of days (Warning Lead Times = 2). In Teton County, such flooding affects multiple sections (Geography Affected = 4) but is expected to be the direct cause of little or no death or injury (Bodily Harm = 1). Major business interruption and major economic loss would be expected from river/stream flooding (Economic Loss = 8) however, the recovery is expected to be managed at the County level (Reconstruction Assistance = 2). Some public sheltering would be required (Shelter = 2). The total Magnitude score is, therefore, nineteen (19) which, for Teton County, is in the "High" range. Historical records for river/stream flooding are available and reliable, indicating that flooding occurs annually within Teton County (Frequency = High).

Dam Failure

Description

Dam failure is the unintended release of impounded waters. Dams can fail for one or a combination of the following reasons:

- Overtopping caused by floods that exceed the capacity of the dam.
- Deliberate acts of sabotage.
- Structural failure of materials used in dam construction.
- Poor design and/or construction methods.
- Movement and/or failure of the foundation supporting the dam.
- Settlement and cracking of concrete or embankment dams.
- Piping and internal erosion of soil in embankment dams.
- Inadequate maintenance and upkeep.

Failures may be categorized into two types; component failure of a structure that does not result in a significant reservoir release, and uncontrolled breach failure that leads to a significant release. With an uncontrolled breach failure of a manmade dam there is a sudden release of the impounded water, sometimes with little warning. The ensuing flood wave and flooding have enormous destructive power. The Idaho Department of Water Resources (IDWR) is responsible for dam safety in this State. The program is described on the IDWR web site.[32]

Dams 10 feet or higher or which store more than 50 acre feet of water are regulated by the Idaho Department of Water Resources (as are mine tailings impoundment structures). Idaho currently has 546 water storage dams and 21 mine tailings structures that are regulated by IDWR for safety. The Dam Safety Section inspects these dams or tailings structures every other year unless one has a particular problem. Copies of all inspection reports for each of the dams and tailing structures are available at the IDWR State Office in Boise. Inspection reports are also available at the four IDWR Regional Offices for dams and tailing structures located in their specific regions.

[32] http://www.idwr.state.id.us/water/stream_dam/dams/dams.htm

Dam Classifications

Each dam inspected by Idaho Water Resources given both a size and risk classification.

Size Classification

Small – 3: Twenty (20) feet high or less and a storage capacity of less than one hundred (100) acre feet of water.

Intermediate – 2: More than twenty (20) but less than forty (40) feet high or with a storage capacity of one hundred (100) to four thousand (4,000) acre feet of water

Large – 1: Forty (40) feet high or more or with a storage capacity of more than four thousand (4,000) acre feet of water. There are no large dams in Teton County.

Risk Classification

This classification is used by IDWR to classify potential losses and damages anticipated in down-stream areas that could be attributable to failure of a dam during typical flow conditions.

Low Risk – 3: No permanent structures for human habitation; Minor damage to land, crops, agricultural, commercial or industrial facilities, transportation, utilities or other public facilities or values.

Significant Risk – 2: No concentrated urban development, one (1) or more permanent structures for human habitation which are potentially inundated with flood water at a depth of two (2) ft. or less or at a velocity of two (2) ft. per second or less. Significant damage to land, crops, agricultural, commercial or industrial facilities, loss of use and/or damage to transportation, utilities or other public facilities or values.

High Risk – 1: Urban development, or any permanent structure for human habitation which are potentially inundated with flood water at a depth of more than two (2) ft. or at a velocity of more than two (2) ft. per second. Major damage to land, crops, agricultural, commercial or industrial facilities, loss of use and/or damage to transportation, utilities or other public facilities or values.

Purposes Categories:

N-Industrial, B-Mining, O-Other, C-Commercial, P-Power, D-Domestic, Q-Fire Protection, E-Erosion Control, F-Flood Control, S-Stockwater, G-Wildlife Protection, T-Mine Tailings, H-Fish Propagation, I-Irrigation, J-Stockwater and Irrigation, K-Domestic, Stock and Irrigation, L-Domestic and Irrigation, M-Municipal Supply

Dam Type

Earth- Earth Fill, Rock- Rock Filled, CNGRV- Concrete Gravity, CNAR-Concrete Arch, MCNAR-Multiple Concrete Arch, TMCRB-Timber Crib, SLBT-lab and Buttress, RKMAS-Rock Masonry, Metal-Metal Sheet Pile, AUXDAM-Auxillary Dam

There is only one dam in Teton County, the Felt Power Dam.

Name	**Stream**	**Purpose**	**Risk Category**	**Size Category**	**Type**	**Storage Capacity** (Acre Ft.)	**Height** (Ft.)
Felt	Teton River	P	3	3	CNGRV	40	12

Table 4.4.1 Dams in Teton County – Source
http://www.idwr.idaho.gov/water/stream_dam/dams/Dams.pdf

Historical Frequencies

There has never been a dam failure in Teton County according to recorded history.

Impacts

Impacts from dam failures can be extremely devastating as evidenced by the failure of the Teton Dam in 1976. This failure changed the entire Region‟s perception of hazard mitigation and emergency preparedness. Through firsthand observation of neighboring Madison County, Teton County residents learned what it takes to protect lives and then to reconstruct a community; not only the infrastructure and homes but in large measure the economy as well.

Loss Estimates

There have been no dam failures in Teton County. Losses from a failure of the Felt Dam would be extremely limited.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Dam Failure has a magnitude score of 16.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

Warning time for a dam failure would be relatively short. (Warning Lead Times = 8). A relatively small portion of the County would be vulnerable to dam failures (Geography Affected = 2). Because of this vulnerability, no deaths and serious injuries would be expected (Bodily Harm = 1) along with only minor economic loss (Economic Loss = 2). County reconstruction assistance might be required (Reconstruction Assistance = 2). Relocation of major populations would not be necessary (Shelter = 1). The total Magnitude score is, therefore, sixteen (16) which, for Teton County, is in the "Medium" range. Historical records for dam failure are available and reliable, indicating that, no dam failures have occurred in the County (Frequency = Low).

Section 4.3 Geologic Hazards

Geologic hazards are adverse conditions capable of causing loss of life and damage to property that involve the movement of geologic features or elements of the surface of the earth. There are a wide variety of such hazards that may be categorized as either sudden or slow phenomena. Slowly developing geologic hazards include soil erosion, sinkholes and other ground subsidence, and migrating sand dunes. Only sudden geologic hazards will be considered in this planning and will be limited to: earthquake, volcanic eruption, landslide/mudslide, and snow avalanche.

Earthquake

Description

The U.S. Geological Survey (USGS) defines earthquake as: "Ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the Earth or by volcanic or magmatic activity, or other sudden stress changes in the Earth." The hazards associated with earthquake are essentially secondary to ground shaking (also called seismic waves) which may cause buildings to collapse, displacement or cracking of the earth"s surface, flooding as a result of damage to dams or levees, and fires from ruptured gas lines, downed power lines and other sources. Earthquakes cause both vertical and horizontal ground shaking which varies both in amplitude (the amount of displacement of the seismic waves) and frequency (the number of seismic waves per unit time), usually lasting less than thirty seconds. Earthquakes are measured both in terms of their inherent "magnitude" and in terms of their local "intensity."

The magnitude of an earthquake is essentially a relative estimate of the total amount of seismic energy released and may be expressed using the familiar "Richter Scale" or using the "moment magnitude scale" now favored by most technical authorities. Both the Richter Scale and the moment magnitude scale are based on logarithmic formulae meaning that a difference of one unit on the scales represents about a thirty-fold difference in amount of energy released (and, therefore, potential to do damage). On either scale, significant damage can be expected from earthquakes with a magnitude of about 5.0 or higher. What determines the amount of damage that might occur in any given location, however, is not the magnitude of the earthquake but the intensity at that particular place. Earthquake intensity decreases with distance from the earthquake"s "epicenter" (its focal point) but also depends on local geologic features such as depth of sediment and bedrock layers. Intensity is most commonly expressed using the "Modified Mercalli Intensity Scale." This measure describes earthquake intensity on an arbitrary, descriptive, twelve degree scale (expressed as Roman numerals from I to XII) with significant damage beginning at around level VII. Mercalli intensity is assigned based on eyewitness accounts. More quantitatively, intensity may be measured in terms of "peak ground acceleration" (PGA) expressed relative to the acceleration of gravity (g) and determined by seismographic instruments.

While Mercalli and PGA intensities are arrived at differently, they correlate reasonably well. While the locations most susceptible to earthquakes are known, there is little ability to predict an earthquake in the short term. Figure 4.3.1 shows the seismic potential for Teton County as determined by the USGS.

Historical Frequencies

Table 4.3.1 provides a listing of the earthquake events that have occurred since 1963 in excess of 3.0 on the Richter scale. Figure 4.3.2 provides an illustration of the location of the historic earthquakes in the County.

Date	Magnitude
02/25/1969	3.60
03/02/1977	3.07
04/041992	4.00
08/131993	3.10
11/071996	3.80

Table 4.3.1
Teton County Earthquake Events

Impacts

Earthquakes are capable of catastrophic consequences, especially in urban areas. Worldwide, earthquakes have been known to cost thousands of lives and enormous economic and social losses. In minor earthquakes, damage may be done only to household goods, merchandise, and other building contents and people are occasionally injured or killed by falling objects. More violent earthquakes may cause the full or partial collapse of buildings, bridges and overpasses, and other structures. Fires due to broken gas lines, downed power lines, and other sources are common following an earthquake and often account for much of the damage. Economic losses arise from destruction of structures and infrastructure, interruption of business activity, and innumerable other sources. Utilities may be lost for long periods of time and all modes of transportation may be disrupted. Disaster Services including medical may be both disabled and overwhelmed. In addition to broken gas lines, other hazardous materials may be released.

Figure 4.3.1 Seismic Potential for Teton County

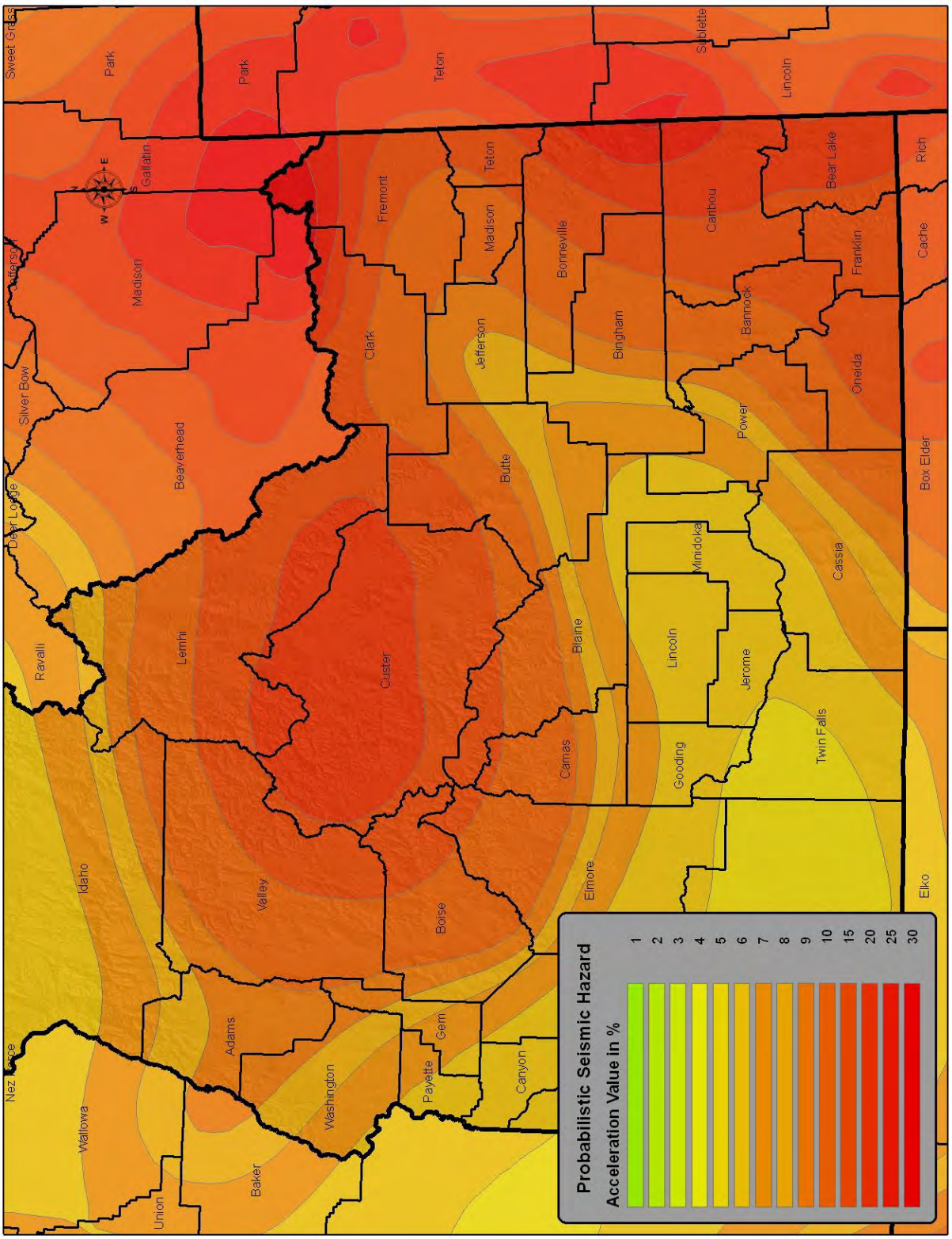
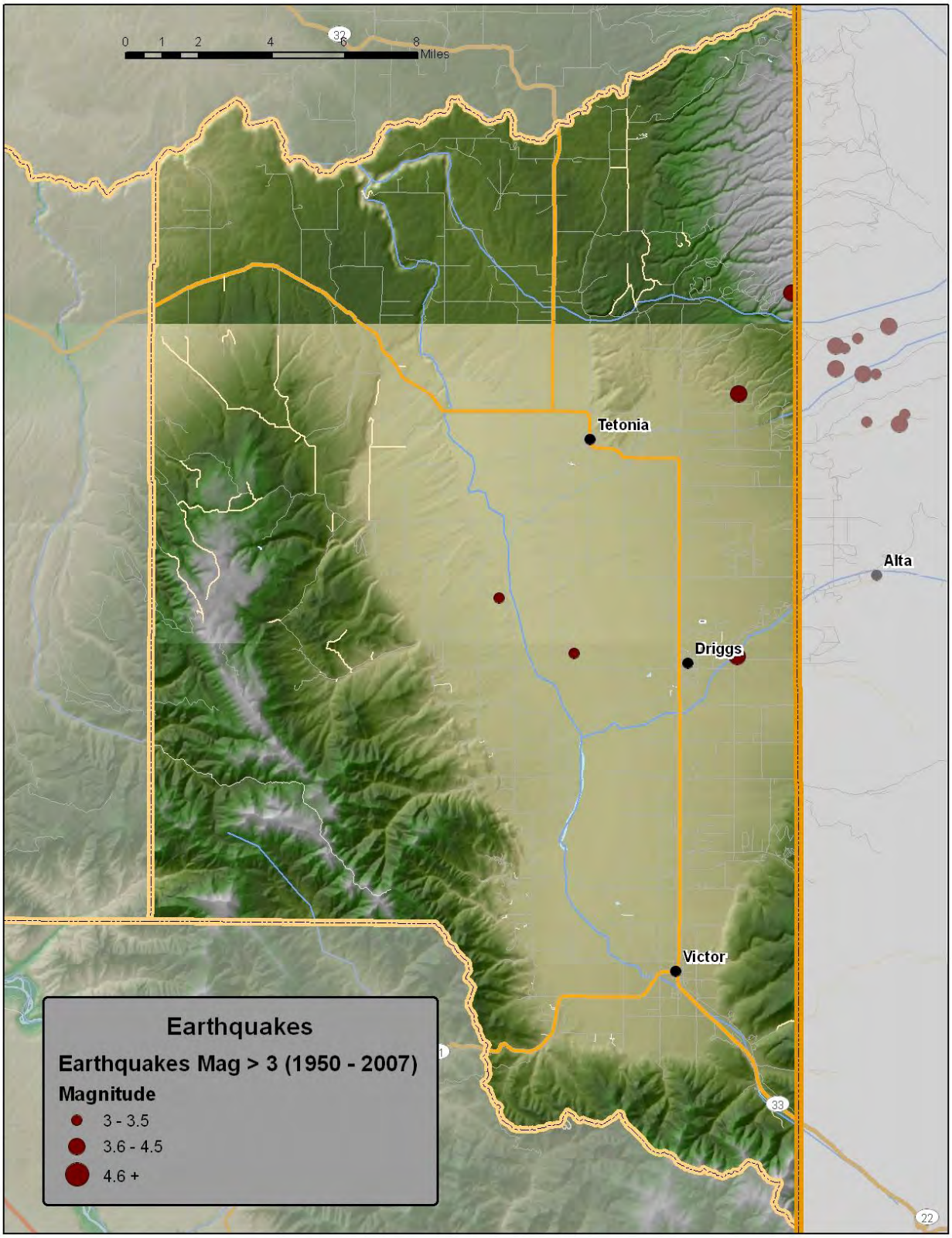


Figure 4.3.2 Teton County Historic Earthquakes



Loss Estimates

Two Idaho earthquakes, Hebgen Lake in 1959 and Borah Peak in 1983, were among the largest in the United States in the past fifty years. These two events combined caused thirty deaths and cost more than twenty million dollars in losses in spite having been centered in relatively remote locations.

The following loss estimates were generated using HAZUS-MH MR2. A level 1 analysis was performed on a probabilistic magnitude 7 earthquake with a 100 year return frequency for the entire area within Teton County. A level 1 analysis is a screen level analysis to determine if additional analyses maybe required for specific locations. A level 2 analysis can then be run for specific locations and structures.

Building Damage

HAZUS estimates that about 170 buildings would receive some damage.

Damage	Slight	Moderate	Extensive	Complete
Single Family	89	28	3	
Other Residential	20	24	4	

Table 4.3.2 Building Damage

Essential Facility Damage

All essential facilities would have at least >50% functionality on Day 1. Essential facilities include the Hospital, Schools, the Sheriff‟s Office, Fire Stations, and the Emergency Operations Center. The Transportation Infrastructure would have >50% Functionality on Day 1. This includes roadways, bridges, and the airport runways.

Expected Utility System Damage

Damage	Potable Water	Waste Water	Natural Gas/Propane
Leaks	37	29	31
Breaks	9	7	8

Table 4.3.3 Utility System Damage

Injuries and Death

HAZUS estimates that there would be at least one (1) injury that would require medical attention.

Economic Loss

The total economic loss estimated for the earthquake is $5.09M (millions of dollars), which includes building and lifeline related losses based on the County‟s available inventory.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the

earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

The total building-related losses are estimated at $1.58M (millions of dollars);

The total transportation-related losses are estimated at $1M.

The total utility system-related losses are estimated at $2.52M

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Earthquake has a magnitude score of 32.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

Predictive methodology for earthquakes is not capable of providing warning for specific events which usually occur suddenly, with no warning (Warning Lead Times = 8). Earthquakes affect wide areas (Geography Affected = 8). In Teton County, such an event is expected to cause some injuries and deaths (Bodily Harm = 2). Major structural and infrastructure damage is possible in the event of a strong earthquake, interrupting business activities and requiring reconstruction (Economic Loss = 4). Some sheltering assistance from neighboring Counties could be required (Shelter = 2). Recovery assistance at the Federal level would be required (Reconstruction Assistance = 8). The total Magnitude score is, therefore, thirty-two (32) which, for Teton County, is in the "High" range. Historical records for

earthquake are available and reliable, indicating that earthquakes occur in the five to twenty-five year range in Teton County (Frequency = Medium).

Landslide/Mudslide

Description

The term "landslide" encompasses several types of occurrence (including mudslides) in which slope-forming materials such as rock and soil move downward under the influence of gravity. Such downward movement may occur as the result of an increase in the weight of slope-forming materials, an increase in the gradient (angle) of the slope, a decrease in the forces resisting downward motion (friction or material strength) or a combination of these factors. Factors that may trigger a landslide include: weather related events such as heavy rainfall (one of the most common contributors), erosion, and freeze-thaw weakening of geologic structures, human causes such as excavation and mining, deforestation, and vibration from explosions or other sources, and such geologic causes as earthquake, volcanic activity, and shearing or fissuring. The speed of descent ranges from sudden and rapid to an almost imperceptibly slow creep where effects are only observable over a period of months or years.

Historical Frequencies

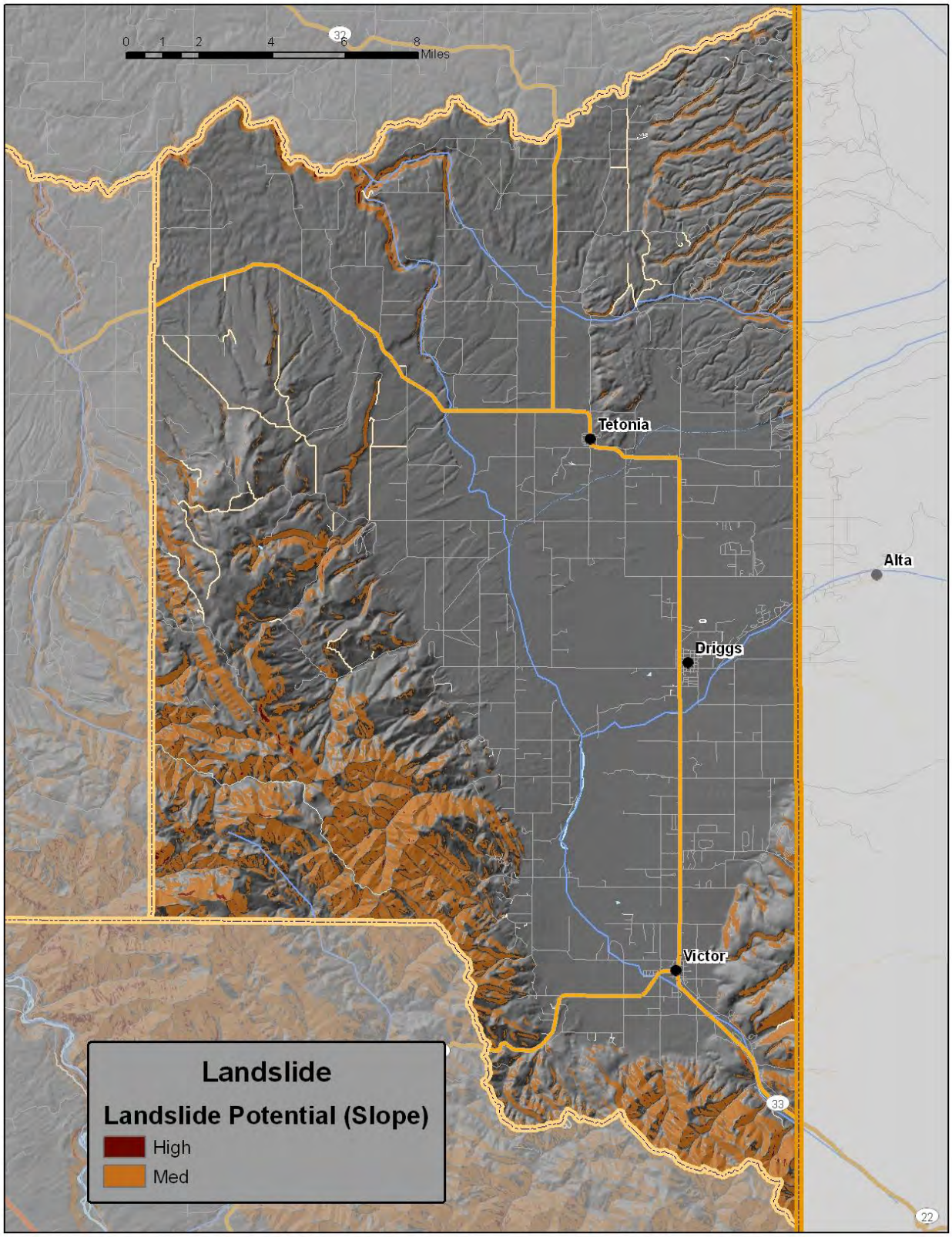
There are no reported landslides in Teton County however; minor slides have occurred on Highway 22 in Wyoming which impacts the traveling public moving between Teton County Idaho and Teton County Wyoming.

Impacts

Some of the many direct and indirect impacts of landslides are:

- Human and animal deaths and injuries and resulting productivity losses
- Damage or destruction of structures
- Destruction or blockage of roadways and resulting transportation interruption
- Loss of, or reduced land usage
- Loss of industrial, agricultural and forest productivity
- Reduced property values in areas threatened by landslide
- Loss of tourist revenues and recreational opportunities
- Damage or destroyed infrastructure and utilities
- Damming or alteration of the course of streams and resulting flooding
- Reduced water quality

Figure 4.3.3 Teton County Landslide Potential



Loss Estimate

Losses due to Landslide events are generally tied to the repair of roadways or the removal of debris on roadways. Teton County has 89 miles of Country owned roadway that is within potential landslide areas. The majority of the landslide areas are in the back Country which is primarily Federal Lands.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Landslide/mudslide has a magnitude score of 13.

	Frequency
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

Conditions leading to landslide/mudslide may develop quickly, providing little warning time (Warning Lead Times = 4). Vulnerabilities in Teton County are minimal (Geography Affected = 2), there is little potential for death or injury (Bodily Harm = 1), and economic loss would be limited (Economic Loss = 2). Because landslides would probably primarily affect State Highways, any necessary recovery would be managed at the State level (Reconstruction Assistance = 4). There would be no need for public sheltering (Shelter = 1). The total Magnitude score is, therefore, thirteen (13) which, for Teton County, is in the "Medium" range. Historical records for landslide/mudslide are available and reliable, indicating that events occur infrequently in Teton County (Frequency = Low).

Snow Avalanche

Description

Snow avalanches are common in mountainous terrain where heavy snowfall accumulates on steep slopes. Avalanches generally occur on slopes between 30 and 45 degrees with 38 degrees being the "ideal" slope for development of avalanche conditions. They are often categorized as either "loose snow" or "slab" types. A loose snow avalanche is initiated when snow is dislodged at a point upslope and, in turn, dislodges more snow as it moves downward. Such avalanches usually grow wider and larger as they proceed but are usually somewhat limited in size. The generally more dangerous slab avalanche occurs when a cohesive mass of snow breaks free and moves downward, either as a single unit, or breaking into smaller pieces traveling together. Four factors combine to produce a slab avalanche: 1) a large mass of snow that is cohesive as a result of a single, large snowfall, or some physical change due to temperature, introduction of water content, or other factors, 2) some source of instability or weakness that forms a boundary capable of breaking free, 3) a surface, called a sliding layer, upon which the slab may easily slide and, 4) a triggering event, such as increased weight, strong vibration, wind, or a temperature increase, that overcomes the binding forces at, or further weakens the boundary of instability. (It is estimated that around 90% of avalanches where victims are involved are triggered by their victims or those who accompany them.) Avalanches are comprised of three zones – the release zone where the mass breaks free and accelerates, the track where the mass travels downward at a relatively constant speed (often approaching 80 mph), and the runout zone where the mass slows and comes to rest. While the exact moment of an avalanche cannot be predicted, avalanche conditions are readily recognizable and avalanches tend to recur on the same slopes year after year.

