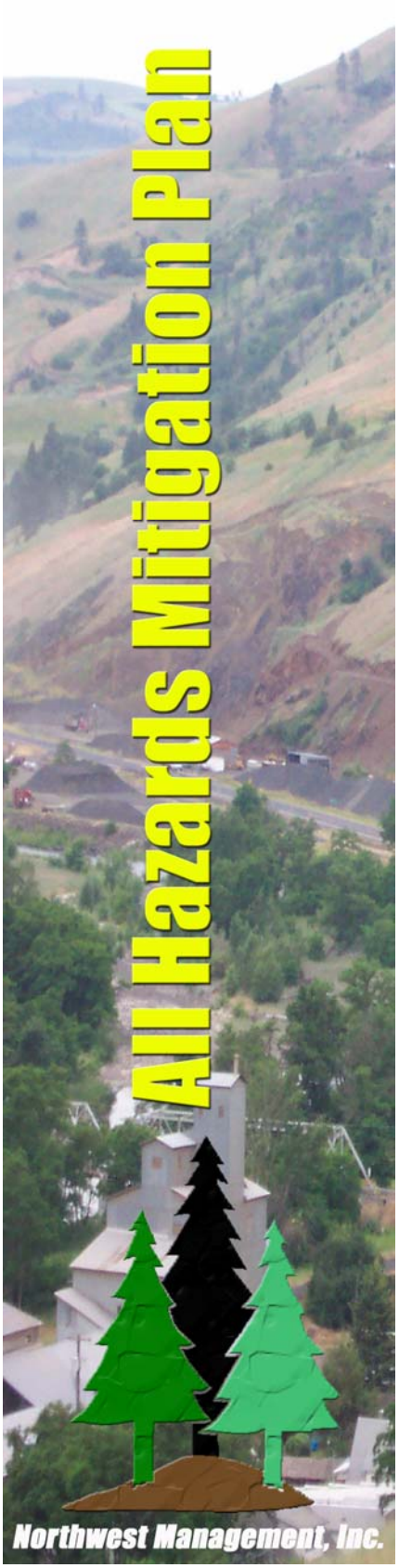


Latah County, Idaho
All Hazards
Mitigation Plan

Volume I

Flood Mitigation Plan

Landslide Mitigation Plan

Severe Weather Mitigation Plan

June 20, 2005

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

This plan was developed by the Latah County All Hazards Mitigation Plan Committee in cooperation with Northwest Management, Inc., 233 E. Palouse River Dr., P.O. Box 9748, Moscow, ID, 83843, Tel: 208-883-4488, www.Consulting-Foresters.com

Acknowledgments

This All Hazard Mitigation Plan represents the efforts and cooperation of a number of organizations and agencies, through the commitment of people working together to improve the preparedness for hazard events while reducing factors of risk.

Latah County Commissioners
and the employees of Latah County

Clearwater Resource Conservation
and Development Council, Inc.

USDI Bureau of Land Management

USDA Forest Service

Idaho Bureau of Homeland Security

Federal Emergency Management Agency

American Red Cross

Idaho Department of Lands

NRCS Natural Resources Conservation Service

City of Bovill
City of Deary
City of Genesee
City of Juliaetta
City of Kendrick
City of Moscow
City of Onaway
City of Potlatch
City of Troy

Moscow Fire Department
Troy Rural Fire District
Genesee City & Rural Fire Department
Gritman Medical Center
Latah County Highway Districts
Kendrick Fire Department
Bovill Rural Fire Protection District
Potlatch Rural Fire District
Deary Rural Fire District
Juliaetta Fire Department
Latah County Disaster Services
Troy Police Department
&
Local Businesses and Citizens of Latah County

To obtain copies of this plan contact:

Latah County Commissioners Office
Latah County Courthouse
522 South Adams
Moscow, Idaho 83843