Historical Frequencies

Table 4.3.4 provides a listing of the avalanches that have occurred in Teton County over the past 100 years where there was an injury or loss of life.

Place	Date	Event	Details	Reported Damage
Victor	1/23/1912	Avalanche	Snow slide in Trail Creek Area	Killed one man, injured another
Steve Baugh Bowl	12/19/2002	Avalanche	Skier triggered avalanche.	Skier injured
Darby Canyon	1/4/2003	Avalanche	Snowmobiler triggered avalanche	Snowmobiler injured

Table 4.3.4 Snow Avalanches in Teton County

Impacts

It is common for avalanche impacts to be somewhat limited, in the case of Teton County avalanches are the largest threat to roadways and related infrastructure. Because avalanches usually occur in remote areas, the most frequent victims are recreational users of the slopes on which they occur. Of those who die in avalanches, approximately one third of the deaths are as a result of trauma while the remaining two thirds are from suffocation. Trauma may be the result of being carried into obstructions such as boulders and trees or over cliffs, or from rocks, trees or large chunks of snow being carried downward at high speed. Avalanches may also

damage or destroy structures, break power lines, block roadways and railroads, and damage trees and vegetation.

Loss Estimates

Snow Avalanches occur primarily in the back country of Teton County and primarily on Federal Lands. As with Landslides, losses from Snow Avalanches come from damage to roadways and the resulting snow and debris removal costs. Teton County has approximately 89 miles of roadway that is areas prone to snow avalanches.

Hazard Evaluation

The Teton Pass area has the County‟s highest avalanche risk. This area attracts many recreationists in the winter. Snowmobilers are at a higher risk than other recreationists because of the noise and weight associated with snowmobiles.

Repetitive Loss – Avalanches do occur repetitively in on the Teton Pass in neighboring Teton County Wyoming and in the back country. The repetitive nature of the loss is the cost of cleanup of the snow and debris on the highway.

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Snow Avalanche has a magnitude score of 13.

	Frequency
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn‟t Happened

Magnitude/Frequency Scoring Rationale

Individual avalanche events occur with little or no warning but in Teton County vulnerable areas are limited and conditions in those areas are monitored (Warning Lead Times = 2). Limited areas in Teton County are subject to avalanches (Geography Affected = 2),

thus offering only limited potential for injuries or deaths (Bodily Harm = 2). Avalanches occur in remote areas and cause little economic loss (Economic Loss = 2) with recovery, where required, managed at the State level (Reconstruction Assistance = 4). There is no need for public sheltering (Shelter = 1). The total Magnitude score is, therefore, thirteen (13) which, for Teton County, is in the "Medium range. Historical records for avalanche show that events have occurred at least every five years. (Frequency = High).

Section 4.4 Other Natural Hazards

Wildfire

Description

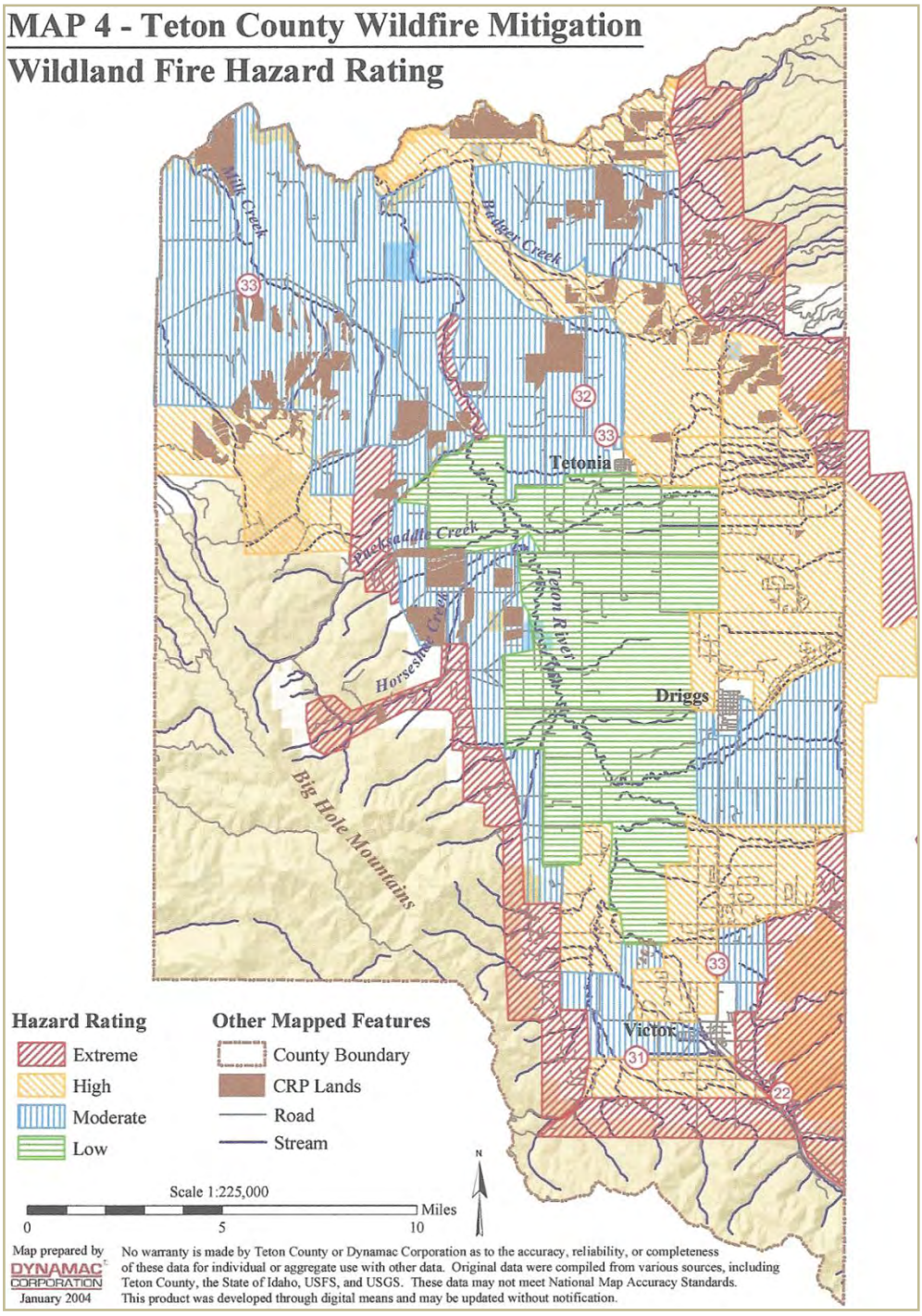
Wildfire is defined by the USDA Forest service as, "A fire, naturally caused or caused by humans, that is not meeting land management objectives."[33] It is generally thought of as an uncontrolled fire involving vegetative fuels occurring in wildland areas. Such fires are classified for hazard analysis purposes as either "Wildland" or "Wildland Urban Interface" fires. See Figure 4.4.1 below for the Teton County Wildland Urban Interface Map. Wildland fires occur in areas that are undeveloped except for the presence of roads, railroads and power lines while Wildland Urban Interface fires occur where structures or other human development meets or is intermingled with the wildland or vegetative fuels. Wildland fire is currently considered a natural and necessary component of wildland ecology and, as such, is most often allowed to progress to the extent that it does not threaten inhabited areas or human interests and well-being. At the Wildland Urban Interface (WUI), vigorous attempts are made to control fires but this becomes an increasingly difficult challenge as more and more development for recreational and living purposes takes place in wildland areas. Some wildland fires are ignited naturally (almost exclusively by lightning) but most ignitions are a result of human activities, either careless or intentional. The rapidity with which a wildland fire spreads and the intensity with which it burns is controlled by a number of factors including:

- Weather - wind speed and direction, temperature, precipitation
- Terrain – fires burn most rapidly upslope
- Type of vegetation
- Condition of vegetation - dryness
- Fuel load – the amount and density of vegetation
- Human attempts to suppress

In Idaho, fire was once an integral function of the majority of ecosystems. The seasonal cycling of fire across the landscape was as regular as the July, August and September lightning storms plying across the canyons and mountains. Depending on the plant community composition, structural configuration, and buildup of plant biomass, fire resulted from ignitions with varying intensities and extent across the landscape. Shorter return intervals between fire events often resulted in less dramatic changes in plant composition.[34] The fires burned from 1 to 47 years apart, with most at 5- to 20-year intervals.[35] With infrequent return intervals, plant communities tended to burn more severely and be replaced by vegetation different in composition, structure, and age[36]. Native plant communities in this region developed under the influence of fire, and adaptations to fire are evident at the species, community, and ecosystem levels. Fire history data (from fire scars and charcoal deposits) suggest fire has played an important role in shaping the vegetation in the Columbia Basin for thousands of years.[37]

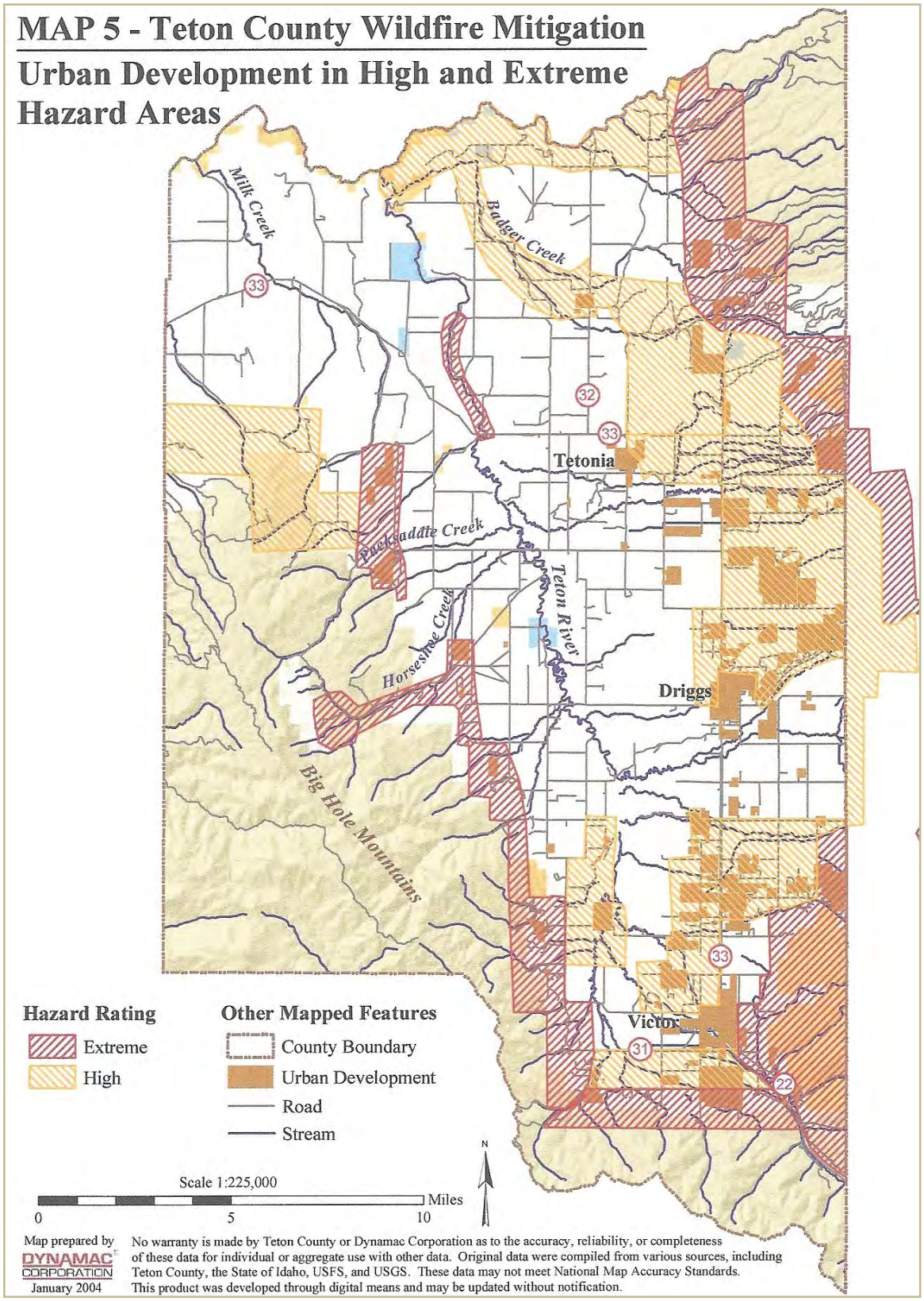
33 http://www.fs.fed.us/fire/fireuse/education/terms/fire_terms_pg5.html
34 Johnson 1998
35 Barrett 1979
36 Johnson *et al.* 1994
37 Steele et al. 1986, Agee 1993

The Teton County Wildland Urban Interface Plan developed in 2004 by the Dynamac Corporation contains the following two maps which illustrated the wildfire risks to Teton County.



MAP 5 - Teton County Wildfire Mitigation

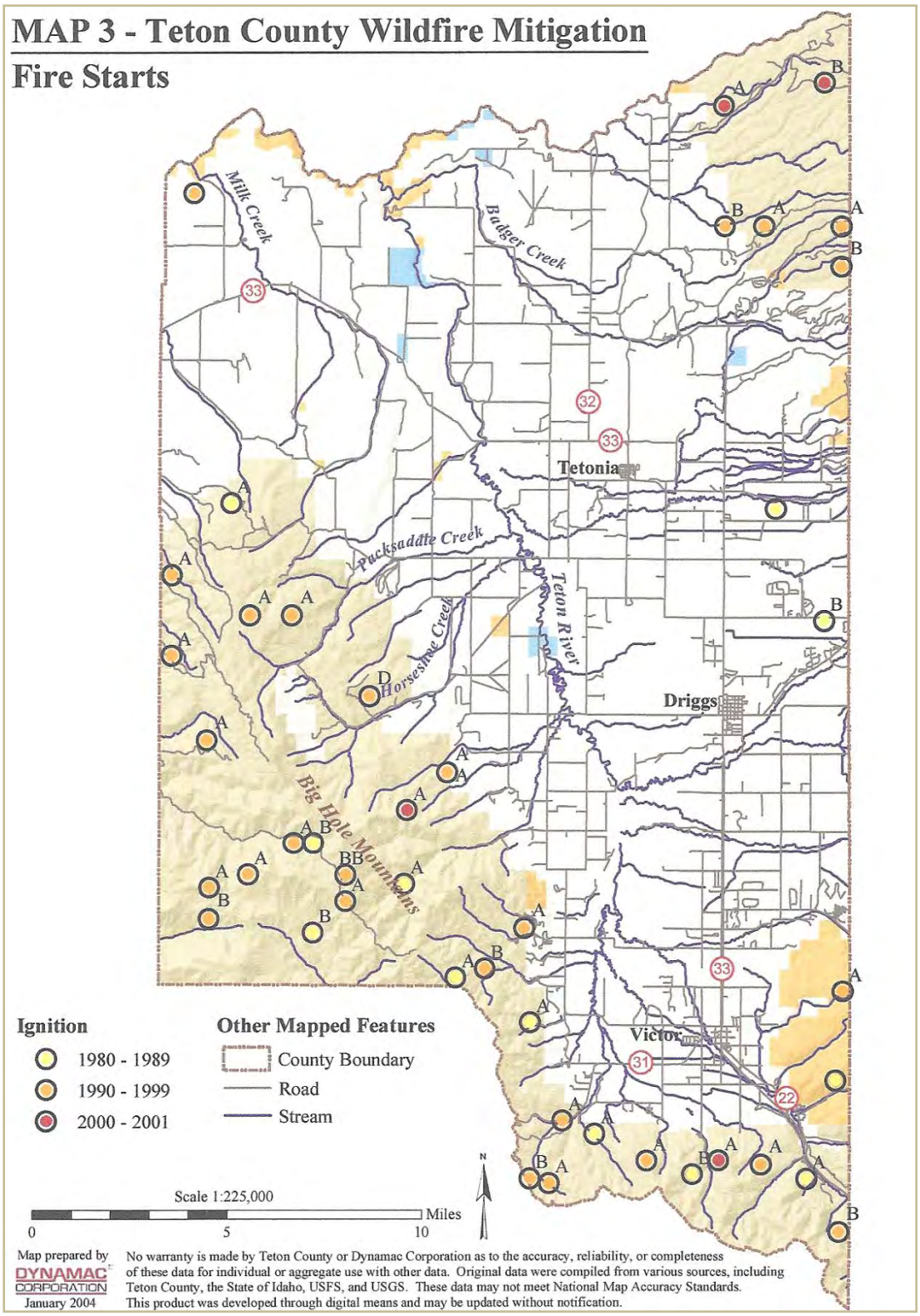
Urban Development in High and Extreme Hazard Areas



Map prepared by DYNAMAC CORPORATION
January 2004

No warranty is made by Teton County or Dynamac Corporation as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources, including Teton County, the State of Idaho, USFS, and USGS. These data may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Historical Frequencies



A breakdown of the sizes of fires in Teton County since 1983 is given in Table 4.4.1 and lists the eight largest fires in this period.

Year	Number of Fires	Acres Burned
1983	1	.10
1985	2	3.10
1987	1	.10
1988	4	1.30
1989	5	5.70
1990	5	.80
1991	3	.70
1992	4	.40
1994	6	11.30
1995	4	1.30
1996	4	103.6
1997	1	.10
1999	1	.10
2000	2	.30
2001	4	4.70
2002	5	97.7

Table 4.4.1
Teton County Wildfire History

Impact

Wildland fires threaten the lives of anyone in their path including hikers, campers and other recreational users and, where suppression efforts are made, firefighters. Enormous volumes of smoke and airborne particulate materials are produced that can affect the health of persons for many miles downwind. Nearer to the fire, smoke reduces visibility, disrupting traffic and increasing the likelihood of highway accidents. As a result of wildland fire there may be changes in water quality in the area and erosion rates may increase along with increased rainfall runoff and flash flood threat, and decreased rainfall interception and infiltration. Indirect impacts include losses to tourism, recreational and timber interests and loss of wildlife habitat. Wildland Urban Interface fires have most or all of the above impacts as well as those of structural fires including injury and loss of life, loss of structures and contents. Agricultural losses may also be sustained including livestock, crops, fencing and equipment.

Figure 4.4.1 provides the Mean Fire Return Interval for the County. Figure 4.4.2 shows the Wildland Urban Interface for the County.

Loss Estimates

According to the Teton County GIS Parcel data there are 3,144 private property parcels within the Wildland Urban Interface zone as defined in Figure 4.4.2. The total value of the parcels is $48,826,426. The maximum value of an individual parcel is $6,980,560.

Figure 4.4.1 Mean Fire Return Interval for Teton County

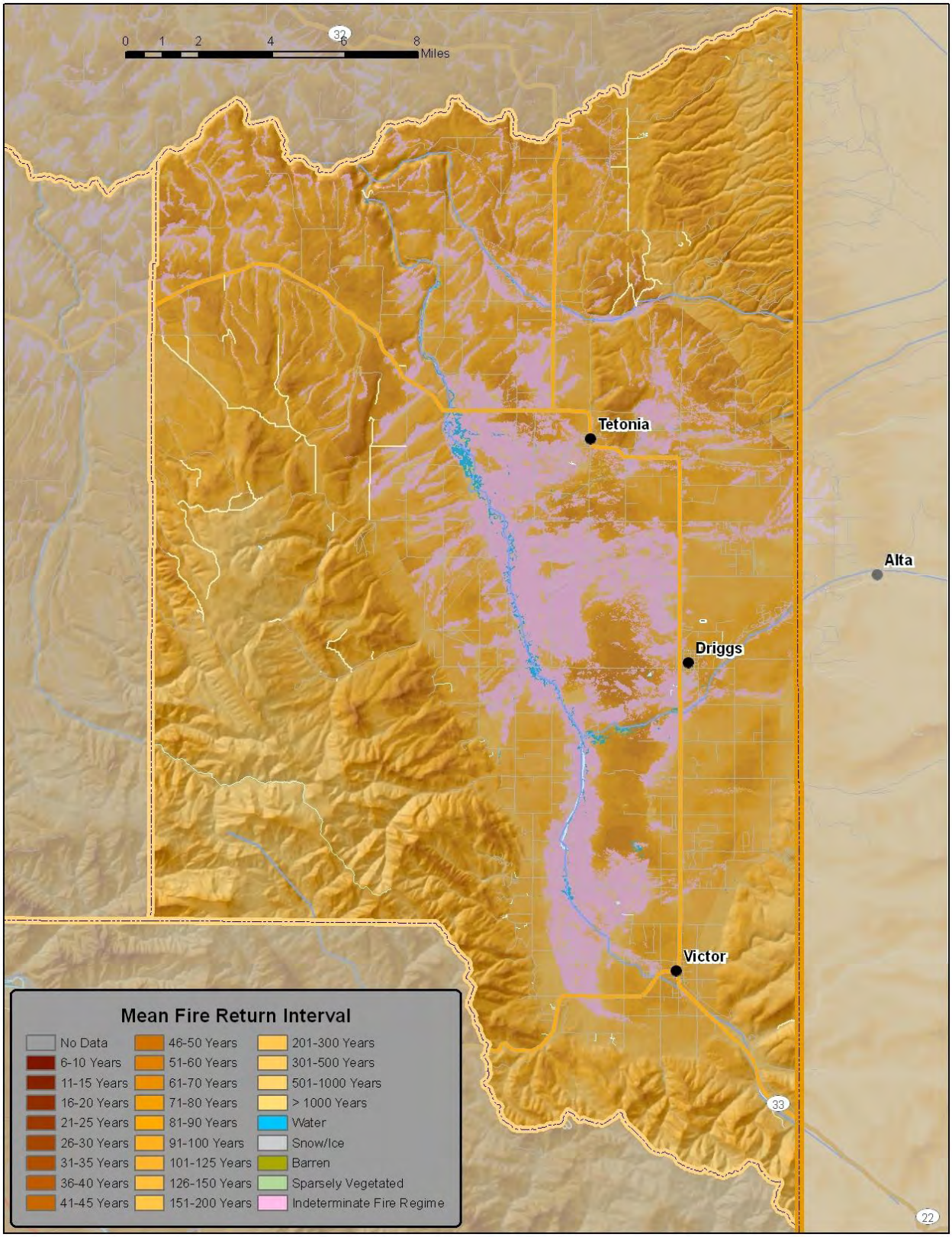
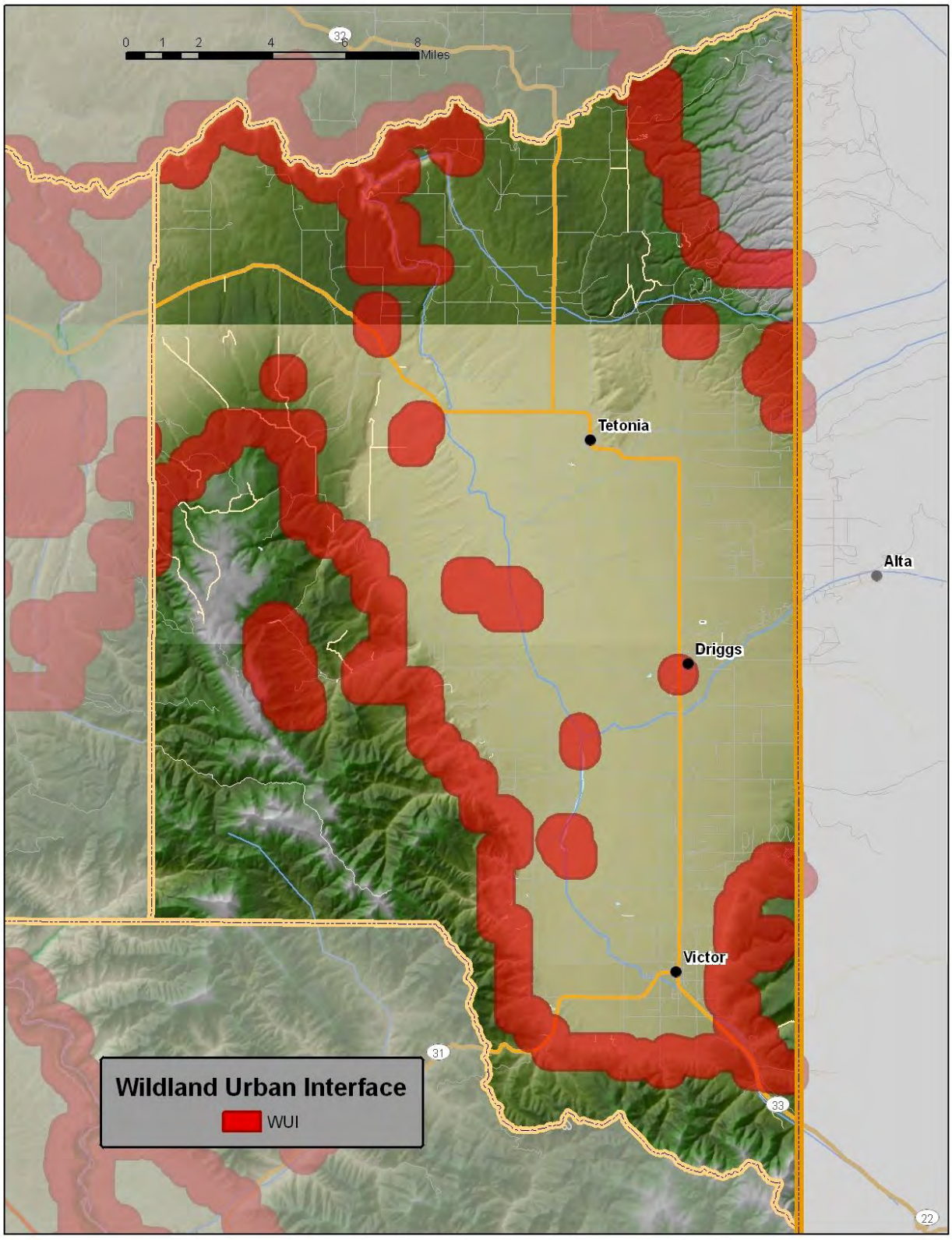


Figure 4.4.2 Teton County Wildland Urban Interface (WUI)



Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Wildfires have a magnitude score of 18.

	Frequency
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Even with rapidly developing wildfire there is usually an hour or more to warn affected residents (Warning Lead Times = 4). Large areas in Teton County are vulnerable to wildfire (Geography Affected = 4) however, because these areas are remote, minimal deaths or and injuries are expected (Bodily Harm = 2). Teton County experiences some economic loss due to wildfire (Economic Loss = 2) and State recovery assistance might be required (Reconstruction Assistance = 4). Some public sheltering would be required (Shelter = 2). The total Magnitude score is, therefore, eighteen (18) which, for Teton County, is in the "Medium" range. Historical records are available and reliable, indicating that wildfires that cause significant damage occur every five to twenty-five years (Frequency = Medium).

Biological

Epidemic/Pandemic

Description

Epidemic/Pandemic is defined as a disease that appears as new cases in the human population at a rate, during a given time period and location, that substantially exceeds the number expected. It is, thus, a relative term and there is no quantitative criterion for designating a health crisis as an epidemic. In addition to its application to infectious diseases, the term is sometimes used to describe outbreaks of other adverse health effects including those stemming from chemical exposure, sociological problems, and psychological disorders. A "pandemic" is a worldwide epidemic while the term "outbreak" may be applied to more geographically limited medical problem as, for instance, in a single community rather than statewide or nationwide. The term "cluster" is often used with reference to noncommunicable diseases.

Health agencies closely monitor for diseases with the potential to cause an epidemic and seek to develop immunizations and eliminate vectors. While this effort has been remarkably successful, there are many diseases of concern and the HIV/AIDS pandemic is still not controlled despite more than 25 years of effort since recognition of the disease in 1981.

Pandemic influenza versus regular influenza season

A flu pandemic has little or nothing in common with the annual flu season. A pandemic flu would be a new strain and a much more serious and contagious flu virus. Humans would have no natural resistance to a new strain of influenza. Also, there is a vaccine for seasonal flu, but there is no vaccine available at this time for a pandemic flu.

If a new, highly contagious strain of influenza begins to infect humans, it would likely cause widespread illness and death within a matter of months, and could last up to two years. The Centers for Disease Control and Prevention (CDC) predict that as much as 25% to 30% of the U.S. population could be sick, hospitalized, and many may die as a result of severe illness.

Eastern Idaho Public Health Department is currently working on a plan to limit the spread of a pandemic influenza and to maintain essential health care and community services if an outbreak should occur. In fact, governments all around the world are preparing for the possibility of a pandemic outbreak.

Although the Federal government is stockpiling large quantities of medical supplies and antiviral drugs, no country in the world has enough anti-virals to protect their citizens. There currently is no vaccine to protect humans against a pandemic influenza virus; however, vaccine development efforts are under way to protect humans against the current H5N1 bird flu virus.

Pandemic Flu

H5N1 "Bird Flu"

The danger is that the bird flu virus may mutate into a new form of human flu that would be easily spread person to person. Some migratory waterfowl carry the H5N1 virus, with no apparent harm, but transmit the virus to susceptible domestic poultry. The highly lethal H5N1 outbreak among domestic poultry is widespread and uncontrolled and has directly infected a

small number of humans. People who have close contact with infected birds or surfaces that have been contaminated with droppings from infected birds are at risk of becoming infected themselves.

A history of poultry consumption in an infected country is not a risk factor, provided the food was thoroughly cooked and the person was not involved in food preparation. Simply traveling to a country with ongoing outbreaks in poultry or sporadic human cases does not place a traveler at increased risk of infection, provided the person does not visit live poultry markets, farms or other environments where exposure to diseased birds may occur. More than 200 million birds in affected countries have either died from the disease or were killed in order to try to control the outbreak.

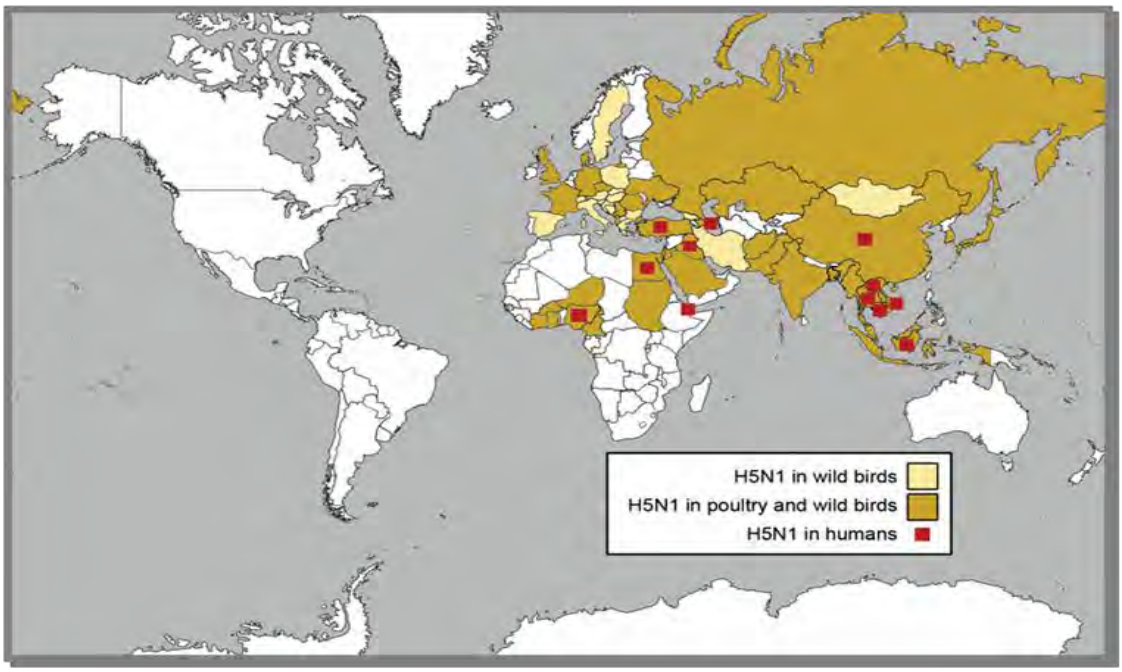


Figure 4.4.5
Bird Flu Outbreaks Worldwide

Many Asian countries are currently dealing with bird flu outbreaks - Cambodia, China, Indonesia, Japan, Laos, South Korea, Thailand, and Vietnam. Bird flu continues to spread geographically from its original focus in Asia. Further spread of the virus along migratory routes of wild water fowl is anticipated. So far, there has been no sustained person-to-person spread of the disease. However, a few isolated cases of human-to-human spread between family members are currently under investigation.

The reported symptoms of bird flu in humans range from typical influenza-like symptoms (e.g., fever, cough, sore throat, and muscle aches), to eye infections (conjunctivitis), pneumonia, acute respiratory distress, viral pneumonia, and other severe and life threatening complications. Diarrhea, vomiting, abdominal pain, chest pain, and bleeding from the nose and gums have also been reported as early symptoms in some cases. In many cases, health deteriorates rapidly leading to a high percentage of death in those infected.

Severe Acute Respiratory Syndrome (SARS)

Severe acute respiratory syndrome (SARS) is a viral respiratory illness caused by a coronavirus, called SARS-associated coronavirus (SARS-CoV). SARS was first reported in Asia in February 2003. Over the next few months, the illness spread to more than two dozen countries in North America, South America, Europe, and Asia before the SARS global outbreak of 2003 was contained.

According to the World Health Organization (WHO), a total of 8,098 people worldwide became sick with SARS during the 2003 outbreak. Of these, 774 died. In the United States, only eight people had laboratory evidence of SARS-CoV infection. All of these people had traveled to other parts of the world with SARS. SARS did not spread more widely in the community in the United States.

In general, SARS begins with a high fever (temperature greater than 100.4°F [>38.0°C]). Other symptoms may include headache, an overall feeling of discomfort, and body aches. Some people also have mild respiratory symptoms at the outset. About 10 percent to 20 percent of patients have diarrhea. After 2 to 7 days, SARS patients may develop a dry cough. Most patients develop pneumonia.

The main way that SARS seems to spread is by close person-to-person contact. The virus that causes SARS is thought to be transmitted most readily by respiratory droplets (droplet spread) produced when an infected person coughs or sneezes. Droplet spread can happen when droplets from the cough or sneeze of an infected person are propelled a short distance (generally up to 3 feet) through the air and deposited on the mucous membranes of the mouth, nose, or eyes of persons who are nearby. The virus also can spread when a person touches a surface or object contaminated with infectious droplets and then touches his or her mouth, nose, or eye(s). In addition, it is possible that the SARS virus might spread more broadly through the air (airborne spread) or by other ways that are not now known.

Historic Epidemic/Pandemic Events

The 1918 -1920 Spanish Flu:

The first cases were reported in Canyon County (northwest of Boise) on September 30th. Within three weeks, the disease was raging all across the state.

Asian Flu 1957 -1958:

First identified in China, this virus caused roughly 70,000 deaths in the United States during the 1957-58 season. Because this strain has not circulated in humans since 1968, no one under 30 years old has immunity to this strain.

Kong Flu 1968-1969:

First detected in Hong Kong in the early 1968 and spread to the United States later that year. The Hong Kong Flu killed about 34,000 people in the United States and one million people worldwide.

Impacts

The following are potential impacts from a worldwide pandemic event. The impacts in Teton County would be similar on a local level.

- Rapid Worldwide Spread
- Health Care Systems Overloaded
- Medical Supplies Inadequate
- Economic and Social Disruption

Loss Estimates

Historically, epidemics have claimed far more lives than any other type of disaster. While modern epidemiology and medical advances make the decimation of populations much less likely, new forms of disease continue to appear. The potential, therefore, exists for epidemic to cause widespread loss of life and disability, overwhelm medical resources and have tremendous economic impacts

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Epidemic/Pandemic has a magnitude score of 19.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

Pandemics and epidemics develop relatively slowly, usually providing at least weeks of warning (Warning Lead Times = 2). When pandemic/epidemic does occur, wide geographical areas are affected (Geography Affected = 8) and deaths and injuries are likely to occur (Bodily Harm = 4). Business interruption and some economic loss are likely (Economic Loss = 2) but recovery is left to individuals and families (Reconstruction Assistance = 1). Some public relocation of individuals to protect them from the virus may be required (Shelter = 2).The total Magnitude score is, therefore, nineteen (19) which, for Teton County, is in the "Medium" range. Historical records for pandemic/epidemic are available and reliable, indicating that such events are rare (Frequency = Low).

West Nile Virus

West Nile virus (WNV) is transmitted to people, birds and other animals by the bite of an infected mosquito. This virus can cause serious illness in people of any age, but especially in people over the age of 50 or those with other underlying medical conditions. The best form of protection is by avoiding mosquito bites.

West Nile virus infections occur in the summer and fall in Idaho, when mosquitoes are active. WNV does not occur in northern states when it is too cool for mosquitoes to survive. In southern states with warmer climates and mosquitoes present year-round, the risk of infection may still be present in the winter months.

Historical Frequencies of West Nile Virus

Locally-acquired mosquito-borne human infections were first recorded in Idaho in 2004. In 2006, Idaho led the nation in reports of human illness associated with WNV with 996 cases being reported to the State Health Department. In addition to people, WNV was also detected in 338 horses, 127 birds and numerous mosquitoes. Table 4.4.2 provides a listing of the documented cases of West Nile Virus in Teton County.

Date	Human	Horse	Bird	Mosquitoes
2006	0	1	0	Not Tested
2007	4	1	1	Not Tested

Table 4.4.2
Reported Cases of WNV in Teton County
Source - http://www.healthandwelfare.idaho.gov/site/4278/default.aspx

Impacts

West Nile fever may include a fever, headache, body aches, a rash and swollen glands. The symptoms of West Nile fever may last for days or linger for weeks to months. Serious illness infecting the brain or spinal cord can occur in some individuals, and although anyone can experience the more severe form of the disease, it tends to occur in people over the age of 50 or those with other underlying medical conditions or weakened immune systems. The severe symptoms may include high fever, headache, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, vision loss, numbness and paralysis. These symptoms may last several weeks or more, and neurological effects may be permanent. Usually, symptoms

occur from 5 to 15 days after the bite of an infected mosquito. There is no specific treatment for infection, but hospitalization and treatment of symptoms may improve the chances of recovery for severe infections. There is no vaccine available for humans.

Loss Estimates

Losses brought about by the effects of West Nile virus are centered on loss of income for those affected by the virus as well as a loss of productivity by businesses. Death has occurred in Idaho from the West Nile virus both in humans and animals.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

West Nile Virus has a magnitude score of 9.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

West Nile Virus outbreaks, like other epidemics, develop relatively slowly, usually providing months of warning (Warning Lead Times = 1). When an outbreak does occur, wide geographical areas can be affected in urban settings but effects may be much more isolated in Teton County because of sparse population density (Geography Affected = 1). The potentially life threatening nature of the disease necessitates major medical care in the event of an outbreak. (Bodily Harm = 4). Little or no economic loss is likely (Economic Loss = 1) and recovery is left to individuals and families (Reconstruction Assistance = 1). Public Sheltering would not be required (Shelter = 1). The

total Magnitude score is, therefore, nine (9) which, for Teton County, is in the "Low" range. Historical records are available and reliable, indicating that isolated instances of West Nile Virus occur yearly (Frequency = High).

Section 4.5 Technological (Manmade) Hazards

Structural Fire

Description

Structural fires produce high heat, toxic gases, and particulate material as smoke and soot. The heat produced or burning debris can, in turn, cause additional fires. Toxic gases and smoke are extreme hazards in the interior of burning structures and may also be a threat downwind of the structure. Where the building contents include toxic materials, the downwind threat can extend a mile or more. Burning structures may collapse injuring persons inside or nearby and floors or roofs may give way beneath those walking on them. Burning structures present electrical, explosion and flashover hazards, and partially burned structures may, themselves, be physical hazards even after the fire is extinguished.

Historical Frequencies

Table 4.5.1 provides an example of the frequency of structure fires and losses in Teton County.

Structure Fire History for Teton Fire Departments for 2006			
Department	**Fire Calls**	**Total Calls**	**Loss**
Teton County FPD		213	$259,025

Table 4.5.1
Structure Fire History for Teton County

Impacts

Indirect dollar losses, as is often the case, may be much larger than direct losses. Costs also include those for development and enforcement of fire codes and maintaining fire response capabilities. Firefighters are, additionally, at risk from such hazards as physical exhaustion and cardiac stresses, heat exhaustion or heat stroke, acute and chronic health effects from toxic exposures, hearing damage, and injuries from many sources.

Loss Estimates

There were 52 structure fire in Teton County is 2006 resulting in a total loss of $259,025.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Structural Fire has a magnitude score of 14.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude/Frequency Scoring Rationale

Structural fires develop rapidly with little or no warning (Warning Lead Times = 8). Structural fire almost invariably affects only one or a very few structures (Geography Affected = 1) but limited deaths and injuries do occur (Bodily Harm = 2). Some economic loss occurs (Economic Loss = 2) but recovery is left to individuals and families (Reconstruction Assistance = 1). Sheltering of the residents may be required (Shelter = 2). The total Magnitude score is, therefore, fourteen (14) which, for Teton County, is in the "Medium" range. Historical records for are available and reliable, indicating that structural fires are relatively frequent (Frequency = High).

Nuclear Event

Description

A "nuclear event" is defined as an incident involving a nuclear reaction; nuclear fission or nuclear fusion. Such an incident must involve "fissionable" materials, defined as materials containing isotopes with nuclei capable of splitting. Further, the most probable incidents involve "fissile" materials, defined as materials containing isotopes capable of sustaining a

nuclear fission chain reaction. Such reactions release heat, radiation, and radioactive contamination in extremely large quantities relative to the amount of material reacting. Examples of nuclear events include nuclear weapons detonations, nuclear reactor incidents, and nuclear (fissile) material production, handling or transportation incidents. A nuclear detonation as a part of an attack scenario is, perhaps, the ultimate technological disaster. The hazards are well-known and vividly described in FEMA publications.[38] They include shock wave, enormous heat, and the spread of fallout (radioactive contamination). Other nuclear events would not involve a nuclear blast, but still have the potential to produce widespread and long-term consequences as exemplified by the 1986 Chernobyl accident[39]. Of primary concern is the release of radioactive contamination in the form of airborne gases and particulate material. This radioactive material has the potential travel great distances and particulate material eventually is deposited in the environment and incorporated into the food chain. Such contamination may remain hazardous for many years. Direct radiation exposure is also a hazard in relatively close proximity to a nuclear event as is exposure to high thermal energy. Nuclear events are virtually always caused by intentional or unintentional human actions.

The Idaho National Laboratory does not pose a credible hazard to Teton County.

Historical Frequencies

There are no recorded nuclear events in Teton County

Impacts

Radiation exposure may also occur due to the spread of radioactive contamination. Radioactive contamination is material containing radioisotopes. When such material becomes airborne, it can reach human victims over long distances. When it does so, it may be deposited on clothing and skin, and may be internalized by inhalation, ingestion, skin absorption, or through skin breaks. Particularly when contamination is internal, the victim receives radiation exposure. Radiation exposure, whatever the source and depending on its type, intensity and duration, can cause acute and/or chronic health effects. Acute health effects are those that appear within a relative short time period – a few hours to a few days – and may include:

- Hair loss
- Skin burns
- Gastrointestinal damage leading to nausea, vomiting, diarrhea, dehydration and loss of appetite
- Decreased red and white blood cell and platelet production leading to infection, weakness and fatigue, and uncontrolled bleeding

Because radioactive contamination presents such hazards, it also can render an area and anything within it uninhabitable until it is removed or has lost its radioactivity through decay. Clean-up of contaminated areas, where it is possible at all, is difficult, costly, and may be hazardous to those carrying it out.

[38] http://www.fema.gov/areyouready/nuclear_blast.shtm
[39] http://www.iaea.org/NewsCenter/Focus/Chernobyl/index.html

Loss Estimates

Indirect costs in such a situation would almost certainly exceed those of clean-up. In addition, because the stigma carried by radiation and radioactive with the general public, affected areas and persons may be shunned out of proportion with the actual hazard. In fact, the social and political impacts of a nuclear event may well greatly exceed any justifiable limits.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Nuclear has a magnitude score of 17.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Nuclear events might arise under a number of scenarios, each providing a different lead time, but the most likely would provide at least a day of warning (Warning Lead Times = 2). A very small area of Teton County could be affected by a detonation of an improvised nuclear device (Geography Affected = 2) but deaths and injuries from such an event are highly unlikely (Bodily Harm = 1). Business interruption and economic loss would occur (Economic Loss = 2) and recovery assistance would be provided by the Federal Government (Reconstruction Assistance = 8). Sheltering may be required (Shelter = 2). The total Magnitude score is, therefore, seventeen (17) which, for Teton County, is in the "Medium" range. No

nuclear event has occurred in Teton County and the likelihood of an occurrence is very low (Frequency = Low).

Hazardous Material Event

Description

Substances that, because of their chemical or physical characteristics, are hazardous to humans and living organisms, property, and the environment, are regulated by the U.S. Environmental Protection Agency (EPA) and, when transported in commerce, by the U.S. Department of Transportation (DOT). EPA regulations address "hazardous substances" and "extremely hazardous substances".

EPA chooses to specifically list hazardous substances and extremely hazardous substances rather than providing objective definitions. Hazardous substances, as listed, are generally materials that, if released into the environment, tend to persist for long periods and pose long-term health hazards for living organisms. They are primarily chronic, rather than acute health hazards. Regulations require that spills of these materials into the environment in amounts at or above their individual "reportable quantities" must be reported to the EPA. Extremely hazardous substances, on the other hand, while also generally toxic materials, are acute health hazards that, when released, are immediately dangerous to the life of humans and animals as well as causing serious damage to the environment. There are currently 355 specifically listed extremely hazardous substances listed along with their individual "threshold planning quantities" (TPQ). When facilities have these materials in quantities at or above the TPQ, they must submit "Tier II" information to appropriate state and/or local agencies to facilitate emergency planning.

DOT regulations provide the following definition for the term "hazardous material":

> *Hazardous material* means a substance or material that the Secretary of Transportation has determined is capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and has designated as hazardous under section 5103 of Federal hazardous materials transportation law (49 U.S.C. 5103). The term includes hazardous substances, hazardous wastes, marine pollutants, elevated temperature materials, materials designated as hazardous in the Hazardous Materials Table (see 49 CFR 172.101), and materials that meet the defining criteria for hazard classes and divisions in part 173 of subchapter C of this chapter.

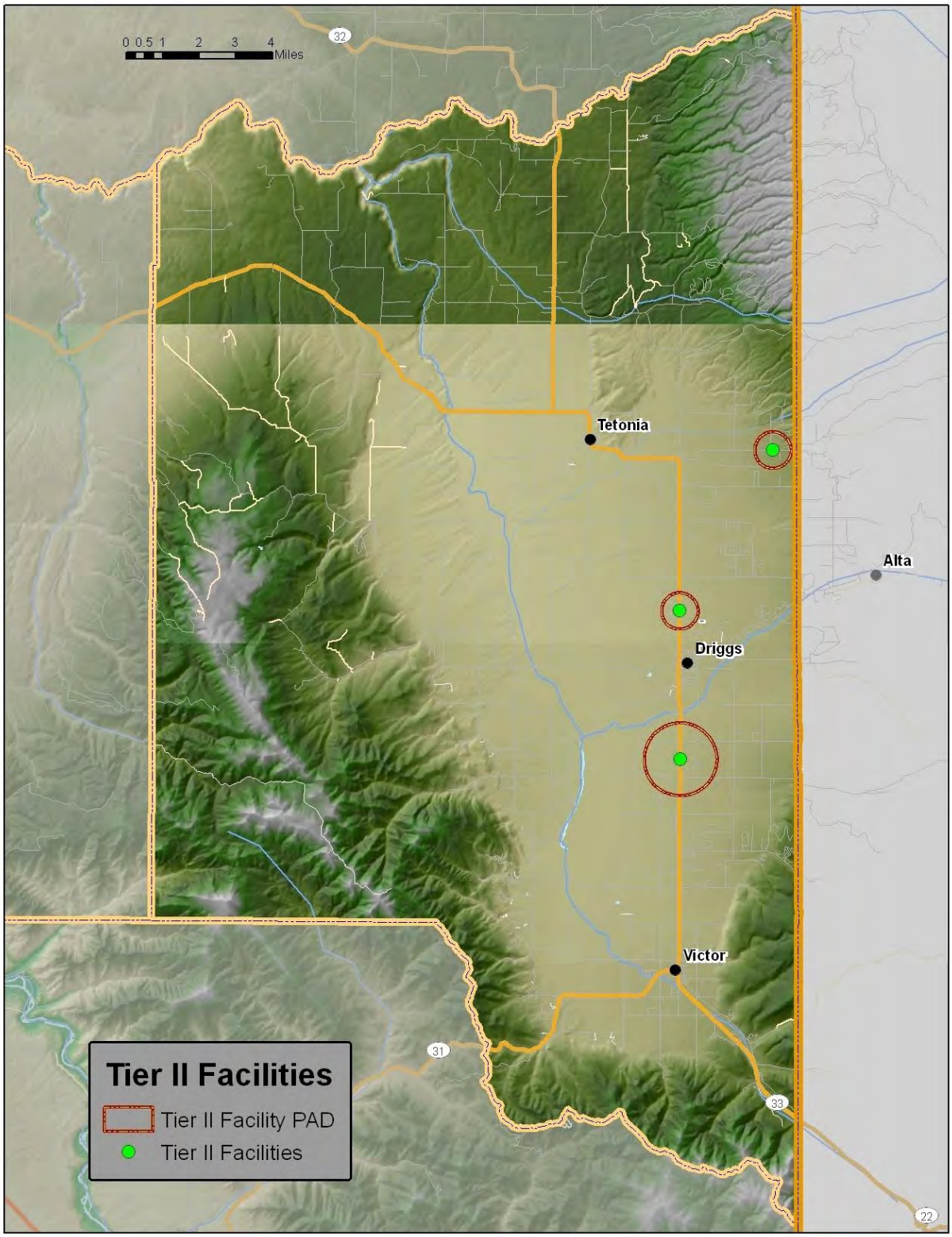
When a substance meets the DOT definition of a hazardous material, it must be transported under safety regulations providing for appropriate packaging, communication of hazards, and proper shipping controls.

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 on individual containers stored and/or used inside facilities.

While somewhat differently defined by the above 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. There is also no universally accepted, objective definition of the term "hazardous material event." 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.

Figure 4.5.1 Teton County Tier II Protective Action Distances



Historical Frequencies

Table 4.5.2 below provides an example of annual hazardous materials events. According to the Idaho State Communications Center there was one (1) hazardous materials event in 2007. Figure 4.5.2 shows the location of the Tier II facilities in Teton County.

Place	Date	Chemical	Classification
Teton	06/28/2007	Explosive Material	Level II

Table 4.5.2
Teton County Hazardous Material Events

***State of Idaho Hazardous Materials Response Classification Levels –**

Level I – An incident involving any response, public or private to an incident involving hazardous materials that can be contained, extinguished, and/or abated using resources immediately available to the responders having jurisdiction.

Level II – An incident involving hazardous materials that is beyond the capabilities of the first responders on the scene, and may be beyond the capabilities of the public sector response agency having jurisdiction. Level II incidents may require the services of the State of Idaho Regional Response Team, or other State/Federal Assistance.

Level III – An incident involving weapons of mass destruction/hazardous materials that will require multiple State of Idaho Regional Response Teams or resources that do not exist within the State of Idaho. These incidents may require resources from State and Federal agencies and/or private industry.

Impacts

The specific impacts posed by a hazardous material event are usefully summarized by reference to the NFPA 704 scheme.

Flammability hazards

- Ignite spontaneously and burn rapidly or explosively on contact with air
- Explode or burn readily and rapidly when mixed with air and provided with an ignition source
- Ignite and/or react explosively in contact with water
- Emit toxic combustion products
- Emit high heat capable of igniting other combustible materials

Flammable liquids compose, by volume, more than half of the hazardous materials shipped, stored and used in the United States.

Health hazards

- Toxic (poison) – when in the body, interferes with biochemical processes, damages organs or tissues, or otherwise causes injury to health
- Asphyxiant – dilutes or removes respired oxygen or otherwise prevents oxygen from reaching organs or satisfying metabolic needs
- Damages genetic material – carcinogens and mutagens

Instability hazards

- Self-reactive (e.g. explosives, organic peroxides, certain monomers)
- React violently or explosively with water
- Decompose violently (usually on heating)
- Sensitive to thermal or mechanical shock

Special hazards – oxidizer (OX)

- Cause spontaneous ignition on contact with combustibles
- Cause combustibles to burn extremely rapidly or explosively

Special hazards – water reactive (~~W~~)

- Ignite spontaneously or explode on contact with water
- Emit flammable gas on contact with water
- Emit toxic gas on contact with water

In terms of physical form, gaseous materials are particularly hazardous because they may travel freely and engulf exposures. When stored and transported, they are commonly contained under high pressure or liquefied at very low temperature. When released, all but oxygen and air itself are asphyxiation hazards in addition to any other chemical or toxic characteristics.