Phone: 208-883-7208
Fax: 208-883-2280
Email: bocc@latah.id.us

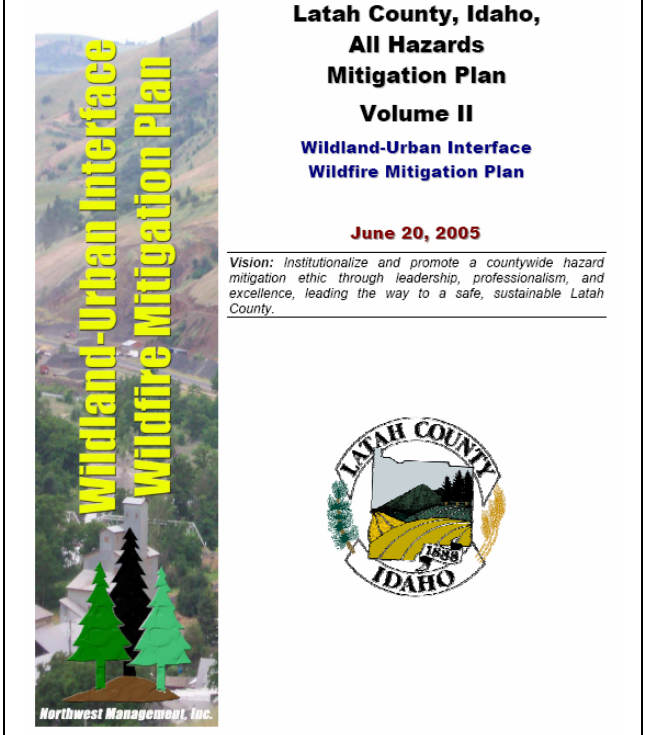
Table of Contents

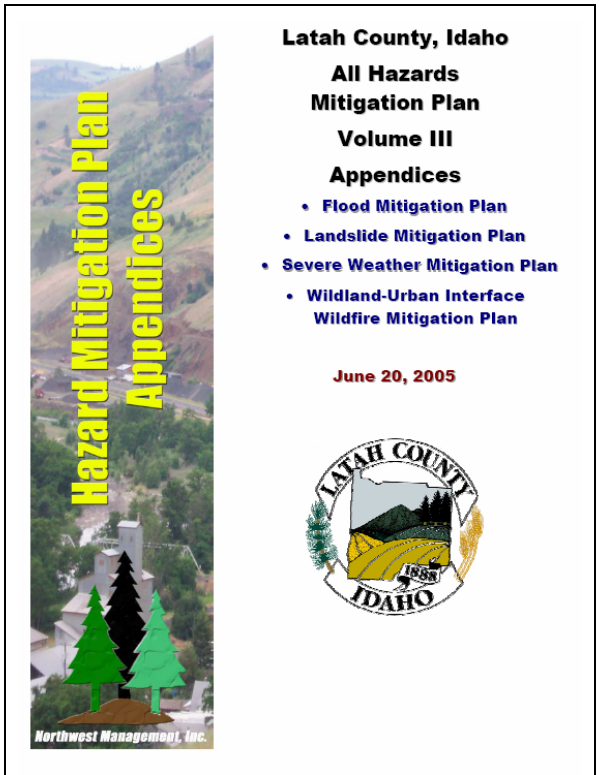
Foreword

The **Latah County All Hazards Mitigation Plan** was developed during 2004-05 by the Latah County Hazard Mitigation Planning Committee in cooperation with Northwest Management, Inc., of Moscow, Idaho. Three bound documents have been produced as part of this planning effort. They include:

- Volume I: All Hazards Mitigation Plan including chapters of;
  - Flood Mitigation Plan
  - Landslide Mitigation Plan
  - Severe Weather Mitigation Plan
- Volume II: Wildland-Urban Interface Wildfire Mitigation Plan
- Volume III: Appendices for Volumes I & II

The Latah County Wildland-Urban Interface Wildfire Mitigation Plan, in addition to being compatible with FEMA requirements is also compatible with the National Fire Plan, the Healthy Forests Restoration Act, and the Idaho Implementation Strategy for the National Fire Plan.





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

FEMA

August 29, 2005

Jack Nelson, Chair
Latah County Board of Commissioners
522 South Adams
Moscow, Idaho 83843

Dear Chairman Nelson:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has approved the Latah County All Hazards Mitigation Plan. The following plan participants are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through August 29, 2010:

Latah County
Bovill
Dreary
Moscow
Genesee
Juliaetta
Kendrick
Onaway
Potlatch
Troy

The plan's approval provides the participants eligibility to apply for hazard mitigation projects through your state. Grant applications will be evaluated individually according to the specific eligibility and other requirements of the particular hazard mitigation grant program. For example, a mitigation project identified in the approved plan may or may not meet the eligibility requirements for Hazard Mitigation Grant Program (HMGP) funding.