Loss Estimates

Losses due to a hazardous materials release in Teton County would be related to response activities, including evacuation-related business interruption, and clean-up costs. Teton County has had significant hazardous materials incidents. Clean up of these releases is the responsibility of the spiller. The cost of response to releases is reimbursed to the responding jurisdiction by the Idaho Bureau of Homeland Security Hazardous Materials Division.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Hazardous Materials has a magnitude score of 20.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Hazardous materials events often occur suddenly and with little or no warning (Warning Lead Times = 8). Such events usually affect a relatively limited area (Geography Affected = 2) and some injuries, but minimal deaths may occur (Bodily Harm = 2). Business interruption and economic losses are limited (Economic Loss = 2) and recovery assistance is provided locally by the State of Idaho Regional Hazardous Materials Response Team from Idaho Falls (Reconstruction Assistance = 4). Some sheltering of the general public may be required (Shelter = 2). The total Magnitude score is, therefore, twenty (20) which, for Teton County, would be in the "High" range even though the Tier II facilities are all petrochemical hazards. Historical records for hazardous material events are available and reliable, indicating that significant hazardous material events occur the annual to five year time frame (Frequency = High).

Riot/Demonstration/Civil Disorder

Definition/Description: State of Idaho statutes define "riot" as follows (Idaho Statute 18-6401 – RIOT DEFINED):

> Any action, use of force or violence, or threat thereof disturbing 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;

Also defined in the statutes (Idaho Statute 18-8102 – DEFINITIONS) is "civil disorder":

> "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.

The term "demonstration" is not defined in this context in the Idaho statutes but the following is given for "unlawful assembly" (Idaho Statute 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.

Riots are generally thought of as being spontaneous, violent events whereas demonstrations are usually planned events and are usually intended to be non-violent. Riots seem often to be motivated by frustration and anger, usually over some real or perceived unfair treatment of some group. There are instances, however, where riots have begun during celebrations and other events where the only initiating factor seems to have been the gathering of a crowd of people. The potential for rioting, then, exists any time people gather but a number of factors are associated with the increased probability one will occur including:

- Drug and alcohol use
- Youth of crowd members
- Low socio-economic status of members
- High level of emotions
- A history of rioting on the same or similar previous occasions
- Initiating event, person, or persons

Once violent or illegal activity is initiated, it escalates, possibly at least partly because of the perception that, because all are acting together, there is little probability that any given individual will be arrested or otherwise suffer consequences. Riots may range in scope from a very few people in a small area to thousands over an entire city. Once initiated, large riots are very difficult to suppress, particularly in the United States where law enforcement is constrained by constitutional guarantees as well as personnel limits. Early and decisive action by law enforcement may be effective in suppressing a riot, but police actions may also lead to further escalation.

Historical Frequencies

There are no recorded riot events in Teton County.

Impacts

Riots may result in loss of life, injury and permanent disability (participants, bystanders, and law enforcement personnel) as well as looting, vandalism, setting of fires and other property destruction. Law enforcement, emergency medical services and medical facilities and personnel, firefighting and other community resources may be overwhelmed and unavailable to the community at large. Transportation routes may be closed, infrastructure and utilities damaged or destroyed, and public buildings attacked, damaged or destroyed. Social and psychological effects may also cause great impacts. Lingering fear and resentment can be long-lasting and can greatly impair the ability of a community to function politically, socially and economically.

Loss Estimates

Losses from Riot/Demonstration/Civil Disobedience comes primarily damage to community and private property. It is difficult to estimate specific losses but losses would be consistent with those due to structure fires and similar incidents.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Riot/Demonstration/Civil Disobedience has a magnitude score of 12.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn't Happened

Magnitude/Frequency Scoring Rationale

Riot/Demonstration/Civil Disorder events usually provide less than a day of warning (Warning Lead Times = 4). Very limited geographical areas would be affected (Geography Affected = 2) and some injuries and/or death might be expected (Bodily Harm = 2). Business interruption and economic loss are likely to be quite limited (Economic Loss = 1) and any recovery assistance would be provided at the local level (Reconstruction Assistance = 2). No public sheltering would be expected (Shelter = 1). The total Magnitude score is, therefore, twelve (12) which, for Teton County, is in the "Low" range. Historical records available and reliable, indicating that such events have never occurred in Teton County (Frequency = Low).

Terrorism

Description

Terrorism is an unlawful act under both Federal and State of Idaho statutes. Definitions are as follows:

U.S. Code : Title 18 : Section 2331. Definitions

(5) the term "domestic terrorism" means activities that -
- (A) involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State;
- (B) appear to be intended -
  - (i) to intimidate or coerce a civilian population;
  - (ii) to influence the policy of a government by intimidation or coercion; or
  - (iii) to affect the conduct of a government by mass destruction, assassination, or kidnapping; and
- (C) occur primarily within the territorial jurisdiction of the United States.

Idaho Statute 18-8102 – DEFINITIONS

(5) "Terrorism" means activities that:
- (a) Are a violation of Idaho criminal law; and
- (b) Involve acts dangerous to human life that are intended to:
  - (i) Intimidate or coerce a civilian population;
  - (ii) Influence the policy of a government by intimidation or coercion; or
  - (iii) Affect the conduct of a government by the use of weapons of mass destruction, as defined in section 18-3322, Idaho Code.

The Federal Emergency Management Agency gives the following as general information on terrorism (http://www.fema.gov/hazard/terrorism/info.shtm):

"Terrorism is the use of force or violence against persons or property in violation of the criminal laws of the United States for purposes of intimidation, coercion, or ransom.

Terrorists often use threats to:

- Create fear among the public.
- Try to convince citizens that their government is powerless to prevent terrorism.
- Get immediate publicity for their causes.

Acts of terrorism include threats of terrorism; assassinations; kidnappings; hijackings; bomb scares and bombings; cyber attacks (computer-based); and the use of chemical, biological, nuclear and radiological weapons.

High-risk targets for acts of terrorism include military and civilian government facilities, international airports, large cities, and high-profile landmarks. Terrorists might also target large public gatherings, water and food supplies, utilities, and corporate centers. Further, terrorists are capable of spreading fear by sending explosives or chemical and biological agents through the mail."

Acts of terrorism, then, are essentially the intentional initiation of the sorts of hazard events that have been discussed in previous sections.

Historical Frequencies

There are no recorded terrorism events in Teton County.

Impacts

Since the events of September 11, 2001, no citizen of the United States is unaware of the enormous potential impacts of terrorist acts. The emotional impacts; fear, dread, anger, outrage, etc., serve to compound the enormous physical, economic, and social damage. The continuing terrorist threat itself has a profound impact on many aspects of everyday life in this country and on the U.S. economy.

Loss Estimates

Specific loss estimates are not provided due to security policies.

Hazard Evaluation

Repetitive Loss - none

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Terrorism has a magnitude score of 24.

Frequency	
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn"t Happened

Magnitude//Frequency Scoring Rationale

Terrorism events may occur with little or no warning (Warning Lead Times = 8). Numerous scenarios are possible, many of which could affect a moderately large area (Geography Affected = 2) but most of which would cause injuries but few deaths (Bodily Harm = 2). Business interruption and economic loss, under most scenarios, are likely to be moderate (Economic Loss = 2) but Federal recovery assistance would probably be available (Reconstruction Assistance = 8). Some sheltering of those in the immediate area may be required (Shelter = 2). The total Magnitude score is, therefore, twenty-four (24) which, for Teton County, is in the "High" range. Historical records available and reliable, indicating that such events have never occurred in Teton County and the likelihood is considered to be low (Frequency = Low).

Section 4.6 Vulnerabilities

Critical Infrastructure

County Facilities

The County Courthouse is located at 89 N. Main Street in Driggs. This facility houses the assessor, clerk and recorder, juvenile probation officer, magistrate court and law library, sheriff‟s dispatch, planning and zoning, and treasurer. The prosecuting attorney is located across the alley from the Commissioner Chambers in a separate building. Teton County Road and Bridge is located at 224 N Main Street, Driggs. The Sheriff‟s Office and DMV is located at 25 Wallace, Driggs.

Teton County Library, Valley of the Tetons Library, is located at 56 N Main, Driggs.

Address & City	Occupancy Description	Value
Driggs	Courthouse	$3,000,000
Driggs	Dog Pound	$2,100
Driggs	EMT Building	$360,000
1 Mile North Driggs	Fairgrounds Building	$126,000
Fairgrounds, Driggs	Picnic Shelter	$12,300
Driggs	Road & Bridge Quonset	$103,000
Driggs	Road & Bridge Shop	$206,000
Driggs	Road & Bridge Tire Shop	$51,500
Driggs	Solid Waste Shed	$10,000
Driggs	Storage Building	$15,500
Corner of Cemetary/100 E, Driggs	Temporary Transfer Station	$250,000
Subtotal		**$4,136,400**
Airport Rd (off Hwy 33), Driggs	Driggs Fire Hall	$618,000
Subtotal		**$618,000**
105 Perry Ave, Tetonia	Tetonia Fire District	$250,000
Subtotal		**$250,000**
32 Elm St, Victor	Victor Fire District	$250,000
Subtotal		**$250,000**
Airport, Driggs	City Airport Hanger	$345,000
Driggs	City Industrial Building	$515,000
235 South 5th East, Driggs	City Public Works Building/Shop	$325,000
South Main, Driggs	City Storage Building	$77,000
80 South Main, Driggs	New City Building	$1,700,000
N Bates Treatment Bldg, Driggs	Lagoon Building	$25,000
West Little, Driggs	Sewer Pump Station	$75,000
Airport, Driggs	Snow Removal Equipment Building	$200,000
Teton Canyon, Driggs	Spring House	$70,000
Subtotal		**$3,332,000**
Rodeo Grounds, Tetonia	Announcer Booth	$4,100

Address & City	Occupancy Description	Value
105 Perry, Tetonia	City Building	$82,500
In the City Park, Tetonia	Shelter	$15,000
Sits Behind Fire Hall, Tetonia	Storage Shed 12x12	$4,100
Subtotal		**$105,700**
971 Old Jackson Hwy, Victor	Chlorination Building	$36,000
32 Elm St, Victor	City Building & Shop	$350,000
Victor	City Picnic Shelter	$13,400
Victor	City Restrooms	$7,200
Victor	City Storage Shed	$15,000
230 Elm St, Victor	Water Storage Tank	$800,000
56 N Main, Victor	Library	$260,000
Subtotal		**$1,481,600**
309 N. 1st. E., Driggs	Hospital Dwelling (Home)	$140,000
309 N. 1st. E., Driggs	Hospital Garage	$40,000
345 N. 1st E.., Driggs	Hospital Rental Home	$145,000
120 E Howard Ave, Driggs	Teton Valley Hospital	$7,000,000
Subtotal		**$7,325,000**
Total		**$17,498,700**

Table 4.6.1 County and City Owned Buildings

Public Services and Facilities

Teton County provides law enforcement and road and bridge maintenance The County does not provide any additional public services directly, nor does the County operate any sort of coordinating public service authority, although informal cooperative agreements have been established among certain districts. All of the County‟s necessary services are divided among individual public service districts and city offices. Near or within the boundaries of the areas of city impact, most services are provided by the cities or their respective service districts. In other unincorporated areas of the County, services are provided either by the various public service districts or individual landowners.

Sewer and Water

Within each city in Teton County, domestic water distribution and sewage collection and treatment systems are provided by the cities, so decisions regarding development and the availability of sewer and water in the areas of impact rest entirely with city governments. The City of Driggs uses an aerated facultative lagoon to treat their water. The City of Driggs has an agreement with Victor to treat their sewage. The City of Tetonia uses a facultative lagoon to treat their water. Both the City of Driggs and Tetonia are planning to upgrade their sewage treatment facilities. In the outlying unincorporated areas of the County water is supplied by individual wells and sewage is treated by septic systems. At least one large subdivision is on an LSAS, Large Soil Absorption System, and other new construction sites are looking at this type of system as well, in place of individual septic systems. For any parcel of land, sewer and water arrangements must meet the standards of the Idaho Department of Health. All septic systems, regardless of size or location, must be approved by the Eastern Idaho Public Health District. In

addition, standards may also be required by the Idaho Department of Water Resources and the Idaho Department of Environmental Quality.

Water Sources

Ground water in Teton County is generally low in dissolved solids and is moderately hard. The chief aquifer in the valley is sand and gravel deposited by streams discharging from the surrounding mountains[40].

The City of Driggs" public water system consists of one main source (Teton Creek Spring infiltration gallery), three back-up source wells and the storage tank well. The headwaters of Teton Creek are in the Teton Mountain Range in Wyoming. Well #1 (the storage tank well) is located between Driggs and the Teton Creek Springs. The three back-up source wells (Dalley, Lion"s Park and High School Wells) are all located inside Driggs. The dominant land use in the immediate area of the Dalley Well, the Lions Park Well and the High School Well consists of residential property, two major transportation corridors, businesses, industry and the airport.

The City of Tetonia"s public water system consists of one well. The well is located on the west side of the City of Tetonia. Land use surrounding the well head includes Highway 33, residential property and commercial property.

The City of Victor"s public water system consists of one well. The springs are located in the Game Creek watershed southeast of Victor and the Willow Well is located just west of Victor. Land in the Game Creek watershed is largely undeveloped national forest land with no agricultural land with 500 feet of the spring intake area. The only development is a jeep trail that parallels Game Creek. Willow Well is located near irrigated crop land and land use within the immediate area of the well head consists of residential property, transportation corridors, irrigation canals and small businesses.

All of the wells in the valley may be influenced by agricultural uses since agriculture is a dominant land use in Teton County.

There are a total of 17 public and private water systems in Teton County that serve businesses, schools, churches, residential areas, etc.

Waste Management

Teton County provides solid waste management throughout the County. The Teton County Landfill was opened in a simpler time, to meet the needs of a small, rural population. As the county grew, the landfill began to fill, and landfill regulations across the nation were strengthened to lessen pollution. Despite numerous improvements, the Idaho Department of Environmental Quality (DEQ) determined several years ago that the landfill no longer met the rules. Under consent order to close in mid-July of this year, in early 2007 there was no long-term solid waste management plan, and county recycling facilities to help reduce the volume of waste going into the landfill.

A temporary solid waste transfer facility has now opened. Terra Firma Organics will be managing this facility, along with municipal composting and other programs to help with waste reduction. Next summer, a permanent transfer station, projected to last at least 20 years, should be operational. Plans are being developed to make it easy to recycle

[40] City of Driggs Comprehensive Plan, 2006

Fire Protection

Teton County Fire Protection District is a combination department with fourteen full-time personnel and over thirty volunteers. A mutual assistance (aid) program between Teton County Fire Department, the U.S. Forest Service, and the Bureau of Land Management provides wildfire protection in the County. The fire district in Teton County, Idaho also provides emergency fire services for structures and wildfires in Alta, Teton County, Wyoming through an agreement with the counties and the mutual assistance agreement. Teton County Fire District stations are located in Driggs, Tetonia and Victor[41].

Public Safety

Law enforcement is provided by the Teton County Sheriff throughout the County. Law enforcement is also provided by the Teton County Sheriff within the municipalities of Driggs, Victor and Tetonia. The Sheriff's office is located in Driggs and employs 8 deputies including a K9 and school resource officer, and 4 dispatchers.

Emergency Medical Services

Ambulance services are located in Driggs and provided by the Ambulance District that is administered by Teton Valley Hospital.

Health Care

Health care in Teton County is provided by Teton Valley Healthcare which includes Teton Valley Hospital, Driggs Health Clinic and Victor Health Clinic. The hospital is owned by Teton County. TetonValley Healthcare also provides homecare services for patients in rural Teton County as well as areas of Teton and Fremont counties.

Emergency Management Services

Teton County Emergency Management is staffed by a full time professional Emergency Management Coordinator. Emergency Management manages the Teton County Emergency Operations Center (EOC), provides ongoing maintenance of the Emergency Operations Plan, coordinates activities of the Teton County Local Emergency Planning Committee, manages the Emergency Management budget and related grants instruments, and provides coordination in other related aspects of County and Region-wide emergency management program including hazard mitigation.

Public Utilities

The major utilities are electrical, telecommunications, and irrigation.

Fall River Rural Electric Cooperative and **Rocky Mountain Power** provide electrical services in Teton County.

Telecommunications lines coincide with the main power transmission and distribution lines throughout most of the County. Telephone service is provided by Silver Star Communication.

Propane services are provided by private companies.

[41] Dynamac Corporation, 2004

Water Resources

Surface Water

Teton River flows through the center of Teton County and drains the entire County. Its headwaters are in Teton County and it flows north towards and merges with Bitch Creek on the northern border of the County. From there the Teton River flows through Fremont and Madison Counties until it reaches the Snake River. The headwaters of Bitch Creek are in the Teton Mountains in Wyoming. It flows west following the northern border of Teton County. There are several creeks that flow out of the mountains on the east and west side of the County and drain into the Teton River. Some of these creeks are Trail Creek, Fox Creek, Darby Creek, Teton Creek, South Leigh Creek, North Leigh Creek, Badger Creek, Packsaddle Creek and Horseshoe Creek.

The Big Hole Mountains have several small lakes scattered throughout the County including Alligator Lake, Castle Lake, Crystle Lake and Packsaddle Lake. Reservoirs in the County include Lizard Lake, McRenolds Resevoir, and Mud Lake. Lizard Lake is southwest of Driggs in the Big Hole Mountains. Mud Lake is northeast of Victor and McRenolds Resevoir is in the northeast corner of the County.

Teton County features broad areas of diverse and ecologically important wetlands, floodplains and riparian corridors. These wetlands are integral to protection of water quality, ground water recharge, pollutant buffering, erosion control and nutrient cycling that supports agricultural operations such as ranching and haying, and support fish and wildlife populations[42].

Irrigation

Irrigation is primarily from surface diversions. There are three irrigation companies in the County. The Grand Teton Canal Company controls the diversions on Teton Creek near Stateline Road which feed canals used mostly on the west side of Highway 33[43] . The Trail Creek Sprinkler irrigation Company diverts water from Trail Creek near Victor. The Teton Pipeline Association is located near Tetonia, Idaho. There are several canals and pipelines throughout the County providing irrigation water.

The following table lists each irrigation company in Teton County, their water source.

Name	Water Source
Grand Teton Canal Company	Teton Creek
Trail Creek Sprinkler Irrigation Company	Trail Creek
Teton Pipeline Association	

Table 4.6.2
Teton County Irrigation Companies

[42] Teton County Comprehensive Plan
[43] City of Driggs, 2006

Transportation

Highways and Transportation

There are three major highways in Teton County. State Highway 33 travels east from Madison County to Tetonia then south through Driggs and Victor then southeast to the Wyoming border. Highway 32 travels south from Fremont County to Tetonia where it junctions with Highway 33. Highway 31 travels northeast from Bonneville County to Victor where it junctions with Highway 33. These highways are designated as part of the Teton Scenic Byway. Other highways include Ski Hill Road which connects Driggs to Alta, Wyoming and Grand Targhee Ski Resort. Stateline Road follows the Idaho/Wyoming border from south Leigh Creek Area to Darby Creek area. Bates-Cedron road is a north-south road on the west side of the valley between Driggs and Victor. Several other roads lead to forest and agricultural areas of Teton County.

Road Type	Length in Miles
Highway	114
Major Road	174
Local Road	1,589
Minor Road	73
Access Roads	22
TOTAL	**1,972**

Table 4.6.2
Miles and Type of County Roads

Bridges

Table 4.6.3 below provides a listing of the bridges in Teton County

Name	Owner	Year Constructed	Value
SH 31	State Highway Agency	1996	$1,671,516.00
SH 32	State Highway Agency	1954	$1,792,854.00
SH 33	State Highway Agency	1987	$9,624,582.00
SH 33	State Highway Agency	1975	$2,440,530.00
SH 33	State Highway Agency	1979	$2,114,748.00
SH 33	State Highway Agency	1979	$3,261,060.00
SH 33	State Highway Agency	1959	$1,476,468.00
SH 33	State Highway Agency	1959	$1,928,448.00
SH 33	State Highway Agency	1959	$1,566,864.00
Subtotal Value			**$25,877,070.00**
STC 6820;BUXTON RD	County Highway Agency	1996	$5,856,786.00

STC 6822	County Highway Agency	1967	$1,229,904.00
950 SOUTH	County Highway Agency	1952	$1,476,468.00
COUNTY ROAD	County Highway Agency	1991	$1,270,080.00
STC 6820	County Highway Agency	1984	$1,294,380.00
CRYSTAL ROAD	County Highway Agency	1995	$911,088.00
COUNTY ROAD	County Highway Agency	1977	$1,341,522.00
COUNTY ROAD	County Highway Agency	1977	$1,385,748.00
COUNTY ROAD	County Highway Agency	1935	$2,199,636.00
COUNTY ROAD	County Highway Agency	1956	$4,199,040.00
COUNTY ROAD	County Highway Agency	1935	$792,342.00
NICKERSON ROAD	County Highway Agency	1990	$6,427,512.00
COUNTY ROAD	County Highway Agency	1983	$3,598,506.00
CO.RD;PLNG#032B	County Highway Agency	1984	$869,616.00
COUNTY ROAD	County Highway Agency	1950	$759,780.00
Subtotal Value			**$33,612,408.00**
Total Value			**$59,489,478.00**

Airports

The City of Driggs operates Driggs-Reed Memorial Airport which is a Class B2 airport. It has a 7,300 foot runway, but no regularly scheduled commercial or passenger flights. There is increased traffic on the airstrip during the weekends and holidays.

Railroads

There is no railway within Teton County.

Educational Facilities

Teton County has one school district, Teton County School District. There are 2 high schools (one alternative high school), one middle school and three elementary schools within the district. Teton County has one private school, Teton Christian Academy.

Bldg	Address & City	Occupancy Description	Value
1	481 N. Main, Dirggs	Teton Junior High	$7,100,000
2		Modular Classroom	$125,000
3		Metal Shop	$25,000
5		Announcing Tower	$10,000
7		Storage Building	$21,000
8		School Wellhouse/Pump	$6,000

9		Concession Building	$2,500
10		Football Lighting	$35,700
11		Football Score Board	$14,000
Subtotal			**$7,339,200**
1	490 N. 1st, Driggs	Art Building	$225,000
Subtotal			**$225,000**
1	441 N. Main, Driggs	Old Seminary Building	$220,000
Subtotal			**$220,000**
1	11 Howard Ave, Driggs	Driggs Elementary School	$3,326,000
Subtotal			**$3,326,000**
1	Driggs	Teton High School	$13,500,000
2		Vocational Agricultural Building	$1,000,000
Subtotal			**$14,500,000**
1	210 N. Main, Tetonia	Administration Building	$1,054,400
Subtotal			**$1,054,400**
1	15 S. 5th, Tetonia	Tetonia Elementary	$2,200,000
Subtotal			**$2,200,000**
1	43 E. Center, Victor	Victor Elementary	$3,600,000
2		Modular Classroom	$85,000
Subtotal			**$3,685,000**
Total Value			**$32,549,600**

Table 4.6.4 School District Building Values

Recreation Areas

Recreation in Teton County is critically important to the economy of the County as well as being an asset for the State of Idaho, but is also a sensitive and contentious issue. There are mixed feelings among the local population regarding the expanding recreation user numbers and the associated economic advantages compared to the quiet enjoyment of the life style which has predominated the valley in the past. The recreation activities available in Teton County are enjoyed by people on a national as well as international basis[44].

The opportunities that exist are plentiful not only within the County, but in close proximity. Water-based recreational activities in Teton County are mainly limited to fishing. Land based activities include, but are not limited to: camping, hiking, mountain biking, birding, hunting, snowmobiling, snowshoeing, snowboarding, and downhill and cross country skiing. Grand Targhee Ski Area is located in adjacent Teton County, Wyoming, and hosts numerous skiers during winter months and is only accessible from Teton County, Idaho. The County is also part of the Caribou-Targhee National Forest and located close to the Bridger-Teton National Forest as well as national and state parks (Grand Teton, Yellowstone and Harriman). Many visitor amenities, activities and services are available within the County including outfitting and guide services as well hot air balloon or glider rides over the valley. The cities of Tetonia, Driggs and Victor each have city parks with playground and other activities.

[44] Dynamac Corporation, 2004

Historical Sites

Table 4.6.5 provides a listing of the sites in Teton County that are the National Registry of Historic Places.

County	Resource Name	Address	City
Teton	Hollingshead Homestead	107 West 1200 N. Teton Cty Rd.	Tetonia
Teton	Pierre's Hole 1832 Battle Area Site	S of Driggs	Driggs
Teton	Spud Drive-In Theater	231 ID 33	Driggs
Teton	Teton County Courthouse	Main St.	Driggs
Teton	Victor Railroad Depot	70 Depot St.	Victor

Table 4.6.5 National Registry of Historic Places in Teton County

Teton County Asset Inventory Summary

Asset Type	Asset	Quantity
General	Geographical Area	451 Square Miles
	Households (2006 est.)	2,716
	Population (2006 est.)	7,383
	Housing Units (2006 est.)	3,951
Essential Facilities	Hospitals	1
	Schools	5
	Fire Stations	3
	Police Stations	1
	Emergency Operations Facility	1
High Potential Loss Facilities	Dams	1
	Hazardous Materials Sites	3
	Military Installations	National Guard
	Nuclear Power Plants	0
Transportation Lifeline Systems	Highways	114
	Railways	0
	Bus	1
	Airports	1
Utility Lifeline Systems[4]	Potable Water	17
	Wastewater	3
	Natural Gas	0
	Electric Power	2
	Communications	3

Section 4.7 Risk Assessment

The Hazard Assessment Process conducted in sections 4.1 – 4.6 was used to establish a basis for determining the cost effectiveness and priority of implementing mitigation strategies. To this end, the following steps were carried out:

1. A list of hazards to be considered was developed.
2. Each hazard was profiled. Profiles include:
    a. A description of the hazard and, where possible, objective definitions including levels of severity,
    b. A description of the possible impacts of the hazard,
    c. A County profile and/or profiles of individual locations where the hazard event may occur, including levels of severity and probabilities of occurrence.
3. For each location, vulnerabilities that may be affected by a hazard event were identified. These vulnerabilities include but are not necessarily limited to:
    a. Human population
    b. Structures
    c. Structure contents
    d. Crops and livestock
    e. Other property
    f. Critical Infrastructure
    g. Economic assets and business activities
    h. Social systems
    i. Others
4. Possible losses due to a hazard event at each location and at the various levels of severity were estimated.

To complete the process of establishing the level of risk severity associated with a hazard, each hazard was assessed based on estimated losses and the likelihood of a hazard event using the information gathered in steps 1-4 above. The risks associated with each hazard were based on historical occurrences and scientific projections. Hazard assessment activities included the use of FEMA‟s HAZUS but because of limitations with FEMA‟s HAZUS data, Teton County‟s own current GIS property valuation data was primarily used to generate loss estimates. Hazard assessment activities also include the mapping of hazards, at-risk structures including critical facilities, and repetitive flood loss structures, the location of at-risk structures, land use, and populations. These mapping activities were completed as part of a hazard assessment and linked to appropriate mitigation strategies which address requirements derived during the assessment process with the specific goal of reducing the risk.

	Frequency
Ranking	**Description**
HIGH	Multiple Times a Year to 5 Years
MEDIUM	5 to 25 Years
LOW	25 Years to Hasn‟t Happened

Risk was determined in part by the frequency of a given hazards event as determined by looking at historical and scientific data and then balanced against the perception of the AHMP Committee and scored using the criteria below.

Quantification of the risk was based on the three critical issues: life safety, property damage, and environmental insult. In addition other issues tied to community support of risk mitigation including social, cultural, and economical issues were included.

Magnitude of Natural Disasters						
Value	**Reconstruction Assistance From**	**Geography (Area) Affected**	**Expected Bodily Harm**	**Loss Estimate Range**	**Population Sheltering Required**	**Warning Lead Times**
1	Family	Parcel	Little to No Injury / No Death	$1000s	No Sheltering	Months
2	City	Block or Group of Parcels	Multiple Injuries with Little to No Medical Care / No Death	$10,000s	Little Sheltering	Weeks
2	County	Section or Numerous Parcels	Major Medical Care Required / Minimal Death	$100,000s	Sheltering Requiring Neighboring Counties Help	Days
4	State	Multiple Sections	Major Injuries / Requires Help from Outside County / A Few Deaths	$1,000,000s	Long Term Sheltering Effort	Hours
8	Federal	County Wide	Massive Casualties / Catastrophic	$10,000,000s	Relocation Required	Minutes

Table 4.7.1
Magnitude of National Disasters

Severity Ranking was then completed based on derived criteria compiled by the AHMP Committee from technical experts and the identified stakeholders. The severity ranking includes the determination of magnitude using the criteria in Table 4.7.1 versus the frequency score discussed above.

Risk Severity Ranking

Each hazard was scored as to magnitude and frequency of occurrence. Table 4.7.1 provides an overall ranking of the hazards by magnitude. Boxes highlighted in Red indicate the highest magnitude; boxes highlighted in yellow indicate the medium magnitude with green boxes signifying the lowest magnitude. Table 4.7.2 illustrates the severity ranking for the hazards facing Teton County when magnitude is compared to frequency. For those hazards with a high magnitude score and a loss estimate greater than $100,000,000 the frequency score is replaced with an Ex or an extreme loss. Those with extreme loss potential are ranked as the highest hazards. The remaining risk rankings, as described in Section 1, are based on frequency and magnitude. Priorities for risk reduction activities are based on the overall risks rankings which

are determined using the process described above. The hazards are placed in the risk ranking Table 4.7.2 on a comparative scale which is used to determine the priorities for risk reduction.

The highest score would be a high frequency and a high magnitude as depicted in the lower right hand box of each ranking table.

Hazard	Magnitude	Frequency
Earthquake	32	M
Terrorism	24	L
Extreme Cold	20	H
Hazardous Materials	20	H
Winter Storm	20	H
River/Stream Flooding	19	H
Epidemic	19	L
Wildfire	18	M
Nuclear	17	L
Dam Failure	16	L
Structure Fire	14	H
Drought	13	M
Landslide	13	M
Flash Flood	13	M
Snow Avalanche	13	M
Tornado	12	M
Riot/Civil Disobedience	12	L
Hail	11	H
Extreme Heat	11	L
Straight Line Wind	11	H
Lightning	10	H
West Nile Virus	9	H

Table 4.7.1 – Hazard Magnitude and Frequency Scoring

Ranges
48-20 High
19-13 Medium
12-0 Low

Frequency
Extreme – $100,000,000 in loss or greater
High – Yearly to Five Years
Medium – Five Years to 25 Years
Low 25 Years to Never Happened

Frequency	Magnitude (Low) 1	Magnitude (Medium) 2	Magnitude (High) 3
(Low) 1	Extreme Heat Riot/Demonstration/Civil Disobedience	Nuclear Epidemic Dam Failure	Terrorism
(Medium) 2	Tornado	Drought Flash Flood Landslide Wildfire Snow Avalanche	Earthquake
(High) 3	Hail Lightning Straight Line Wind West Nile Virus	River/Stream Flooding Structure Fire Hazardous Materials	Winter Storm Extreme Cold

Figure 4.7.1 Hazard Ranking Teton County

Repetitive Loss Summary

Repetitive Loss in Teton County is limited to two areas, extreme cold and flooding. The extreme cold losses are similar to other counties in the region, broken water pipes and livestock losses. Extreme cold is exacerbated by frequent loss of power. Teton County only has one source of electrical power into the County and that source is frequently lost during extreme cold temperatures. Most of the long term County residents are familiar with the situation and have installed backup sources of heat and lighting however, as the County grows there is a concern that potential loss of life could increase. The other repetitive loss in the County is tied to spring flooding in the Badger Creek area. The loss is primarily to County roadways. There have been no NFIP claims for flood damage in Teton County. See illustrations in Section 4.2 Flooding.

Individual Jurisdictional Risk Rankings

The Teton County All Hazard Mitigation Plan has been developed as a multi-jurisdictional plan therefore each jurisdiction risk must be ranking independently from the County and the other jurisdictions. The tables below provide a summary of the ranking for each jurisdiction. The summary ranking is based on two key issues, the location of the hazard in relationship to the jurisdiction and the extent of the vulnerability within the specific jurisdiction.

City of Driggs

Frequency	Magnitude (Low) 1	Magnitude (Medium) 2	Magnitude (High) 3
(Low) 1	Extreme Heat Riot/Demonstration/Civil Disobedience Snow Avalanche Landslide	Nuclear Epidemic Dam Failure	Terrorism
(Medium) 2	Tornado	Drought Flash Flood Wildfire	Earthquake
(High) 3	Hail Lightning Straight Line Wind West Nile Virus	River/Stream Flooding Structure Fire Hazardous Materials	Winter Storm Extreme Cold

Table 4.7.3
City of Driggs Risk Rankings

City of Tetonia

Frequency	Magnitude (Low) 1	Magnitude (Medium) 2	Magnitude (High) 3
(Low) 1	Extreme Heat Riot/Demonstration/Civil Disobedience Snow Avalanche Landslide	Nuclear Epidemic Dam Failure	Terrorism
(Medium) 2	Tornado	Drought Flash Flood Wildfire	Earthquake
(High) 3	Hail Lightning Straight Line Wind West Nile Virus	River/Stream Flooding Structure Fire Hazardous Materials	Winter Storm Extreme Cold

Table 4.7.5
City of Tetonia Risk Rankings

City of Victor

Frequency	Magnitude (Low) 1	Magnitude (Medium) 2	Magnitude (High) 3
(Low) 1	Extreme Heat Riot/Demonstration/Civil Disobedience Snow Avalanche Landslide	Nuclear Epidemic Dam Failure	Terrorism
(Medium) 2	Tornado	Drought Flash Flood Wildfire	Earthquake
(High) 3	Hail Lightning Straight Line Wind West Nile Virus	River/Stream Flooding Structure Fire Hazardous Materials	Winter Storm Extreme Cold

Table 4.7.4
City of Victor Risk Rankings

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Section 5 Land Use Planning/Disaster Mitigation Integration

This section of the Teton County Multi-Jurisdiction All Hazard Mitigation Plan examines the relationship between the participating jurisdictions Comprehensive Plan, Land Use or Zoning Ordinances, and the AHMP. Incorporating hazard mitigation practices into land use planning is extremely important as future developments are planned and constructed. Through proper planning within the individual jurisdictions risk to property owners can be reduced and future disaster related economic losses avoided. Land Use and Mitigation Planning Integration are seen as critical components of the mitigation program in Teton County.

The Teton County Comprehensive Plan, "A Guide for Development 2004-2010" was developed during 2001-2004 and amended on January 10, 2005. As written this Plan incorporates, through policy and implementation goals, a vast majority of the issues and actions identified as part of the Teton County Multi-Jurisdiction All Hazard Mitigation Planning effort. If implemented as planned, both the County Comprehensive Plan and the All Hazard Mitigation Plan will act as complementary guidance documents to improve the safety of Teton County communities and will reduce the potential damage that can be expected from the profiled hazards in this Plan.

It is recommended that the Coordinator of Emergency Management, the Planning and Zoning Administrator, the County Road and Bridge Supervisor, and the Fire District continue to work closely together to realize the success envisioned in the goals, policies, and implementation actions defined in these two complementary documents. Teton County may well be the best Planned Community in the State. The integration of land use planning between the County and the Cities appears to be outstanding.

City of Driggs

The City of Driggs has an outstanding Land Use Planning Department. Their Comprehensive Plan, last updated in 2007, is fully aligned with this AHMP. They have very strong land use planning goals and objectives and have addressed those hazards that are potential risks to the jurisdiction including seismic, flooding, and wildfire. Their Land Use ordinances take into account building in hazard prone areas and they have adopted the International Building Code for all new construction and remodels in the City. There are no recommendations for improvements as part of this review process.

City of Victor

The City of Victor updated their Comprehensive Plan in 2006. The Plan"s goals and objectives are compatible with this AHMP. Their hazard section addresses the hazards posed to their jurisdiction appropriately. The subdivision ordinances address building in hazard prone areas and they use the International Building Code to govern construction in the City. The hazards that they focus on are flooding, seismic, landslides, and wildfire. There are no recommendations for improvements as part of this review.

City of Tetonia

The City of Tetonia adopted the latest revision of the City"s Comprehensive Plan in 2008. For a small jurisdiction the Comprehensive Plan is outstanding and is completely aligned with this AHMP. The goals and objectives are appropriate to protect against those risks posed by the hazards located in the City. The subdivision ordinances reflect hazard control. There are no recommendations for improvement as part of this review.

Section 6 Implementation Roadmap

Hazard mitigation is defined as any cost-effective action(s) that has the effect of reducing, limiting, or preventing vulnerability of people, culture, property, and the environment to potentially damaging, harmful, or costly hazards. Hazard mitigation measures which can be used to eliminate or minimize the risk to life, culture and property, fall into three categories:

1) Those that keep the hazard away from people, property, and structures,
2) Those that keep people, property, or structures away from the hazard, and
3) Those that reduce the impact of the hazard on victims, i.e., insurance.

This mitigation plan identifies key strategies that fall into all three categories.

Hazard mitigation measures must be practical, cost effective, and culturally, environmentally, and politically acceptable. Actions taken to limit the vulnerability of society to hazards must not in themselves be more costly than the anticipated damages.

The primary focus of this Plan is on decision making for land use and capital investment. Mitigation proposals are made and prioritized based on risk assessment that takes into account the magnitude of hazards, their frequency of occurrence, and the vulnerabilities of the community to them. This helps to assure that risk reduction efforts, whether for homes, roads, public utilities, pipelines, power plants, public works, or other projects, are both necessary and cost effective.

In the past, hazard mitigation has been one of the most neglected emergency management programs. Because disaster events are generally infrequent and the nature and magnitude of the threat is often ignored or poorly understood priority to fund and implement mitigation measures is low. Mitigation success can be achieved, however, if accurate information is portrayed to decision makers and the public through complete hazard identification and impact studies, followed by effective mitigation management.

Prioritization Process

Initial prioritization of the Mitigation Projects will occurred at the Local Mitigation Workshop where representatives from the Counties and the participating Cities came together to approve the risks severity ranking, the goals, and associated projects. (See Attachment 1 for meeting minutes). The projects were selected based on the goals and related objectives of the Plan. The basic tenants of the process, as discussed in the scope and mission statement of this Plan, was life safety first, protection of critical infrastructure second, and reduction of repetitive loss third. Those projects that were selected and listed and then roadmapped as the four highest priority projects were selected based on the following criteria:

- Hazard Magnitude/Frequency
- Potential for repetitive loss reduction
- Benefit / Cost
- Vulnerability to the Community
- Population Benefit

- Property Benefit
- Economic Benefit
- Project Feasibility (environmentally, politically, socially)
- Potential project effectiveness and sustainability
- Potential to mitigate hazards to future development

The County Commissioners participating in the Workshop were given the final voice in the approval process for County Projects. The Commissioners were very involved and directed the County Emergency Coordinator to also request each City to identify and choose four projects for each City. Those projects were developed and have been incorporated into the AHMP as described below.

Ongoing Prioritization Process

Differing prioritization processes will occur within the County and the participating Cities after the Plan is adopted and then becomes a living document with annual evaluation and updating.

The prioritization process will continue to be based on the three basic tenants of Mitigation Planning; 1) Save lives, 2) Protect critical infrastructure, and 3) Eliminate repetitive loss.

The process will reflect that a key component in funding decision is a determination that the project will provide an equivalent or more in benefits over the life of the project when compared with the costs. Projects will be administered by county and local jurisdictions with overall coordination provided by the County Emergency Management Coordinator.

County Commissioners and the elected officials of all jurisdictions may evaluate opportunities and establish their own unique priorities to accomplish mitigation activities where existing funds and resources are available and there is community interest in implementing mitigation measures. If no Federal funding is used in these situations, the prioritization process may be less formal. Often the types of projects that the County can afford to do on their own are in relation to improved codes and standards, department planning and preparedness, and education. These types of projects may not meet the traditional project model, selection criteria, and benefit-cost model. The County will consider all pre-disaster mitigation proposals brought before the County Commissioners by department heads, city officials, fire districts and local civic groups.

When Federal or State funding is available for hazard mitigation the requirements that establish a rigorous benefit-cost analysis as a guiding criterion in establishing project priorities will be followed. The County will understand the basic Federal grant program criteria which will drive the identification, selection, and funding of the most competitive and worthy mitigation projects.

Prioritization Scheme

The following numerical scoring system developed by Northwest Laboratories[45] may be helpful and used to prioritize projects. The system was modified slightly to represent the basic mitigation tenants chosen by Teton County. This prioritization serves as a guide for the County when developing mitigation activities. This project prioritization scheme has

[45] Valley County, Idaho, All Hazards Mitigation Plan, pages 123-127

been used in other Counties with the State of Idaho and is designed to rank projects on a case by case basis. The County mitigation program does not want to restrict funding to only those projects that meet the high priorities because what may be a high priority for a specific community may not be a high priority at the County level. Regardless, the project may be just what the community needs to mitigate disaster. The flexibility to fund a variety of diverse projects based on varying reasons and criteria is a necessity for a functional mitigation program at the County and community level.

To implement this case by case concept, a more detailed process for evaluating and prioritizing projects has been detailed below. Any type of project, whether County or City specific, will be prioritized in this more formal manner.

To prioritize projects, a general scoring system has been developed. This prioritization scheme has been used in Statewide all hazard mitigations plans. These factors range from cost-benefit ratios, to details on the hazard being mitigated, to environmental impacts.

The factors for the non-planning projects include:

- Hazard Magnitude/Frequency
- Potential for repetitive loss reduction
- Benefit / Cost
- Vulnerability to the Community
- Population Benefit
- Property Benefit
- Economic Benefit
- Project Feasibility (environmentally, politically, socially)
- Potential project effectiveness and sustainability
- Potential to mitigate hazards to future development

Since some factors are considered more critical than others, two ranking scales have been developed. A scale of 1-10, 10 being the best, has been used for hazard magnitude/frequency, potential for repetitive loss reduction, cost, vulnerability to the community, population benefit and property benefit. Economic benefit, project feasibility, potential to mitigate hazards to future development, and potential project effectiveness and sustainability are all rated on a 1-5 scale, with 5 being the best. The highest possible is 65.

The guidelines for each category are as follows:

Hazard Magnitude/Frequency

The Hazard Magnitude/Frequency rating is a combination of the recurrence period and magnitude of a hazard. The severity of the hazard being mitigated and the frequency of that event must both be considered. For example, a project mitigating a 10-year event that causes significant damage would receive a higher rating than one that mitigates a 500-year event that causes minimal damage. For a ranking of 10, the project mitigates a high frequency, high magnitude event. A 1 ranking is for a low frequency, low magnitude event. Note that only the damages being mitigated should be considered here, not the entire losses from that event.

Potential for repetitive loss reduction

Those projects that mitigate repetitive losses receive priority consideration here. Common sense dictates that losses that occur frequently will continue to do so until the hazard is mitigated. Projects that will reduce losses that have occurred more than three times receive a rating of 10. Those that do not address repetitive losses receive a rating of 1.

Benefit / Cost

The analysis process will include summaries as appropriate for each project, but will include benefit / cost analysis results. Projects with a negative benefit / cost analysis result will be ranked as a 0. Projects with a positive Benefit / Cost analysis will receive a score equal to the projects Benefit / Cost Analysis results divided by 10. Therefore a project with a BC ratio of 50:1 would receive 5 points; a project with a BC ratio of 100:1 (or higher) would receive the maximum points of 10.

Vulnerability of the Community

A community that has a high vulnerability with respect to other jurisdictions to the hazard or hazards being studied or planned for will receive a higher score. To promote participation by the smaller or less vulnerable communities in the County, the score will be based on the relationship to other communities being considered. A community that is the most vulnerable will receive a score of 10, and one that is the least, a score of 1.

Population Benefit

Population Benefit relates to the ability of the project to prevent the loss of life or injuries. A ranking of 10 has the potential to impact 90% or more of the people in the municipality (county, city, or district). A ranking of 5 has the potential to impact 50% of the people, and a ranking of 1 will not impact the population. The calculated score will be the percent of the population impacted positively multiplied by 10. In some cases, a project may not directly provide population benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly effects the population, but should not be considered to have no population benefit.

Property Benefit

Property Benefit relates to the prevention of physical losses to structures, infrastructure, and personal property. These losses can be attributed to potential dollar losses. Similar to cost, a ranking of 10 has the potential to save $1,000,000 or more in losses. Property benefit of less than $1,000,000 will receive a score of the benefit divided by $1,000,000 (a ratio below $1 million). Therefore, a property benefit of $300,000 would receive a score of 3. In some cases, a project may not directly provide property benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly effects property, but should not be considered to have no property benefit.

Economic Benefit

Economic Benefit is related to the savings from mitigation to the economy. This benefit includes reduction of losses in revenues, jobs, and facility shut downs. Since this benefit can be difficult to evaluate, a ranking of 5 would prevent a total economic collapse, a ranking of 3 could prevent losses to about half the economy, and a ranking of 1 would not prevent any economic losses. In some cases, a project may not directly provide economic benefits, but may lead to actions that do, such as in the case of a study. Those projects will not receive as high of a rating as one that directly affects the economy, but should not be considered to have no economic benefit.

Project Feasibility (Environmentally, Politically & Socially)

Project Feasibility relates to the likelihood that such a project could be completed. Projects with low feasibility would include projects with significant environmental concerns or public opposition. A project with high feasibility has public and political support without environmental concerns. Those projects with very high feasibility would receive a ranking of 5 and those with very low would receive a ranking of 1.

Potential to mitigate hazards to future development

Proposed actions that can have a direct impact on the vulnerability of future development are given additional consideration. If hazards can be mitigated on the onset of the development, the County will be less vulnerable in the future. Projects that will have a significant effect on all future development receive a rating of 5. Those that do not affect development should receive a rating of 1.

Potential project effectiveness and sustainability

Two important aspects of all projects are effectiveness and sustainability. For a project to be worthwhile, it needs to be effective and actually mitigate the hazard. A project that is questionable in its effectiveness will score lower in this category. Sustainability is the ability for the project to be maintained. Can the project sustain itself after grant funding is spent? Is maintenance required? If so, are or will the resources be in place to maintain the project. An action that is highly effective and sustainable will receive a ranking of 5. A project with effectiveness that is highly questionable and not easily sustained should receive a ranking of 1.

Final ranking

Upon ranking a project in each of these categories, a total score can be derived by adding together each of the scores. The project can then be ranking high, medium, or low based on the non-planning project thresholds of:

Project Ranking Priority Score

- High 40-65
- Medium 25-39
- Low 9-24[46]

[46] Valley County, Idaho, All Hazards Mitigation Plan, pages 123-127

Mitigation Projects

Listed below are the goals and objectives developed by the AHMP and the priority projects that were developed to address the risks posed. Included in the list are a cost estimate where established or a rough order of magnitude cost and an anticipated period for further investigation, project development and implementation.

Severe Weather

Denotes Priority Project

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will develop methods to mitigate the losses due to severe weather in the County.	Protect Transportation Routes	Plant Living Snow Fences between Newdale and Tetonia	Private Property Owners/ Emergency Management	ROM - $8/FT 2009 – Identify at-risk Areas 2010 – Develop Agreements with Landowners 2011 – Seek Funding and Plant Fences
		Plant Living Snow Fences along Badger Creek Road	Private Property Owners/Road and Bridge	ROM - $8/FT 2010 – Identify at-risk Areas 2011– Develop Agreements with Landowners 2012 – Seek Funding and Plant Fences
		Plant Living Snow Fences along the Bates-Cedrum Loop near Victor	Private Property Owners/Road and Bridge	ROM - $8/FT 2011 – Identify at-risk Areas 2012 – Develop Agreements with Landowners 2013 – Seek Funding and Plant Fences
	Protect Isolated Citizens	Install Emergency Generators at all Emergency Shelter Locations	Emergency Management	ROM - $50,000 2009 – Select Equipment and prioritize purchases 2010 – Seek Funding and Install Equipment

Flooding

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will continue to participate in the National Flood Insurance Program and develop actions that will reduce the damage to County infrastructure due to flash and stream flooding.	Improve the NFIP Program in Teton County	Redraw the NFIP Maps for Teton County"s 100 year floodplain.	Floodplain Administrator/ FEMA	ROM - $50,000 2009 – Request Funding from FEMA. 2010 – Conduct Hydrology Studies and Redraw Flood Maps
		Work with the Cities of Driggs and Tetonia to analyze the need to participate in the NFIP.	Floodplain Administrator	ROM - $25,000 2009 – Host Public Meetings and provide education for those in Flood Prone Areas.
	Protect County Roadways from annual flooding	Install culverts/bridges or raise roadways in flood prone areas such as: Badger Creek Road Fox Creek (Repetitive Loss)	Road and Bridge	ROM - $150,000 plus annual maintenance cost. 2010 – Develop a LHTAC Grant to evaluate all culverts in the County. Determine Priority Replacement. 2011 – Ongoing, Repair or Replace Damaged Culverts
		Analyze the alluvial fan flooding potential east of Driggs	Floodplain Administrator	ROM $25,000 2008 – Identify Funding Source 2009 – Request Funding 2010 – Conduct Study

Geological

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will reduce potential damage to County infrastructure and structures through implementation of earthquake mitigation techniques.	Protect Critical Facilities from Seismic Damage	Conduct an assessment and identify Unreinforced Masonry Structures in the County with specific emphasis on County or School District Owned Structures.	Emergency Management/Building Official	ROM - $50,000 2009 – Request Funding 2010 – Conduct Assessment 2011 – Prioritize Structure for Retrofit and Request Funding 2012 – Begin retrofit

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
		Remodel the Teton County EOC to seismic standards	Emergency Management	ROM - $500,000 2008 – Apply for EOC Grant 2009 – Seek Additional Funding as Necessary 2010 – Begin Retrofit
		Harden the Teton County 911 Dispatch Center	Sheriff's Office	ROM - $150,000 2009 – Develop Hardening Requirements, Develop Design and Cost Estimate, Conduct BCA 2010 – Submit HMA Grant 2011 – Conduct Project
		Seismically retrofit the Teton Valley Hospital	Hospital Administrator	ROM - $2,000,000 2011 – Develop Retrofit Requirements, Develop Design and Cost Estimate, Conduct BCA 2012 – Submit HMA Grant and/or General Obligation Bond 2013 – Conduct Retrofit
Teton County will reduce the potential damage to property from Landslides by adopting codes and standards for construction in landslide prone areas.	Protect Buildings from Landslides	Revise the County Subdivision Ordinance to restrict building in Landslide prone areas.	P & Z Administrator	ROM - $15,000 2009 – Seek Funding from County to develop ordinance. 2010 – Adopt Ordinance

Wildfire

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will reduce the losses caused by wildfire by continuing the Wildland Urban Interface Mitigation Program.	Adopt and enforce applicable components of NFPA Code 1144 that addresses the unique needs of Teton County	Develop a Wildland Fire Ordinance which establishes the road widths, access, water supply, and building regulations suitable to ensure new structures can be protected.	Emergency Management/ P & Z Administrator	ROM - $5000 2009 – Develop Ordinance 2010 - Adopt Ordinance
	Improve access to areas prone to Wildland Fire	Develop a listing of roads, bridges, cattle guards, culverts, and other limiting conditions and incorporate improvements into the Road and Bridge Transportation Plans	Road and Bridge	ROM - $150,000 plus annual maintenance cost. 2012 – Develop a LHTAC Grant to evaluate all roadways in the County. Determine Priority actions. 2013 – Ongoing: Repair or Replace damaged culverts, bridges etc.
		Revise the County Subdivision Ordinance to require dual access for subdivisions in Wildfire prone areas.	P & Z Administrator	ROM - $5,000 2009 – Seek Funding from County to develop ordinance. 2010 – Adopt Ordinance.
	Improve Hazard Communications Tools	Use GIS Technology to Link Red Zone Data to Landowner Parcel Maps	Emergency Management	ROM - $5000 2009 – Seek Funding from BLM to integrate Red Zone data. 2010 – Integrate Data

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
	Balance watershed planning, natural resource management, and land use planning with natural hazard mitigation to protect life, property, and the environment.	Develop a standard practice for roadside vegetation management.	Emergency Management	No Cost 2009 – Develop standard as part of WUI Planning ongoing effort
		Designate Wildland Urban Interface areas as a special land use category in the County Comprehensive Plan	P & Z Administrator	No Cost 2010 – Include in next revision prior to publication.
	Preserve, rehabilitate, and enhance natural systems to serve natural hazard mitigation functions.	Develop wildfire fuel breaks around CRP Land	Fire District/ Emergency Management	Insufficient Data to Estimate Cost. 2009- WUI Working group develop priority list of CRP Land to be protected included acreage and liner feet of fuel breaks.
		Conduct Fuel Reduction Projects in the following Areas: City of Driggs Watershed City of Victor Watershed	Fire District/ Emergency Management	ROM -$100,000 2009 – Seek Funding from BLM 2010 – Conduct Projects
	Develop Additional Water Supplies for Fire Protection	Develop an agreement with developers and private landowners for access to and use of year round water sources for fire protection.	Emergency Management/ Fire Districts	ROM - $5000 2008 – Seek Funding from BHS SHSP and develop standard agreement and requirements. 2010 – Execute Agreements.