Over the next five years we encourage Latah County to follow the plan's schedule for monitoring and updating the plan, develop further mitigation actions, and continue the multi-jurisdictional partnership exemplified in the plan. 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, who coordinates and administers these efforts for local entities.

Sincerely,

Carl L. Cook, Jr., Director
Mitigation Division

cc: Stephen Weiser, Idaho Bureau of Homeland Security

Enclosure

JV:gb

www.fema.gov

Chapter I: Overview of this Plan and its Development

1 Introduction

This All Hazards Mitigation Plan for Latah County, Idaho, is the result of analyses, professional cooperation and collaboration, assessments of wildfire risks and other factors considered with the intent to reduce the potential for wildfires to threaten people, structures, infrastructure, and unique ecosystems in Latah County, Idaho. The planning team responsible for implementing this project was led by the Latah County Commissioners. Agencies and organizations that participated in the planning process included:

- Latah County Commissioners and County Departments
- City of Bovill
- City of Deary
- City of Genesee
- City of Juliaetta
- City of Kendrick
- City of Moscow
- City of Onaway
- City of Potlatch
- City of Troy
- Idaho Department of Lands
- USDI Bureau of Land Management, (also providing funding through the National Fire Plan)
- Idaho Bureau of Homeland Security
- Clearwater Resource Conservation and Development Council, Inc.
- USDA Forest Service
- University of Idaho
- Moscow Fire Department
- Troy Rural Fire District
- Genesee City & Rural Fire Districts
- Gritman Medical Center
- North Latah County Highway District
- Juliaetta Fire Department
- Bovill Rural Fire Protection District
- Deary Rural Fire District
- Potlatch Rural Fire District

- Kendrick Fire Department
- Latah County Disaster Services
- Troy Police Department
- Bennett Lumber Products
- Northwest Management, Inc.

The Latah County Commissioners solicited competitive bids from companies to provide the service of leading the assessment and the writing of the **Latah County All Hazards Mitigation Plan**. The Commissioners selected Northwest Management, Inc., to provide this service. In addition, the Clearwater Resource Conservation and Development Council, Inc., solicited bids from companies and organizations to lead efforts in preparing the Latah County Wildfire Mitigation Plan. Northwest Management, Inc., was also selected to provide this service to the County. Northwest Management, Inc., is a professional natural resources consulting firm located in Moscow, Idaho. Established in 1984 NMI provides natural resource management services across the USA. The Project Co-Managers from Northwest Management, Inc., were Dr. William E. Schlosser, and Mr. Vincent P. Corrao.

1.1 Phase I Hazard Assessment for Latah County

The All Hazards Mitigation Plan is developed in accordance with the Federal Emergency Management Agency's (FEMA) guidelines for a County level pre-disaster mitigation plan and the State of Idaho Bureau of Homeland Security.

The Phase I Assessment for Latah County was conducted to determine the relative likelihood of a hazard's occurrence and the potential damage to people, property, infrastructure, and the economy. This assessment is summarized in Table 1.1.

Table 1.1. Phase I Hazard Assessment of Latah County.

Probability of Occurrence	Low	Medium	High
High		Winter Storm	Wildland Fire Wind Storms Flood
Medium		Landslide	
Low	Civil Unrest / Terrorism	Earthquake / Seismic Shaking	
	Potential to Impact People, Structures, Infrastructure, and the Economy		

1.1.1 Hazards Addressed in this Plan

This All Hazards Mitigation Plan will include assessment of a variety of hazards including:

- Wildland-Urban Interface Wildfire Mitigation Plan
- Flood Mitigation Plan
- Landslide Mitigation Plan
- Severe Weather (Wind Storm & Winter Storm) Mitigation Plan

1.1.2 Other Hazards Not Addressed in this Plan

Due to funding limitations and the results of the Phase I Hazard Profile, Latah County and participating jurisdictions have decided not to assess the following hazards until additional funding has become available. At such a time, the All Hazards Mitigation Plan will be revised to include the additional hazards, and others as may become evident.