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
	Update and Improve Road Signing and Rural Addressing	Install Road Signs as prescribed by NFPA Standards	Emergency Management/Road and Bridge	ROM - $50,000 2010 – Seek BLM or LTHAC Grant to purchase signs. 2011 – Install Signs

Biological

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will seek to reduce the exposure of humans and animals to the West Nile Virus.	Build knowledge of West Nile Virus in the general public.	Maintain an active "fight the bite" public education program.	Health District/ Emergency Management	No Cost 2008- Continue Program

Structural Fire

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will seek to reduce losses from Structure fires.	Ensure that all structures have minimum detection and protection devices	Encouraging private property owners to install and maintain smoke detectors on all levels of the residences and to place detectors in all bedrooms	Fire Districts/ Emergency Management	ROM - $100,000 2010 – Seek Funding for the Assistance to Fire Fighters Safety Grant Program 2011 – Distribute Detectors
	Develop Additional Water Supplies for Fire Protection	Develop an agreement with developers and private landowners for access to and use of water sources for fire protection.	Fire District	ROM - $5000 2009 – Seek Funding from BHS SHSP and develop standard agreement and requirements. 2010 – Execute Agreements.

Nuclear Event

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will examine the risks posed to the County from Nuclear Facilities and Improvised Nuclear Devices.	Develop a Basic Understanding of Nuclear Risks in the County	Conduct a Public Education Program on hazardous materials and include Radioactive Materials, Class 7.	Emergency Management	ROM - $10,000 2010 – Apply for a HMEP Grant 2011 – Conduct Program

Hazardous Material Event

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will seek to identify hazardous material flow through the County.	Protect citizens from releases of hazardous materials in transportation	Conduct a hazardous materials flow study for highways that run through the County.	Emergency Management	Cost Estimate - $8000 2009 – Apply for an HMEP Grant and Conduct Study.

Riot/Demonstration/Civil Disorder

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will develop methods to identify and report Civil Disobedience activities.	Educate the Public on Civil Disobedience Reporting	Teton County will conduct a public education program to assist the citizens of the County in recognizing and reporting civil disobedience events to County Law Enforcement.	Sheriff's Office	ROM - $10,000 2013 – Apply for a Law Enforcement Grant to Conduct Public Education. 2014 – Conduct Program.

Terrorism

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will identify measure to protect critical County infrastructure and facilities from potential terror incidents.	Identify and protect potential terrorism targets.	Conduct a County Terrorism assessment.	Emergency Management	No Cost 2009 – Work with LEPC to conduct assessment.
		Protect Critical Infrastructure based on the assessment.	Emergency Management	Insufficient Data to estimate cost. 2010 – Develop a listing of critical infrastructure to be protected. 2011 – Seek Funding to design and engineer protection alternatives. 2012 – Conduct Engineering 2013 – Seek Funding to Implement Solutions. 2014 – Begin Implementation

Other

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Teton County will strive to improve the warning and communications systems in the County	Obtain the Capability to notify and warn citizens	Install a reverse notification calling system in Teton County	Emergency Management/Sheriff's Office	ROM - $12,000 2009 – Seek Regional Partners to Implement Swift Reach of similar program and seek funding with County 911 Budget. 2010 – Implement System.

Participating Jurisdiction Projects

City of Driggs

Denotes Priority City Project

Severe Weather

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Driggs will develop methods to protect the life safety of its citizens from harm due to severe weather events.	Protect isolated individuals from Severe Winter Storms and Extreme Cold.	Identify Evacuation Shelters Equip with Emergency Generators.	Emergency Management	ROM - $5000 2009 – Work with City Council, Church, and volunteer organizations.
	Protect City Services	Bury Water lines below the frost line.	Mayor/Public Works	ROM - $1,000,000 2009 – Develop Engineering Requirements, Cost Estimate, and Conduct BCA 2010 – Apply for HMA Grant
		Install SCADA monitoring on City Water and Sewer Systems	Mayor/Public Works	ROM - $50,000 2010 – Design System 2011 – Install using Water and Sewer User Funds

Flooding

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Driggs will develop actions that will reduce the damage to City property and infrastructure due to flooding.	Protect Private Property	Evaluate the need to participate in the National Flood Insurance Program	Mayor/P & Z Administrator	No Cost 2009 – Invite IDWR to assist in assessment, Adopt NFIP.

Geological

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Driggs will reduce potential damage to City infrastructure and structures through implementation of earthquake mitigation techniques.	Protect Critical Services	Upgrade aging water and sewer lines to current seismic standards	Mayor/Public Works	ROM - $1,000,000 2009 – Develop Engineering Requirements, Cost Estimate, and Conduct BCA 2010 – Apply for HMA Grant
		Harden Creekside Bridge	Mayor/Public Works	ROM - $80,000 2011 – Develop Requirements, Design, and Cost Estimate. Conduct BCA 2012 – Apply for HMA Grant 2013 – Harden Bridge

Structural Fire

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Driggs will seek to reduce losses from Structure fires.	Ensure that all structures have minimum detection and protection devices	Encouraging private property owners to install and maintain smoke detectors on all levels of the residences and to place detectors in all bedrooms	Fire District	ROM - $35,000 2012 – Seek Funding for the Assistance to Fire Fighters Safety Grant Program 2013 – Distribute Detectors
	Improve Water Supply	Increase the flow capacity of the City water system for fire protection.	Mayor/Public Works/Fire District	ROM - $250,000 2010 – Develop Design, Cost Estimate. Conduct B CA 2011 – Apply for IDOC Block Grant

Other

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
Protect the Community from the effects of aging or failing infrastructure	Improve Waste Water Treatment	Increase Capacity of the Waste Water Treatment Facility	Mayor/Public Works	ROM - $3,500,000 2009 – Begin Facility Design 2010 – Develop Cost Estimate 2011 – Conduct General Obligation Bond – Apply for USDA Rural Develop Waste Water Loan Program 2012 – Begin Upgrade

City of Tetonia

Severe Weather

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Tetonia will develop methods to protect the life safety of its citizens from harm due to severe weather events.	Protect isolated individuals from Severe Winter Storms and Extreme Cold.	Identify Evacuation Shelters Equip with Emergency Generators.	Emergency Management	ROM - $5000 2009 – Work with City Council, Church, and volunteer organizations.

Flooding

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Tetonia will develop actions that will reduce the damage to City property and infrastructure due to flooding.	Improve Drainage	Install a City wide storm water drainage system.	Mayor/Public Works	ROM - $1,500,000 2009 – Begin System Design 2010 – Develop Cost Estimate 2011 – Conduct General Obligation Bond – Apply for IDOC Block Grant 2012 – Begin System Installation
	Protect Private Property	Evaluate the need to participate in the National Flood Insurance Program	Mayor/P & Z Administrator	No Cost 2009 – Invite IDWR to assist in assessment, Adopt NFIP.

Geological

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Tetonia will reduce potential damage to City infrastructure and structures through implementation of earthquake mitigation techniques.	Protect Critical Infrastructure	Construct a new City Hall that meets current Building Codes for the Area.	Mayor/City Council	ROM - $700,000 2009 – Begin Facility Design 2010 – Develop Cost Estimate 2011 – Conduct General Obligation Bond – Apply for USDA Rural Development Community Facility Load Program 2012 – Begin Construction

Structural Fire

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Tetonia will seek to reduce losses from Structure fires.	Ensure that all structures have minimum detection and protection devices	Encouraging private property owners to install and maintain smoke detectors on all levels of the residences and to place detectors in all bedrooms	Fire District	ROM - $25,000 2012 – Seek Funding for the Assistance to Fire Fighters Safety Grant Program 2013 – Distribute Detectors
	Improve Street Markings and Mapping	Install Road Signs	Mayor/Public Works	ROM - $10,000 2011 – Seek BLM or LTHAC Grant to purchase signs. 2012 – Install Signs
	Ensure Fire Water Flows	Install an emergency generator on the City Water System.	Mayor/Water Department	ROM - $15,000 2009 – Procure Equipment using Water Users Funds

City of Victor

Severe Weather

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Victor will develop methods to protect the life safety of its citizens from harm due to severe weather events.	Protect isolated individuals from Severe Winter Storms and Extreme Cold.	Identify Evacuation Shelters Equip with Emergency Generators.	Emergency Management	ROM - $5,000 2009 – Work with City Council, Church, and volunteer organizations.
	Protect Critical Infrastructure	Upgrade main effluent pumping station.	Mayor/Sewer Department	ROM - $250,000 2009 – Begin Station Design 2010 – Develop Cost Estimate 2011 – Conduct General Obligation Bond – Apply for USDA Rural Development Sewer System Loan Program 2012 – Begin Construction

Flooding

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Victor will continue to participate in the NPIF and protect City owned and private property from the effects of Flooding.	Improve Drainage	Upgrade storm water drainage on Main Street.	Mayor/Public Works	ROM - $500,000 2009 – Begin System Design 2010 – Develop Cost Estimate 2011 – Conduct General Obligation Bond – Apply for IDOC Block Grant 2012 – Begin System Installation
		Upgrade storm water drainage on Cedron Street	Mayor/Public Works	ROM - $500,000 2010 – Begin System Design 2011 – Develop Cost Estimate 2012 – Conduct General Obligation Bond – Apply for IDOC Block Grant 2013 – Begin System Installation

Geological

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Victor will reduce potential damage to City infrastructure and structures through implementation of earthquake mitigation techniques.	Protect Library Patrons from tipping shelves and falling books.	Place restraining hardware on the Library Shelves. Place retraining bars or trim along the front to the book shelves.	Library District Librarian	ROM - $10,000 2009 – Seek funding in City budget and install hardware.
	Protect Critical Infrastructure	Retrofit the Water Storage Facility to Seismic Standards	City Administrator/ Public Works	ROM - $300,000 2009 – Develop Engineering Requirements, Cost Estimate, and Conduct BCA 2010 – Apply for HMA Grant 2011 – Conduct Retrofit
		Retrofit City Hall to meet Seismic Standards	City Administrator/ Public Works	ROM - $200,000 2010 – Develop Engineering Requirements, Cost Estimate, and Conduct BCA 2011 – Apply for HMA Grant 2012 – Conduct Retrofit

Structural Fire

Goal	*Objective*	*Project*	*Responsible Entity*	*Order of Magnitude Cost & Planning Horizon*
The City of Victor will seek to reduce losses from Structure fires.	Ensure that all structures have minimum detection and protection devices	Encouraging private property owners to install and maintain smoke detectors on all levels of the residences and to place detectors in all bedrooms	Fire District	ROM - $35,000 2011 – Seek Funding for the Assistance to Fire Fighters Safety Grant Program 2012 – Distribute Detectors

Teton County Priority Projects

The following mitigation projects were selected as priority projects by the Teton County Board of County Commissioners:

1. Reconstruct the County EOC to seismic standards.
2. Seismically retrofit the Teton Valley Hospital
3. Conduct Wildland Urban Interface Fuel Reduction Projects
4. Install Culverts/Bridges or raise County roadways to reduce damage due to annual flooding

Reconstruction EOC

Reconstruct the EOC to meet seismic standards.

Purpose and Need

The Teton County EOC is located in the old fire building on Highway 33 adjacent to the Teton County Fire District‟s new station. The Station was built prior to current seismic standards the EOC, which is located on the second floor of the station, is housed in an old facility constructed as a training/meeting room. Engineering analysis of the facility indicates that the location will not survive a seismic event, especially the second story. The facility is not adequate as an EOC.

Project Description

Retrofit the Teton County EOC by removal of the existing offices and second floor EOC in the old Teton County Fire Facility. Reconstruct the offices and EOC using appropriate building codes.

Cost Estimate

The rough order of magnitude cost estimate for this project is $500,000.

Benefit Cost Analysis (BCA)

Cost Benefit Analysis is not necessary for this project if funding is provided by the EOC Grant. If HMA Funding is requested a BCA will be conducted as part of the application process. See Roadmap line 6.

Funding Options

There are very few funding options for new “brick and mortar” facilities, but the retrofit of this facility should qualify for Pre-Disaster Mitigation Funding. Other funding options include the current EOC grant application that Teton County has submitted or funding provided through incentives or impact fees established by ordinance on developers of new developments.

Seismic Retrofit of the Teton Valley Hospital

Seismically retrofit or harden the Teton Valley Hospital

Purpose and Need

Teton County is located adjacent to Yellowstone National Park and other seismically active areas in western Wyoming. While the County has experienced no major seismic events in the recent past the potential for a major seismic event exists. The Teton Valley Hospital was built in the 1950s and remodeled several times since that time. Portions of the Hospital are constructed to current seismic codes and standards however; there are portions that were constructed before the standards were in place. Those areas are in need of evaluation and retrofitting as appropriate.

Project Description

This project has three important components, first evaluation of the current Hospital structure to determine areas that do not meet code, and second an engineering design of a retrofit of the structure, and third, the actual retrofitting or upgrading of the structure. One suggestion would be to conduct the engineering evaluation and design to clearly define the scope of the retrofit and then conduct a separate project to focusing just on the retrofit activities. A second approach may be to conduct the evaluation to determine need and then link the engineering design and construction activities into a single integrated project.

Cost Estimate

The rough order of magnitude cost estimate for this project is $2,000, 000.

Benefit Cost Analysis (BCA)

A BCA will be conducted as part of the HMA Application. See line 26 of the Teton County AHMP Roadmap.

Funding Options

The retrofitting of critical infrastructure, such as the Teton Valley Hospital qualifies for a Pre Disaster Mitigation Grant. Other funding options include a Community Facility grant/loan from USDA Rural Development. Facility loans are available to 501.C3 organizations without the need of a general obligation bond.

Wildland Urban Interface Fuels Reduction

Conduct WUI fuel reduction projects in Teton County.

Purpose and Need

Wildfires are a constant threat to Teton County‟s communities. The Wildland Urban Interface program in the County has been active for several years, but has not conducted many fuel reduction projects. There is a need to protect the watersheds for the Cities of Driggs and Victor. Both communities get a portion of their domestic water supply from

springs fed from the mountains east of their jurisdictions. This project looks to work closely with the Targhee-Caribou National Forest to develop projects designed specifically to protect the drinking water supplies of these two communities.

Project Description

The Teton County WUI Working group will work with the Targhee – Caribou National Forest to determine proper fuel reduction projects for those areas considered to be the watersheds for the City of Driggs and the City of Victor. Working together, as required by land ownership, the WUI Working group will define projects and apply for grants to reduce the fuels in these areas.

Cost Estimate

The rough order of magnitude cost estimate for this project is $100,000.

Benefit Cost Analysis (BCA)

Cost Benefit Analysis is not necessary for this project unless HMA Funds are requested. If HMA Funding is sought a BCA will be conducted.

Funding Options

Depending on location fuel reduction projects are eligible for grants from the Forest Service, the BLM or FEMA. The key to funding Fuel Reduction locations is working closely with the affected Federal landowner to ensure that the projects are prioritized into their funding cycles and schedules.

Reduce Repetitive Flooding Damage on County Roadways

Install Culverts/Bridges or raise County roadways to reduce damage due to annual flooding.

Purpose and Need

Annual spring runoff from snow melt almost always does some damage in Teton County. The pictures provided below illustrate some flooding that occurred during the spring of 2008 along the Badger Creek Road. *This is an annual occurrence and is considered repetitive loss.*

The annual repair of these roadways and others in the County is an impact the County"s Road and Bridge budget. With the mounting costs of fuel it is expected that these types of projects will increased the strain on existing tax revenues.

Project Description

Using historical knowledge the County Road and Bridge Department will examine areas where spring flooding occurs and will determine if proper drainage techniques would alleviate the annual damage. The County will then engineering a solution which may include, but not be limited to, placement of culverts or bridges in areas that experience season flooding or raising of roadways to keep flood waters into existing waterways.

Cost Estimate

The rough order of magnitude cost estimate for this project is $150,000.

Benefit Cost Analysis (BCA)

Cost Benefit Analysis is not necessary for this project if LHTAC funds are requested, if HMA Funds are requested a BCA will be conducted as part of the application.

Funding Options

Options for funding these activities could come from a variety of sources including the Local Highway Transportation Assistance Council‟s allotment of highway funds, pre-disaster mitigation funding, flood mitigation assistance funding, the creation of a community improvement district, or existing road funds in the County.

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Attachments

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Attachment 1
Meeting Minutes

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Teton County
All Hazards Mitigation Plan
August 29, 2006

Rick Fawcett, Whisper Mountain Professional Services, Inc., and Bob Dalton, Teton County Disaster Services, met to discuss the process for writing the Teton County All Hazards Mitigation Plan. Whisper Mountain has been hired by the County to write this plan, and Rick explained to Bob the type of people he would like to see on the plan committee, to include Road and Bridge, Planning and Zoning, School Bus Transportation Supervisors, Canal and Water District people, EMS, Commissioners, Mayors, and other interested parties including the general public. The plan will be written over a two-year period. The County is responsible for a 25% soft match which can be obtained through participation at the planning meetings and the use of any studies completed for the County. Rick said he would like to do a county survey of 10% of the property owners and would need an address list from the assessor‟s office. Bob said that would not be a problem. He said the assessor could also provide the parcel value information for cost loss estimates.

Bob gave Rick the following information to help get the process started:

1. Larry Booth retired from Planning and Zoning and Kirk Hibbert from Rexburg took his place.
2. There is only one Fire District which includes the entire County.
3. Bob wants to leave the wildland fire interface as an appendix in the plan.
4. The Fire District and the County has been GIS surveyed and Jay Hansen has done all of the homes and structures, mapped them and identified them. The interface has been clearly defined.
5. The ambulance and fire districts are separate.
6. Growth is “killing” the County for adequate schools, EMS, and law enforcement to name a few.
7. Craig Sherman, the city clerk in the City of Victor will have a lot of valuable information for the plan.
8. Bob wants to work through the LEPC for the AHMP committee.
9. Bob‟s greatest worry is a 6.0 or greater earthquake. There is one about every 200 years from Jackson to the Hoeback Junction. His second greatest concerns are wildland fire and severe winter storms.
10. Bob knows of an area up Badger Creek that needs new culverts where the roads are washed out by flood waters every year.

Rick said he would start on the historical studies and gathering information and then meet with the LEPC to get them involved with the plan.

TETON COUNTY LEPC/CITIZEN CORPS COUNCIL MINUTES
7 NOVEMBER, 2006

The monthly meeting of the Teton County LEPC & Citizen Corps Council was held at the Teton County Fire Protection District Training room, Driggs, Idaho. The meeting commenced at 1530. President Jay Hanson chaired the meeting. Members in attendance were Jay Hanson, Bob Dalton, Culin Sherman, Sheriff Cooke, Mayor Nancy Nead, Tammy Cox, Ken Schwab, Dave Plourde, Officer Tony Anderson, Greg Adams, Val Judy, and District Chief Mike Hoyle. Mayor Christensen, Craig Sherman (City of Victor), Susan Kunz (Teton Valley Hospital), Kelly Circle (Teton County S & R), Mike Clements (Idaho Bureau of Homeland Security) and Road & Bridge (Ralph Egbert) were unable to attend for various reasons.

The minutes of 3 October, 2006, were read and reviewed. Mayor Nead made a motion to accept as written, Mike Hoyle seconded the motion, and the motion was carried by unanimous voice vote.

There was no Old Business to discuss. New business/briefs as follows:

Whisper Mountain Professional Services, Mr. Rick Fawcett: Rick has been awarded IBHS/Federal Mitigation money to gather information and plan for processes to mitigate risks and plans to make communities safer. This is part of a 9 County endeavor covering the Counties represented by NEAFO Mike Clements, IBHS. This two year project is underway. This is the first meeting in Teton County with plans to meet for approximately 2 hours every other month with our Committee. Additional members not presently attending the LEPC meetings shall be encouraged to attend to ensure maximum benefit and credit. **These members should be Planning & Zoning, GPS/GIS coordinator, Road & Bridge, Mayors/City Councils, County Commissioners, County Clerk, County Assessor, Teton Valley Hospital and the general public (during the public hearing phase and earlier).** The step by step process was briefed. This presentation will be provided (electronically) to Bob Dalton who shall provide all concerned with the brief.

Many potential mitigation projects shall/will be available for Teton County. Larger culverts under roads that historically "flood" each spring may be eligible. Additional water wells that would augment existing water supplies may be eligible as they enhance fire protection. This could, possibly, enhance our Cities as part of mitigation issues. Wildland/Wildfire issues may be qualified. Flooding issues may be qualified. Hardening of Critical Infrastructure (buildings) may be qualified.

This grant requires an "in-kind" match. This match includes the cost of your attendance at these planning meetings! Your attendance is a key part of our 25% match for the region and our portion of this grant. So your attendance is very valuable.

Sheriff Cooke/911 Supervisor Culin Sherman: Presently working with Fire & EMS on radio interoperability/vehicle tracking matters. Progress is being made.

Teton County Ambulance District/EMS Ken Schwab: Nothing new to report.

City of Tetonia, Mayor Nead: Discussed the impact on the City when the Fire District utilized their water supply for a major structural fire in the Felt area. Chief Hoyle and others explained the procedures and an informative discussion took place among the members. No decision was made, however the issue will be studied. It was discussed that this may be mitigated utilizing grant money (see Whisper Mountain brief above).

Q102FM: Nothing new to add, subtract, or divide!

TCFPD District Chief Mike Hoyle: New growth continues to present challenges and "interesting" solutions. Radio interoperability/new equipment/vehicle tracking continues in planning.

Idaho State Police, Officer Tony Anderson: Nothing new to report.

IBHS Consultant Greg Adams: nothing new to report

IBHS Exercise Coordinator Val Judy: Needs all agencies exercise requirements/wants for the next three years. This is of extreme importance to ensure funds are obligated. Exercises planned for the future in the region are Severe Weather, Surge Capacity, bi-regional Hazmat, and others. Please contact Val with any and all of your requirements so that they will appear on the calendar.

7th District Health, Tammy Cox: Had to cancel the exercise in Challis & Mackay because of supply problems. Have attended meetings in Boise and Atlanta, GA (Strategic National Stock Pile). Requested Law support for vaccination clinics if required under emergency situations requiring such action.

Pandemic flu and the video for schools was discussed (cough in the sleeve is hilariously presented). West Nile virus is "over" for this year, however next year may be a "bad one" based on past experience in other areas. Pertussis seems to be on the increase. 7th District Health workload continues to increase, however funding seems to be on the decrease.

There being no further business, the meeting adjourned at 1658 (two minutes early!).. The next meeting will be held on the first Tuesday in December, the 5th. This meeting will be held either at the ESB Training room or the TCFPD training room. Please submit any agenda items to the Secretary as soon as possible. A reminder will/should be sent prior to the December meeting.

Submitted: Approved:

Bob Dalton, Secretary Jay Hanson, President

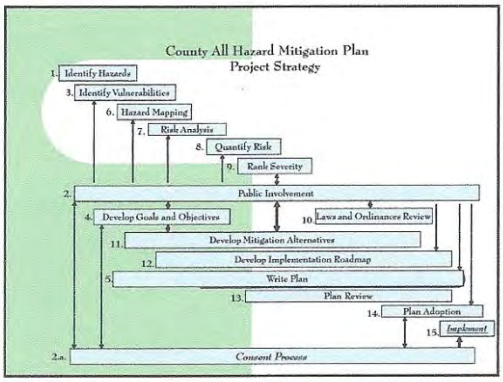
All Hazard Mitigation Planning

Rick Fawcett
Whisper Mountain
Professional Services, Inc.

November 7, 2006

Project Strategy

Hazard mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to life and property from a hazardous event. Hazard mitigation results in long-term, cost-effective, and environmentally-conscious reduction of hazard vulnerability. ***The goal of hazard mitigation is to save lives and reduce property damage.*** This, in turn, can reduce the enormous cost of disasters to property owners and all levels of government. In addition, hazard mitigation can protect critical community facilities, reduce exposure to risk, and minimize community disruption.

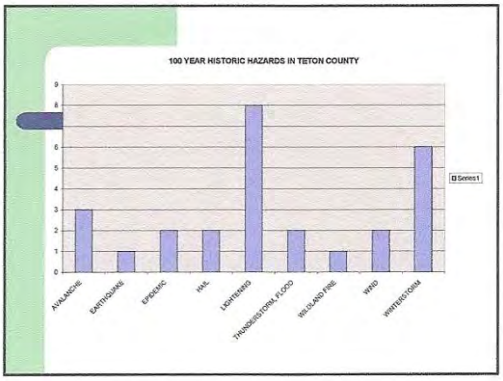


Identify Hazards

- Examine Existing Documentation
- Historical Analysis
  - 100 Year Events
  - Records
  - Stories – Legends
- Weather Service
- ***Map Hazards***
- Compare Vulnerabilities and Capabilities to determine Risk
- Quantify Risk

Significant Historical Hazards

HAZARD	# TIMES OCCURRED
AVALANCHE	3
EARTHQUAKE	1
EPIDEMIC	2
HAIL	2
LIGHTENING	8
THUNDERSTORM, FLOOD	2
WILDLAND FIRE	1
WIND	2
WINTERSTORM	6



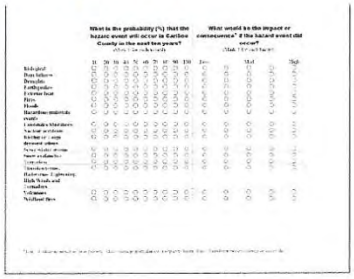
County AHMP Data

- Major historic earthquakes
- Active Faults
- All Quaternary Faults
- Rivers
- Lakes
- Watersheds
- Dams and Reservoirs
- FEMA Flood Maps
- Digital Elevation Model
- Soil Types
- Superfund Sites
- Tier II Sites
- Populated Places
- Demographics by Census Block and Tract
- Hospitals
- Schools
- Federal Lands
- State Lands
- Private Lands
- Transportation
  - Roads
  - Railroads
  - Airports
- Historical Sites
- National Natural Landmarks

All Hazard Mitigation Planning Committee

- Bob Dalton – Committee Chairman
- Interested Members of LEPC
- County and City Officials
- Potentially Affected Stakeholders
- *Facilitated by Whisper Mountain*

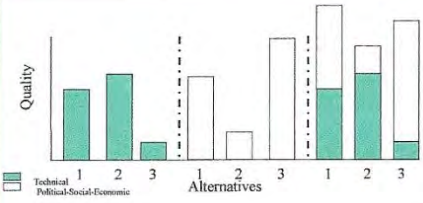
Perception of Risk



County All Hazard Mitigation Plan – Public Participation

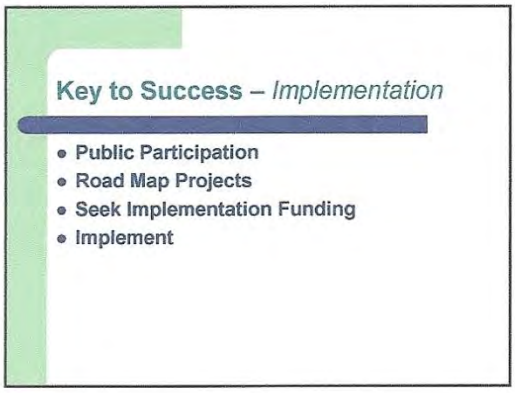
- Identify Stakeholders
- Identify Stakeholder Roles and Responsibilities Public Survey
- ***Public Survey***
- Document Stakeholder Issues
- Develop Derived Requirements
- Develop Alternatives and Analyze to Choose Preferred Solutions
- Implement

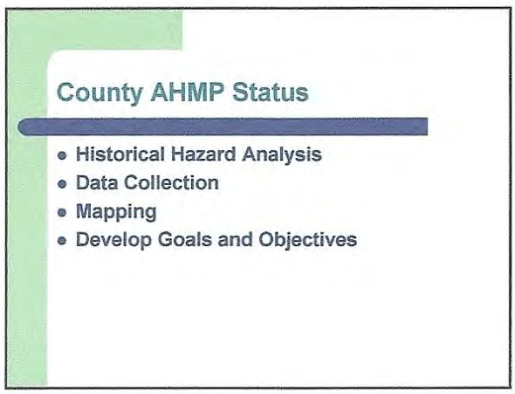
Developing *"Implementable"* Mitigation Alternatives

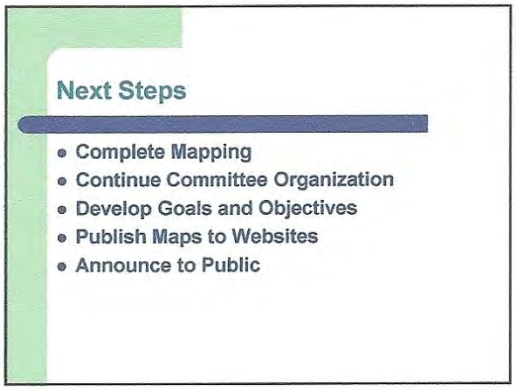


Roadmap Mitigation Projects

- Define Scope
- Determine Requirements
- Develop Engineered Cost Estimate
- Conduct Cost Benefit Analysis
- Prioritize Projects
- Align Funding against Schedule
- Implement


Key to Success – Implementation
Public Participation
Road Map Projects
Seek Implementation Funding
Implement


County AHMP Status
Historical Hazard Analysis
Data Collection
Mapping
Develop Goals and Objectives


Next Steps
Complete Mapping
Continue Committee Organization
Develop Goals and Objectives
Publish Maps to Websites
Announce to Public

Teton County
All Hazards Mitigation Plan
Committee Meeting
April 3, 2007

The second meeting of the Teton County All Hazards Mitigation Plan Committee was held in Driggs at the Teton County Fire Station at3:30 pm. Bob Dalton, Teton County Civil Defense Coordinator, welcomed everyone to the meeting. He took care of business and scheduled events and then turned the time over to Rick Fawcett of Whisper Mountain Professional Services, Inc., the firm hired by the County to write the AHMP. Rick added his welcome to Bob‟s.

Rick referred to three maps he had posted on earthquake, wildland fuels, and composite hazard vulnerabilities in Teton County. These maps came from a 100 year historical hazards study. Some of the data came from HazUS which has proven to be less than accurate in some cases. New property values have to be obtained for updated vulnerability studies. Also, with new development in the County, volume in flood plains has to be changed due to the added impervious surfaces. (Are property owners selling water rights with the land?) It may be a need to fly the floodplain with lidar to get an accurate flood plain description. There is only one area with a GIS reading for a flood area currently, and that is at the Back Saddle Bridge. Intermittent streams are not mapped and are often the source of flooding. The County Planning and Zoning Department is the FEMA flood program contact. Road and Bridge has documented road wash-out spots (i.e. Badger Creek and Fox Creek). Building in these flood prone areas is a problem. Teton Creek was altered for the purpose of surrounding development (which is illegal) and sometimes it is completely dry, and at other times it is full and flooding. Dozens of canals are being excavated as farmlands are sold for development. It then places the burden upon the streams to carry the water that the canals previously carried. The past water masters will have valuable information about sheet flooding issues. The NRCF has maps of old irrigation systems. There have been several roads washed out on the north end of the valley and at least one basement got wet. The County is using borough pits at the sides of the roads as stormwater collection sites. This then poses a West Nile Virus problem as the mosquitoes are attracted to this standing water.

Teton County currently has 267 subdivisions with 69 approved for continuance. There are 79 more subdivision applications on moratorium. The past year electric meters increased by 4% and this year by 5.5% on top of that. Building permits quadrupled in the County. Property values increased $85 million in one day. There have been 1,000 new lot proposals since 1-1-07. There are plans for a 120 unit hotel. There are 8 new subdivisions within the city. There were 37 septic permits so far this year, which is an increase of 15%. The County has issued 248 building permits to date also. Planning and Zoning can‟t

keep up with the rapid developments. This growth must be mitigated to properly handle the need for infrastructure and emergency services.

Rick handed out an earthquake study which showed the faults lie on the east side of the County primarily. It quakes on one side of the County, but shakes on the other side as well. There is a great underground lake on the west side of the County. There are minor earthquakes frequently in the County, and historically some larger ones.

The following issues were also brought to discussion:

1. Tier II sites are identified on the earthquake map and most of them are agricultural sites. There are a total of five in the County that report. Propane and petroleum are other stored reportable hazmats.
2. The redzone data needs to be linked to the fuel load data.
3. The land use project map is done for 50 years by the university.
4. Winter storm is the biggest perceived threat to the County. Growth is the second biggest threat.
5. There is no reverse 911 system in Teton County, but there is an enhanced 911 system. With CAD locations can be found down to a 30 foot radius.

Rick said a risk assessment survey would be mailed to a 10% sampling of property owners in the County. The results of the survey will be in the AHMP and will be used to identify the risks. Rick thanked everyone for their time and valuable contributions and encouraged them to communicate any other hazards they were or might become aware of.

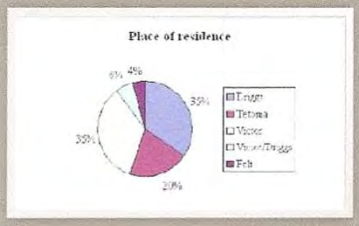
Teton County
AHMP Committee Members
Attendance Roster
April 3, 2007

Agency	Representative	Position	Email
Madison County	Greg Adams	Homeland Security	gadams@co.madison.id.us
Teton County	Kim Cooke	Sheriff	
Teton County Fire (Redzone)	Jay Hanson	Coordinator	tetonjay@tetontel.com
Idaho State Police	Tony Anderson	HazMat Specialist	tony.anderson@isp.idaho.gov
East Idaho Health	Mike Draney	EIPHD	mdraney@silverstar.com
Eastern Idaho Health	Tamara Cox	EIPHD	tcox@phd7.idaho.gov
Teton Valley Ambulance	Ken Schwab	Coordinator	kschwab@tetonvalleyhospital.com
Teton County Fire District	Mike Hoyle	Fire Chief	firechief@tetontel.com
KCHQ	Dave Plourade	Media	dave@q102fm.net
Teton County	Ralph Egbert	Road & Bridge Supervisor	
Teton County	Clay Smith	Road & Bridge Foreman	
Teton Valley Hospital	Susan Kunz	CEO	skunz@tetonvalleyhospital.com
City of Victor	Craig Sherman	City Administrator	victcity@tetontel.com
Civil Defense	Bob Dalton	Coordinator	dirtetonco@tetontel.com

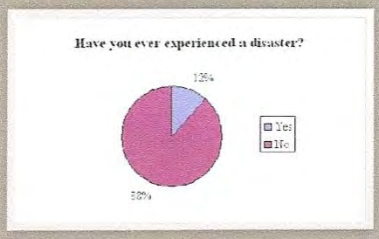
Teton County AHMP Update

September 4, 2007

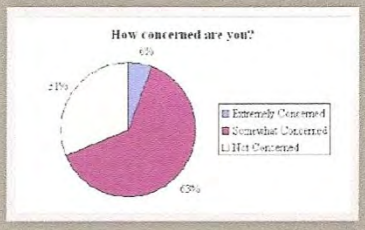
Question 1: What town do you live in or near?



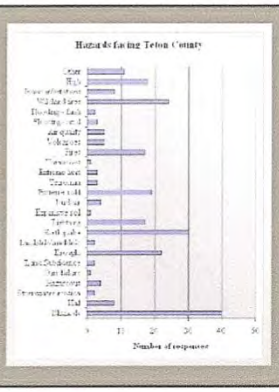
Question 2: Have you ever experienced or been impacted by a disaster?



Question 3: How concerned are you about the possibility of our community being impacted by a disaster?



Question 4: Please select the five (5) highest hazards facing your neighborhood.

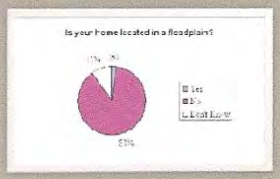


Question 5: Other hazards not listed?

	Number of responses
Water Quality	1
Air quality	1
Population density	7
Power outages	1
Scarcity of gasoline	1

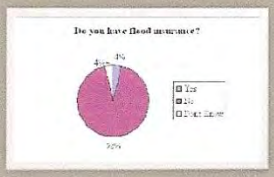
Question 6: Is your home located in a floodplain?

	Number of responses	Percent
Yes	1	2.0%
No	45	88.2%
Don't Know	5	9.8%
Total	51	100%



Question 7: Do you have flood insurance?

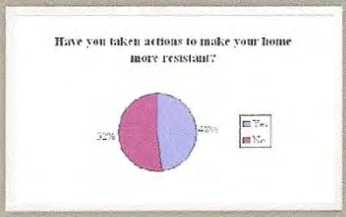
	Number of responses	Percent
Yes	2	3.9
No	47	92.2
Don't Know	2	3.9
Total	51	100.0



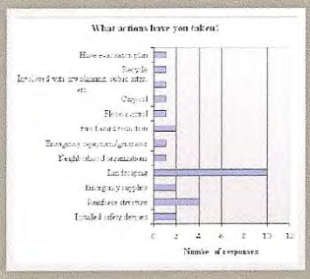
If "no" why not?

	Number of responses	Percent
Not located in a floodplain	35	74.5%
Too expensive	4	8.5%
Not necessary because it never floods	1	2.1%
Not necessary because I'm elevated or otherwise protected	3	6.4%
Never really considered it	4	8.5%
Total	47	100%

Question 8: Have you taken any actions to make your home or neighborhood more resistant to hazards?



If "yes" please explain



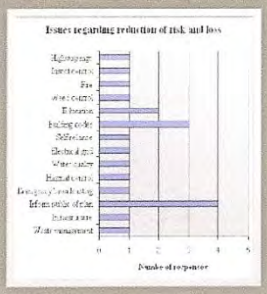
Are you interested in making your home or neighborhood more resistant to hazards?

Question 11: What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?

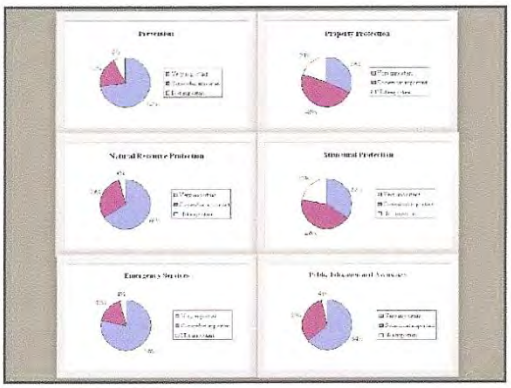
	Number of Responses
Newspaper	18
Television	6
Radio	5
Internet	5
Mail	30
Public Meeting	4
Other	1

Question 12: In your opinion what are some steps your county and city government could take to reduce or eliminate risk or future hazard damages in your neighborhood?

Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?



Question 14: A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.



Risk Assessment Input!

Hazard	Data Type	Risk Rank
Wildland Fires	Common Knowledge	1
Hazmat - Transportation	Common Knowledge	2
Hazmat - Fixed Facility	Common Knowledge	3
Severe Winter Weather	Statistical	4
Spring Flooding	Common Knowledge	5
Wind	Statistical	6
Hail	Statistical	7
Tornado	Statistical	8
Dam Failure	Statistical	9
Avalanche	Common Knowledge	10
Flash Flood	Common Knowledge	11
Earthquake - Mag 6 +	Statistical	12
Rockslide	Common Knowledge	13
Landslide	Common Knowledge	14
Earthquake - Mag 4-6	Statistical	15
Flood	Statistical	16

Frequency – How Often Does it Occur?

Frequency Chart	
Score	Description
100	Multiple Times Per Year
87.5	Every Year
75	2-5 Years
62.5	6-10 Years
50	11-25 Years
37.5	26-50 Years
25	51-100 Years
12.5	101-250 Years
1	Over 250 Years

Hazard
Wildland Fires
Hazmat - Transportation
Hazmat - Fixed Facility
Severe Winter Weather
Spring Flooding
Wind
Hail
Tornado
Dam Failure
Avalanche
Flash Flood
Earthquake - Mag 6 +
Rockslide
Landslide
Earthquake - Mag 4-6
Flood

Magnitude – How Bad is It? -

Magnitude of Natural Disasters: 1-20					
Score	Reconstruction Assistance	Geography Affected	Bodily Harm	Economic Loss	Warning Lead Times
4	Family	Census Block	Little to No Injury / No Death	No Sheltering / Some Income Loss	Months
8	City	Census Block Group	Multiple Injuries with Little to No Medical Care / No Death	Little Sheltering / Some Economic Loss	Weeks
12	County	Census Tract	Major Medical Care Required / Minimal Death	Sheltering Requiring Neighboring Counties Help / Major Business Interruption	Days
16	State	Multiple Census Tracts	Major Injuries / Requires Help from Outside County / A Few Deaths	Major Sheltering Effort / Major Business and Economic loss	Hours
20	Federal	County Wide	Massive Casualties / Catastrophic	Major Sheltering / Economy Destroyed	Minutes

Scoring the Hazard

Hazard	Magnitude							Total Risk	Data Type

Teton County
AHMP Committee Members
Attendance Roster
September 4, 2007

Agency	Representative	Position	Email
Teton County	Greg Adams	Emergency Management Coordinator	tetonem@silverstar.com
Eastern Idaho Health	Tamara Cox	EIPDH	tcox@phd7.idaho.gov
KCHQ	Dave Plourade	Media	dave@q102fm.net
Teton Fire	Bret Campbell	Assistant Chief	firemarsh@tetontel.com
Teton County Search &Rescue	Kelly Circle	Commander	circle@tetontel.com
Teton Valley Hospital	Susan Kunz	CEO	skunz@tetonvalleyhospital.com
City of Victor	Craig Sherman	City Administrator	victcity@tetontel.com
Teton County Sheriff's Office	Valee Wells	Supervisor	vwells@co.teton.id.us
Regional Exercise Coordinator	Val Judy	NE Area Supervisor	vjudy@co.bonneville.id.us

Teton County
All Hazards Mitigation Plan
February 12, 2008

Rick Fawcett of Whisper Mountain Professional Services, Inc. met with Teton County Emergency Management Coordinator, Greg Adams, on February 12, 2008 at 10:00 am to review the AHMP draft. Greg had reviewed the plan and noted approximately 13 changes to be made. Rick said he would incorporate those changes into the next draft. A meeting was set for February 22, 2008 with BHS Dave Jackson, and Rick said he would have the changes made for that meeting. Greg gave Rick a list of possible projects to include in the plan. The list is as follows:

Wildfire mitigation
Earthquake hardening (critical facilities)
Street drainage
Storm water management
Effluent pump station
Flood control improvements
Reservoir seismic retrofit
Alluvial fan flood hazards due east of Driggs
Highway infrastructure protection project
Regional detention pond
Property acquisition for repetitive loss situations (usually from flooding)
Water treatment seismic retrofit
Road bank stabilization
Shelter hardening (usually in schools)
Underground electrical conversion (burying electrical transmission lines)
Wastewater plant floodwall
Road elevation
Pipe bridge erosion/scour retrofit
Conduit trestles on ponds
Floodplain restoration
Flood drainage gate
Water head gate seismic retrofit
Living Snow fence
Hazmat transport
Critical infrastructure power back-up (connectors needed; there is a generator shared by 9 counties)
New or retrofit hospital (Teton Valley Hospital was built in the 30"s)
911 is in the Teton Courthouse add-on

Teton County
Multi-Jurisdiction
All Hazards Mitigation Plan
Workshop
May 8, 2008

The third meeting and public workshop of the Teton County Multi-Jurisdiction All-Hazards Mitigation Plan Committee was held on May 8, 2008 at 6:00 pm at Driggs in the Commissioner"s Chambers. Greg Adams, the Teton County Emergency Management Coordinator, and Rick Fawcett, of Whisper Mountain Professional Services, Inc., came before the County Commissioners and invited public officials and the general public to present the Plan draft to date and ask for input for completion. Rick emphasized the purpose of the Plan is to save lives and reduce property loss. Rick presented a power-point presentation on the development of the plan to date. He explained the historical hazards study and how the hazards have been ranked using the formula:

Frequency X Magnitude = Risk

He then asked for comments from those in attendance to add information about unidentified risks or changes they would like to see in the Plan. The following items were discussed:

1. FEMA flood plain maps are inadequate. Flood prone areas need to be mapped as well.
2. There was a llama diagnosed with West Nile virus in Teton County. All mosquitoes tested in the County tested negative.
3. Chlorine stored at water treatment facilities as already been addressed for safety issues.
4. There is a single-loop power supply over Big Piney.
5. Many bridges in the County need retrofitted and improved (most of them are on the State Hwy 32; the one at Crystal at 100 West is not wide enough). A new bridge is needed on Highway 32 at Bitch Creek and another on Canyon Creek.
6. There is a need for a living windbreak from Tetonia to Newdale.
7. EMS and the hospital need hardened against shaking.
8. The high school and middle school are seismic ready as they were constructed more recently; however, the older smaller elementary schools are not.
9. There is no back-up power supply for heating at any of the designated shelters in the County.
10. The County and all three cities wanted to move extreme cold and winter storm to a high high ranking on the risk chart.
11. Public education for what to do in extreme cold sheltering in place is needed.
12. Horseshoe Road is under an MOU with the Forest Service for maintenance.

13. The roads up Badger Creek and the Bates-Cedrum Loop around Victor are particularly bad in the winter due to snow blowing and drifting. Living windbreaks or other are needed there.
14. Lift stations are backed up by generators, but ruptured sewer lines could be a problem.

The commissioners asked what the process is for the next step forward. Rick said he would give them another three weeks (at their request) to review the plan and offer comments, then it would be completed and sent to the State for review. Then any changes or suggestions they made would be incorporated into the plan. It would then go to the Commissioners for approval and signatures.

Teton County
Local Mitigation Workshop
Attendance Roster
May 8, 2008

Agency	Representative	Position	Email
Teton County	Greg Adams	Emergency Management Coordinator	tetonem@silverstar.com
LEPC/TVH	Bonnie Burlage	RN	bburlage@tvhcare.org
City of Driggs	Louis B Christensen	Mayor	
Teton Fire	Bret Campbell	Assistant Chief	firemarsh@tetontel.com
Teton County Search &Rescue	Kelly Circle	Commander	circle@tetontel.com
Teton Valley Hospital	Susan Kunz	CEO	skunz@tetonvalleyhospital.com
City of Victor	Craig Sherman	City Administrator	victcity@tetontel.com
Teton Valley Hospital	Floyd Bounds	CEO	fbounds@tvhcare.org
Teton Valley Hospital	Ken Schwab	Supervisor	kschwab@tvhcare.org
City of Driggs	Jared D Gunderson	Public Works	pwdriggs@pdt.net
Teton County	Bruce Nye	Building Official	bnye@co.teton.us
Teton County	Tom Davis	Building Inspector	tdavis@co.teton.us
City of Tetonia	Lyndsy Anderson	Clerk	tetoniagov@tetontel.com
Teton Victor	Dan Thompson	Mayor	victorcity@tetontel.com
Teton Valley Alliance	Barbara Boyle	Asst. Coordinator TVA	barbboyle@gmail.com
Teton Valley Alliance	Nolan Boyle	Executive Coordinator TVA	nolanboyle@gmail.com

Agency	Representative	Position	Email
Teton School District	Gordon Wooley	Superintendent	gowool@d401.k12.id.us
Teton County	Louis Simonet	Engineer	lsimonet@co.teton.id.us
Teton Valley News	Garrett Woodward	Reporter	reporter@tetonvalleynews.net
Teton County	Larry Young	Commissioner	lyoung@co.teton.id.us
Teton County	Alice Stevenson	Commissioner	astevenson@co.teton.id.us
Teton County	Mark Trupp	Commissioner	mtrupp@co.teton.id.us
Teton County	Phillip Fox	Search and Rescue	pfox@silverstar.com

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Attachment 2
Public Questionnaire

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Teton County All-Hazards Mitigation Plan

Public Participation Questionnaire

April 2007

Dear Teton County Resident,

We need your help! Teton County is embarking on an initiative to assist communities in reducing risk from natural and man-made hazards. This questionnaire is designed to help us understand your perceptions of disasters. We are developing a strategic plan to prioritize activities to assist Teton County communities and residents to reduce their risk from natural disasters. The information you provide will help improve coordination of risk reduction activities within the County.

Your returned survey indicates your willingness to take part in the study. Your participation in this study is voluntary. All individual survey responses are strictly confidential, and are for research purposes only.

Your opinions are important to us. Please return your completed survey no later than May 15, 2007 to our technical consultant on this project Whisper Mountain Professional Services, Inc. at 1455 E. Cedar, Pocatello, Idaho, 83201 in the stamped, addressed, return envelope provided.

If you have questions regarding the survey, feel free to contact the Whisper Mountain Professional Service, Inc. at (208) 478-7982.

Thank you for your participation!

Sincerely,

Mr. Robert Dalton
Coordinator,
Teton County
Civil Defense

1. What town do you live in or near? _____

2. Have you ever experienced or been impacted by a disaster (a sudden event bringing great damage, loss, or destruction)?
- ❑ Yes (please explain):_____
- ❑ No

3. How concerned are you about the possibility of our community being impacted by a disaster?
- ❑ Extremely concerned
- ❑ Somewhat concerned
- ❑ Not concerned

4. Please select the five (5) highest hazards facing your neighborhood:

- ❑ Blizzards/Ices Storms/Winter Storms Hail
- ❑ Storm Water Erosion
- ❑ Hazardous Materials
- ❑ Dam Failure
- ❑ Land Subsidence (e.g. sinkhole)
- ❑ Drought
- ❑ Landslide/Mudslide
- ❑ Earthquake
- ❑ Lightening
- ❑ Expansive Soils
- ❑ Nuclear
- ❑ Extreme Cold
- ❑ Terrorism (bombs/biological/chemical)
- ❑ Extreme Heat
- ❑ Tornadoes
- ❑ Fires
- ❑ Volcanoes
- ❑ Air Quality
- ❑ Flooding – Canal
- ❑ Flooding – Flash (Riverine)
- ❑ Wildland Fires
- ❑ Insect Infestations
- ❑ High Wind / Wind Storms
- ❑ Air Quality
- ❑ Other (please explain):

5. Is there a hazard not listed in this survey that you think is a wide-scale threat to your neighborhood?

- ❑ Yes (please explain):_____
- ❑ No

Note: *Please read before answering questions 6 and 7.*

A "flood" as defined by the National Flood Insurance Program is "a general and temporary condition of partial or complete inundation of two of more acres of normally dry land area or two or more properties". Flood zones are geographic areas that the Federal Emergency Management Agency (FEMA) has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Hazard Boundary Map or Flood Insurance Rate Map (FIRM). It's important to know that if you have a Federally backed mortgage on a home located in a high-risk area, Federal law requires you to purchase flood insurance. Also, if you've received a Federal grant for previous flood losses, you must have a flood insurance policy to qualify for future aid.

6. Is your home located in a floodplain?

- ❑ I don't know
- ❑ Yes
- ❑ No

7. Do you have flood insurance?
- ❑ I don‟t know
- ❑ Yes
- ❑ No

If "No", why not?
- ❑ Not located in a floodplain
- ❑ Too expensive
- ❑ Not necessary because it never floods
- ❑ Not necessary because I‟m elevated or otherwise protected
- ❑ Never really considered it
- ❑ Other (please explain):

8. Have you taken any actions to make your home or neighborhood more resistant to hazards?
- ❑ Yes
- ❑ No

If "Yes", please explain:

_____
_____

9. Are you interested in making your home or neighborhood more resistant to hazards?
- ❑ Yes
- ❑ No

11. What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?
- ❑ Newspaper
- ❑ Television
- ❑ Radio
- ❑ Internet
- ❑ Mail
- ❑ Public Workshops/meeting
- ❑ Other (please explain):

12. In your opinion, what are some steps your county or city government could take to reduce or eliminate risk of future hazard damages in your neighborhood?

_____
_____

13. Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?

_____
_____
_____

14. A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing. (see next page)

1. Prevention

Administrative or regulatory actions that influence the way land is developed and buildings are built. Examples include planning and zoning, building codes, open space preservation, and floodplain regulations.

- ❑ Very Important
- ❑ Somewhat Important
- ❑ Not Important

2. Property Protection

Actions involve the modification of existing buildings to protect them from a hazard or removal from the hazard area. Examples include acquisition, relocation, elevation, structural retrofits, and storm shutters.

- ❑ Very Important
- ❑ Somewhat Important
- ❑ Not Important

3. Natural Resource Protection

Actions that, in addition to minimizing hazard losses also preserve or restore the functions of natural systems. Examples include: floodplain protection, habitat preservation, slope stabilization, riparian buffers, and forest management.

- ❑ Very Important
- ❑ Somewhat Important
- ❑ Not Important

4. Structural Projects

Actions intended to lessen the impact of a hazard by modifying the natural progression of the hazard. Examples include dams, levees, canals, detention/retention basins, channel modification, retaining walls and storm sewers.