1.1.2.1 Earthquakes & Seismic Shaking Hazards

Although Latah County has felt earthquakes (Kenneth F. Sprenke and Roy M. Breckenridge, Seismic Intensities in Idaho, Idaho Geological Survey, 1992), the epicenters were distant and seismic shaking was below levels to cause damage. A survey of newspapers by the Bureau of Homeland Security (http://www.bhs.idaho.gov/local/counties/latah.htm) reveals no reports of earthquakes at all. There are no known Holocene faults nearby (http://www.idahogeology.com/pdf/Maps_(M)/m-08-m.pdf). The hazard as identified by the Idaho Geological Survey is indicated as moderate for most of the county, and public input has not identified significant concerns. As demographics change and awareness of seismic safety increases through continued education, mitigation measures will be addressed in updates to this plan.

1.2 Goals and Guiding Principles

1.2.1 Federal Emergency Management Agency Philosophy

Effective November 1, 2004, a Local Hazard Mitigation Plan approved by the Federal Emergency Management Agency (FEMA) is required for Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM) eligibility. The HMGP and PDM program provide funding, through state emergency management agencies, to support local mitigation planning and projects to reduce potential disaster damages.

The new local hazard mitigation plan requirements for HMGP and PDM eligibility is based on the Disaster Mitigation Act of 2000, which amended the Stafford Disaster Relief Act to promote and integrated, cost effective approach to mitigation. Local hazard mitigation plans must meet the minimum requirements of the Stafford Act-Section 322, as outlined in the criteria contained in 44 CFR Part 201. The plan criteria covers the planning process, risk assessment, mitigation strategy, plan maintenance, and adoption requirements.

FEMA will only review a local hazard mitigation plan submitted through the appropriate State Hazard Mitigation Officer (SHMO). Draft versions of local hazard mitigation plans will not be reviewed by FEMA. FEMA will review the final version of a plan prior to local adoption to determine if the plan meets the criteria, but FEMA will be unable to approve it prior to adoption. In Idaho the SHMO is:

Idaho Bureau of Homeland Security
4040 Guard Street, Bldg 600
Boise, ID 83705

A FEMA designed plan will be evaluated on its adherence to a variety of criteria.

- Adoption by the Local Governing Body
- Multi-jurisdictional Plan Adoption
- Multi-jurisdictional Planning Participation
- Documentation of Planning Process
- Identifying Hazards

- Profiling Hazard Events
- Assessing Vulnerability: Identifying Assets
- Assessing Vulnerability: Estimating Potential Losses
- Assessing Vulnerability: Analyzing Development Trends
- Multi-Jurisdictional Risk Assessment
- Local Hazard Mitigation Goals
- Identification and Analysis of Mitigation Measures
- Implementation of Mitigation Measures
- Multi-jurisdictional Mitigation Strategy
- Monitoring, Evaluating, and Updating the Plan
- Implementation Through Existing Programs
- Continued Public Involvement

1.2.2 Additional State and Federal Guidelines Adopted

The Wildland-Urban Interface Wildfire Mitigation Plan component of this All Hazards Mitigation Plan will include compatibility with FEMA requirements while also adhering to the guidelines proposed in the National Fire Plan, the Idaho Statewide Implementation Plan, and the Healthy Forests Restoration Act (2004). The Wildland-Urban Interface Wildland Fire Mitigation Plan has been prepared in compliance with:

- The National Fire Plan; A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy Implementation Plan–May 2002.
- The Idaho Statewide Implementation Strategy for the National Fire Plan–July 2002.
- Healthy Forests Restoration Act (2004)
- The Federal Emergency Management Agency's Region 10 guidelines for a Local Hazard Mitigation Plan as defined in 44 CFR parts 201 and 206, and as related to a fire mitigation plan chapter of a Natural Hazards Mitigation Plan.

"When implemented, the 10-Year Comprehensive Strategy will contribute to reducing the risks of wildfire to communities and the environment by building collaboration at all levels of government."
- The NFP 10-Year Comprehensive Strategy August 2001

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

1.2.3 Latah County Planning Effort and Philosophy

The goals of this planning process include the integration of the National Fire Plan, the Idaho Statewide Implementation Strategy, the Healthy Forests Restoration Act, and the requirements of FEMA for a county-wide All Hazards Mitigation Plan. This effort will utilize the best and most appropriate science from all partners, the integration of local and regional knowledge about man made and natural hazards, while meeting the needs of local citizens, the regional economy, the significance of this region to the rest of Idaho and the Inland West.