- ❑ Very Important
- ❑ Somewhat Important
- ❑ Not Important

5. Emergency Services

Actions that protect people and property during and immediately after a hazard event; examples include warning systems, evacuation planning, emergency response training, and protection of critical emergency facilities or systems.

- ❑ Very Important
- ❑ Somewhat Important
- ❑ Not Important

6. Public Education and Awareness

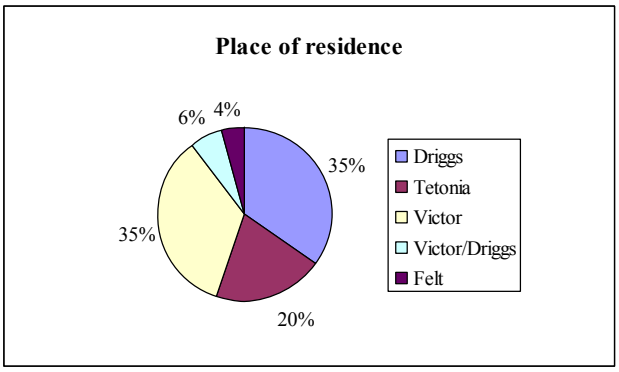
Actions to inform citizens about hazards and the techniques they can use to protect themselves and their property. Examples include outreach projects, school education programs, library materials and demonstration events.

- ❑ Very Important
- ❑ Somewhat Important
- ❑ Not Important

THANK YOU FOR YOUR PARTICIPATION

Teton County Public Questionnaire Results

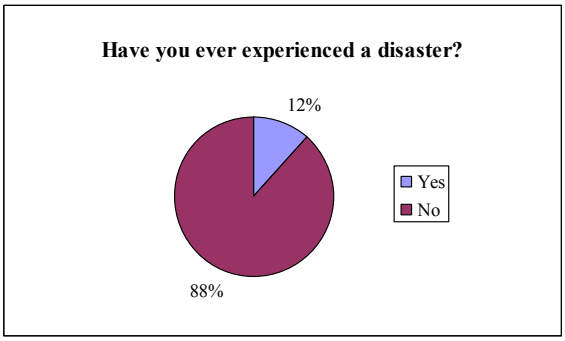
Question 1: What town do you live in or near?



	Number of Responses	Percent
Driggs	17	34.7%
Tetonia	10	20.4%
Victor	17	34.7%
Victor/Driggs	3	6.1%
Felt	2	4.1%
Total	49	100%

The distribution of the respondents is similar to the distribution of the population in Teton County

Question 2: Have you ever experienced or been impacted by a disaster?



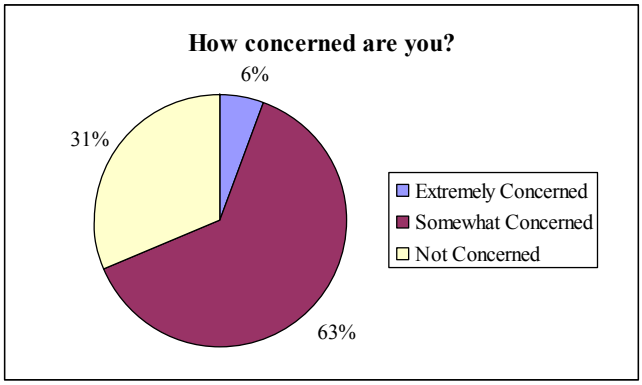
	Number of Responses	Percent
Yes	5	11.9%
No	37	88.1%
Total	42	100%

Plea
se explain:

Reported Disasters	
Lightning	1
Fire	2
Car accident	1

The responses to this question indicate that the majority have not been impacted, there is only a few that even reported that they had been involved in a disaster.

Question 3: How concerned are you about the possibility of our community being impacted by a disaster?



	Number of Responses	Percent
Extremely Concerned	3	5.9%
Somewhat Concerned	32	62.7%
Not Concerned	16	31.4%
Total	51	100%

A very large percentage of respondents in Teton County are at least somewhat concerned about a disaster happening.

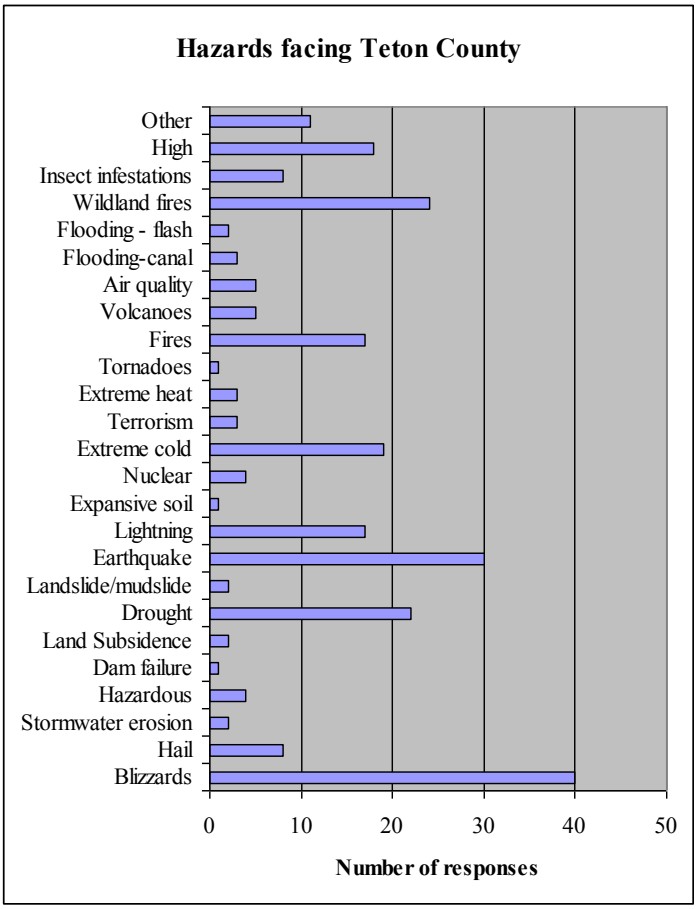
Question 4: Please select the five (5) highest hazards facing your neighborhood.

The results for this questionnaire listed the top five hazards as the following:

6. Blizzards
7. Earthquake
8. Wildfires
9. Drought
10. Extreme Cold

The AHMP committees perception of the top five hazards were similar, but not in the same order.

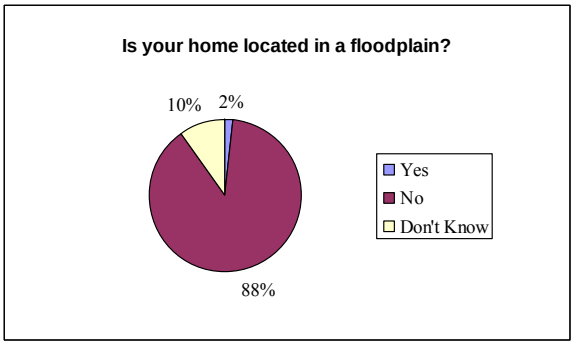
6. Wildland Fire
7. Thunderstorms, Lightening, Hailstorms, High Winds, Tornadoes
8. Severe Winter Storm
9. Snow Avalanche
10. Earthquake



Other hazards not listed?

	Number of Responses
Water Quality	1
Air quality	1
Population density	7
Power outages	1
Scarcity of gasoline	1

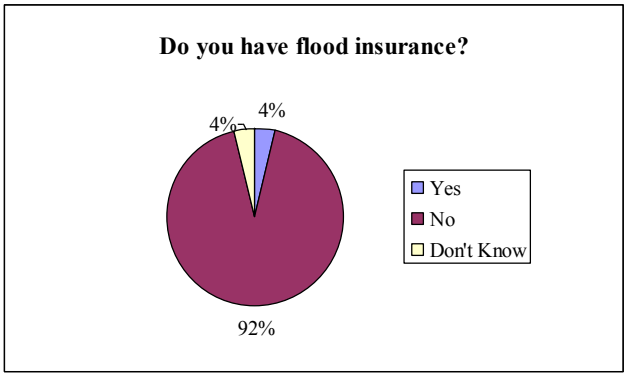
Question 6: Is your home located in a floodplain?



	Number of Responses	Percent
Yes	1	2.0%
No	45	88.2%
Don't Know	5	9.8%
Total	51	100%

Question 7: Do you have flood insurance?

	Number of Responses	Percent
Yes	2	3.9
No	47	92.2
Don't Know	2	3.9
Total	51	100.0



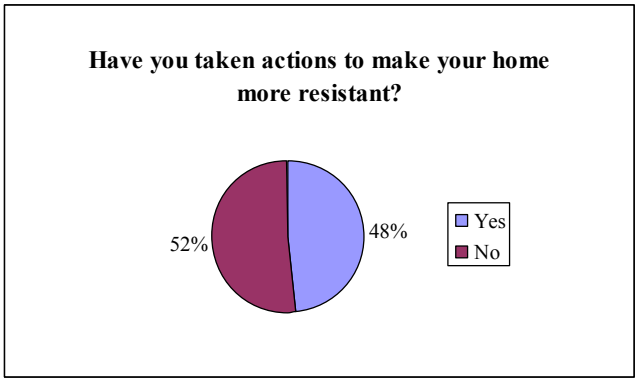
If "no" why not?

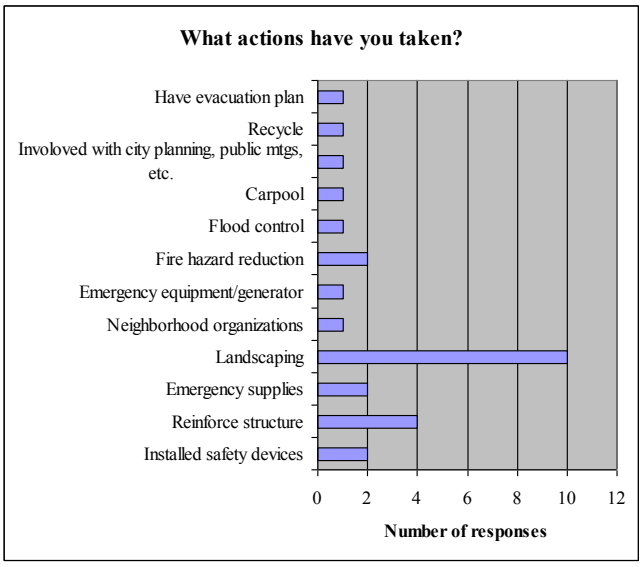
	Number of Responses	Percent
Not located in a floodplain	35	74.5%
Too expensive	4	8.5%
Not necessary because it never floods	1	2.1%
Not necessary because I'm elevated or otherwise protected	3	6.4%
Never really considered it	4	8.5%
Total	47	100%

Only one (1) respondent indicated that they lived in a flood plain however, two (2) responded that they have flood insurance. Four (4) respondents indicated that flood insurance was too expensive, which might lead to the assumption that they live in a flood plain, but can't afford the insurance.

Question 8: Have you taken any actions to make your home or neighborhood more resistant to hazards?

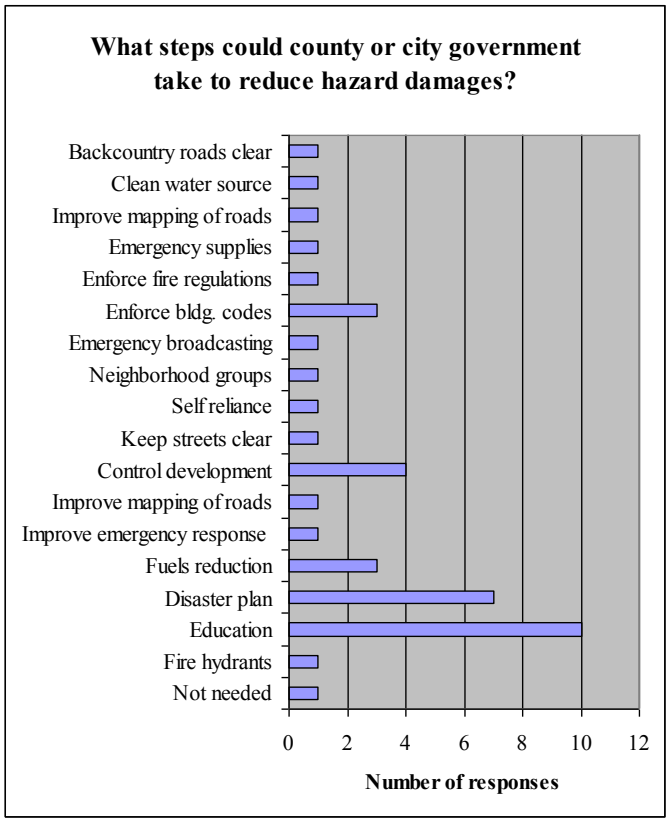
	Number	Percent
No	23	47.9%
Yes	25	52.1%
Total	48	100%



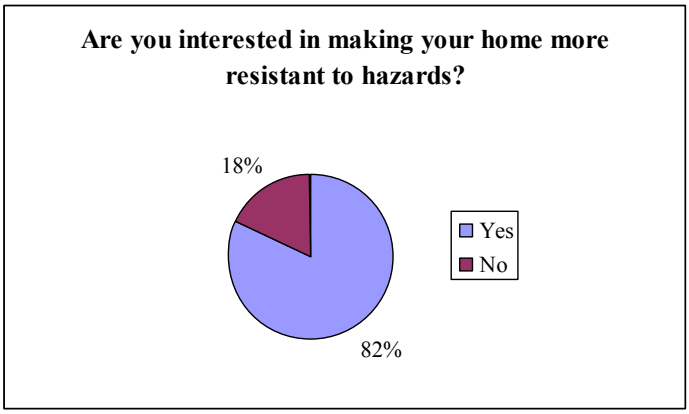


Forty eight (48%) percent of the respondents have taken actions to make their home more resistant to hazards. The most widely used action was integrating defensible space into landscaping which is a typical defense for wildfire.

Question 9: Are you interested in making your home or neighborhood more resistant to hazards?



	Number of Responses	Percent
Yes	36	81.8%
No	8	18.2%
Total	44	100%



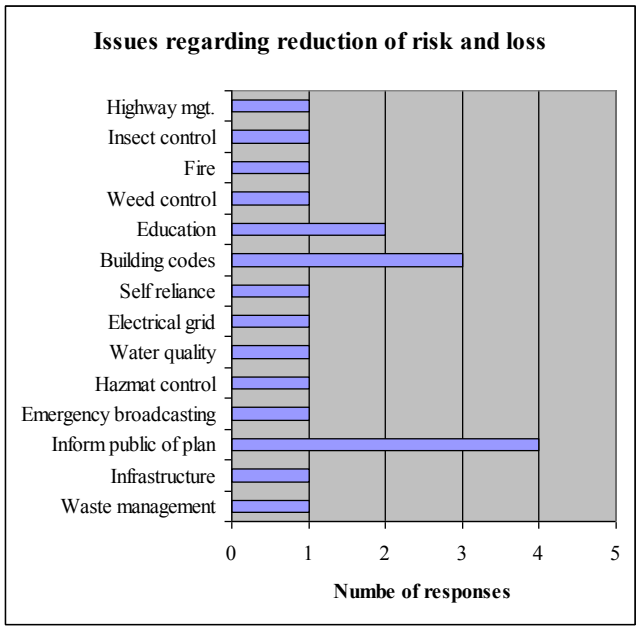
This particular question is very important because many of the mitigation actions that might be taken by the County may require individual property owners to take individual actions and in some cases bear the cost of the mitigation. Eighty two (82%) percent of respondents indicated that they are interested in making their home more resistant

Question 11: What is the most effective way for you to receive information about how to make your home and neighborhood more resistant to hazards?

	Number of Responses
Newspaper	18
Television	6
Radio	5
Internet	5
Mail	30
Public Meeting	4
Other	1

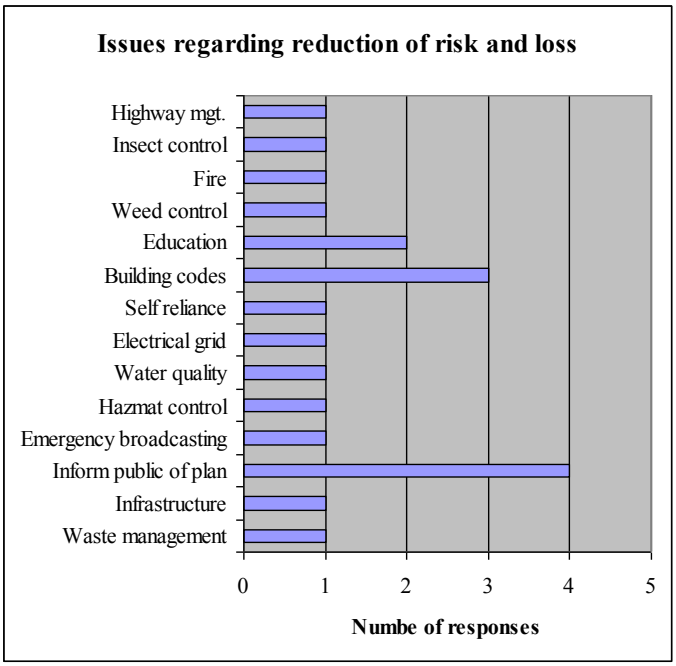
Previous research on Risk Education and Public Information done by Dr. Hank Jenkins-Smith, the Coordinator of the University of New Mexico‟s Risk Perception Center as well as Dr. Paul Solvic and others indicated that the public receives 72% of their information regarding risk through television yet the respondents in the County indicated that they would rather have information provided to them in printed form, either through the mail or through the newspaper with television and the internet being listed in third place. This is a very important finding which has also been repeated in other counties.[47]

Question 12: In your opinion what are some steps your county and city government could take to reduce or eliminate risk or future hazard damages in your neighborhood?



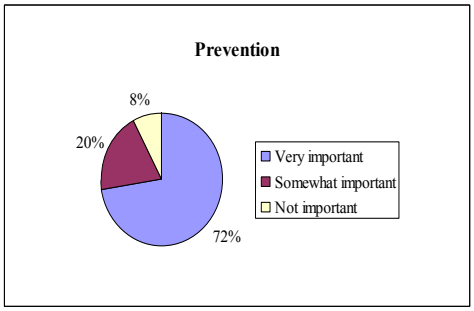
Public Education and other Preparedness type actions are listed as those that the respondents believe are the responsibility of the County Government. The previous question regarding how the public would like to receive that education indicates that the public would rather receive the information through printed media. Building Codes also a preparedness activity is thought to the responsibility of the government.

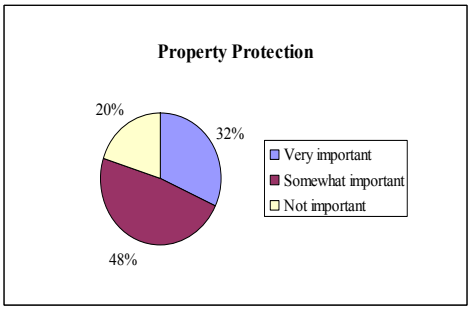
47

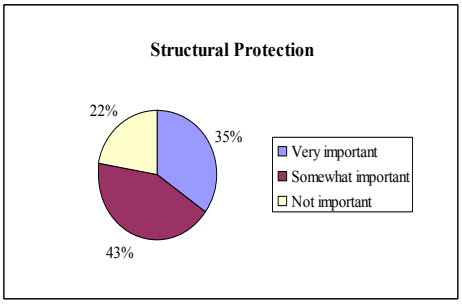


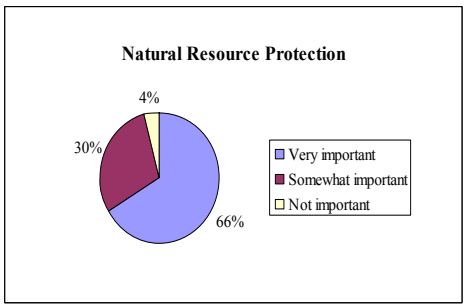
Question 13: Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?

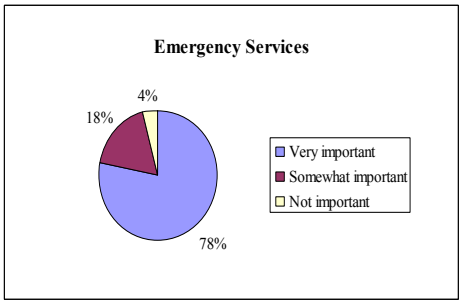
Question 14: A number of community-wide activities can reduce our risk from hazards. In general, these activities fall into one of the following six broad categories. Please tell us how important you think each one is for your community to consider pursuing.

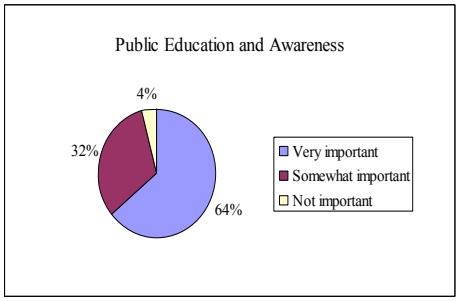












Written Responses to Public Questionnaire

Question 8: Have you taken any actions to make your home or neighborhood more resistant to hazards?

1. Increased well capacity for fires, metal roofs.
2. Smoke detector, landscaping
3. insulation from cold, fire detectors
4. Cleared trees/brush around house for urban interface wildland fire
5. We have protected our home against forest fires by installing a break between the forest and us, a water sprinkler system, and by limiting brush against the house.
6. Fuels removal
7. keep lawn moved other grass down
8. moved canal across the road
9. earthquake
10. Helped educate neighbors about forest fire threat, including organizing meetings with forest service
11. No burnable landscaping too close to house
12. Steel roof – grass 40-50‟ around house – keep weeds/grass cut
13. Ride bike to reduce carbon emissions from vehicles, carpool, recycle goods in Jackson, make personal choices as a consumer to reduce my impact on the environment.
14. Built (2003) house to conform to earthquake, wind, & snow load standards
15. Generator to be independent of electrical supply for entire home – independent supply of fuel, for motor vehicles.
16. By starting a food supply, other than that haven‟t done anything
17. Cleared debris from around buildings, notified law enforcement of unlawful burning, cleaned ditches & culverts to ease flooding, showed new people how easy it is to keep a culvert clean.
18. Keep fire hazards to a minimum
19. Maintain a green zone around house
20. Cut vegetation around home, water immediately around home, have escape plan w/house fire
21. cut down some dead trees

Question 12: In your opinion, what are some steps your county or city government could take to reduce or eliminate risk of future hazard damages in your neighborhood?

1. Education
2. We really need a disaster plan for home – Food supply, water supply, etc.
3. Reduce risk of fire through fuels reduction
4. less development of interface
5. Fire hydrants in subdivisions
6. planning & training scenarios
7. Education of public, pre-plans

8. Plow
9. Develop a comprehensive plan that has longer term sustainability. I worry about over-development and the impact it will have on infrastructures that are already sub-par.
10. Not allow homes to be built in the floodplain. Create a larger sewer system and require developments to "hook up". Require impact fees to cover costs of growing community – schools, hospitals, roads, etc.
11. Recognize mitigation issues
12. Unless they have a one-on-one with God I"m not to sure what anyone is able to do about most "natural" disasters- self reliance is best and leaving government on sidelines is best.
13. Better highway system. Education, tell the people of dif things we all … have
14. Community teams – organize neighborhoods to watch out for each other and have very localized plans
15. 1. Arrange for radio stations to broadcast notifications. Recent power outages: no one at valley radio station.
    2. Require seismic construction rules for residences, strictly enforce commercial: UBC etc.
    3. Revive forest fire planning by county for residences
16. Can"t think of any that are crisis material right now.
17. Make info on floodplain more accessible, encourage appropriate thinning of forests surrounding Teton Valley, more careful management of waterways and building in floodplains.
18. Make thoughtful decisions in current development within Teton County. Increase community education on how to decrease individual ecological footprints. Create more incentives to be mindful consumers (e.g. tax breaks, challenges)
19. - Continue to enforce building code laws
    - Educate about hazards and practical responses - from at home kits to evacuation routes.
20. By keeping the public aware of what is going on. Fixing the problem before it gets worse. Supplying the public necessary resources to help them survive a hazard
21. Enforce the ban on field burning, at the present time our local law enforcement have chosen not to follow this law.
22. 1. Advise homeowners to maintain a green zone.
    2. When it is extremely cold and the power goes out, the power company should advise customers to turn off high load items (like heat) so that the initial in-rush current is minimized.
23. Great fire dept. We chose to live in the country – We don"t expect the speed & availability of big city services.
24. Plan gathering place, emergency reminders
25. Reduce home sites in floodplains, secure clean water source, protect aquifer levels so wells don"t go dry, hook up to sewer systems to protect groundwater quality.
26. thinning of old growth timber & keeping old trails & road in the backcountry open & clear

27. Education for community regarding what to do in event of emergency so each household is more prepared to be self sufficient, more able to meet demands of situation in a calm manner.
28. Don‟t let people build in flood plain ie Teton Creek Driggs to state line
29. Plan ahead, have a plan for evacuating people AND large animals in the event of a disaster.

Question 13: Are there any other issues regarding the reduction of risk and loss associated with hazards or disasters in the community that you think are important?

1. Good management of sewer & water & garbage/waste
2. infrastructure, services –
3. Let people know where to go and what to do in case of a disaster
4. Do not allow certain materials to be transported or stored in Teton County
5. Careful attention to groundwater issues to ensure safe culinary water cleanliness & availability
6. Expand the electrical power grid. It is dangerous to lose power in the winter.
7. The types of risks we have here are best left to private insurance and self reliance - not bureaucratic bungling
8. Emergency plan, water storage, home food storage, first aid/disaster drills, etc
9. Weed control, dust control (air quality), highway management, uncontrolled subdivision growth, loss of ground water, pollution of ground water by septic tanks
10. Just fire
11. Public awareness that yes, we do live in a cold snowy area. Governments is here to help, but we need to do our part to be able to care for ourselves in event of emergency!
12. LAND USE PLANNING!!! Create ordinances that make developers responsible for providing emergency services, clean and reliable water sources, fire protection, stream protection and protection of forested areas (don‟t build homes in area w/high probability of fire)
13. county needs an mosquito abatement program there is a need & a threat
14. Is there a disaster plan for our community involving shelters in case of evacuation? Where do we go for medical care in case of a major earthquake involving road disintegration if we can‟t get to the hospital? Are our communities‟ disaster supplies all stored in the same place or are they spread out among the towns to up accessibility? I don‟t believe as a community we have any idea what you may have planned.
15. In my area, having a plan to save/rescue large animals – horses in particular is necessary