1.2.3.1 Mission Statement

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

1.2.3.2 Vision Statement

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

1.2.3.3 Goals

- To reduce the area of land damaged and losses experienced because of hazards where these risks threaten communities in the county.
- Prioritize the protection of people, structures, infrastructure, and unique ecosystems that contribute to our way of life and the sustainability of the local and regional economy.
- Educate communities about the unique challenges of pre-disaster hazard mitigation and post-disaster response.
- Establish mitigation priorities and develop mitigation strategies.
- Strategically locate, plan, and implement hazard reduction projects.
- Provide recommendations for alternative treatment methods that can impact the exposure to multiple hazards at one time.
- Meet or exceed the requirements of FEMA for a county level All Hazards Mitigation Plan.

Chapter 2: Documenting the Planning Process

2 Initiation

Documentation of the planning process, including public involvement, is required to meet FEMA's DMA 2000 (44CFR§201.4(c)(1) and §201.6(c)(1)). This section includes a description of the planning process used to develop this plan, including how it was prepared, who was involved in the process, and how all of the involved agencies participated.

2.1 Description of the Planning Process

The Latah County All Hazard Mitigation Plan was developed through a collaborative process involving all of the organizations and agencies detailed in Section 1.0 of this document. The County Commissioner's Office contacted these organizations directly to invite their participation and schedule meetings of the planning committee. The planning process included 5 distinct phases which were in some cases sequential (step 1 then step 2) and in some cases intermixed (step 4 completed throughout the process):

1. **Collection of Data** about the extent and periodicity of hazards in and around Latah County. This included an area encompassing Benewah, Shoshone, Clearwater, Nez Perce Counties to insure a robust dataset for making inferences about hazards in Latah County specifically.
2. **Field Observations and Estimations** about risks, juxtaposition of structures and infrastructure to risk areas, access, and potential treatments.
3. **Mapping** of data relevant to pre-disaster mitigation control and treatments, structures, resource values, infrastructure, risk assessments, and related data.
4. **Facilitation of Public Involvement** from the formation of the planning committee, to a public mail survey, news releases, public meetings, public review of draft documents, and acknowledgement of the final plan by the signatory representatives.
5. **Analysis and Drafting of the Report** to integrate the results of the planning process, providing ample review and integration of committee and public input, followed by signature of the final document.

2.2 The Planning Team

Planning efforts were led by the Project Co-Directors, Dr. William E. Schlosser, of Northwest Management, Inc. and Mr. Vincent P. Corrao, B.S. Dr. Schlosser's education includes 4 degrees in natural resource management (A.S. geology; B.S. forest and range management; M.S. natural resource economic & finance; Ph.D. environmental science and regional planning). Mr. Corrao holds a bachelor's degree in Forest Resource Management, is a Certified Forester with the Society of American Foresters, and is President of Northwest Management, Inc. Leading efforts from Latah County, was Sandy Rollins, Latah County Disaster Services Coordinator, who organized meetings, facilitated information management, and coordinated many activities associated with the development of the plans.

They led a team of resource professionals that included Latah County government, incorporated cities, city and rural fire protection, law enforcement, State of Idaho Bureau of Homeland Security, Idaho Department of Lands, the US Forest Service, the Bureau of Land Management, fire mitigation specialists, resource management professionals, and hazard mitigation experts.

The planning team met with many residents of the county during the inspections of communities, infrastructure, and hazard abatement assessments. This methodology, when coupled with the other approaches in this process, worked adequately to integrate a wide spectrum of observations and interpretations about the project.

The planning philosophy employed in this project included the open and free sharing of information with interested parties. Information from federal and state agencies was integrated into the database of knowledge used in this project. Meetings with the committee were held throughout the planning process to facilitate a sharing of information between cooperators.

When the public meetings were held, many of the committee members were in attendance and shared their support and experiences with the planning process and their interpretations of the results.

2.2.1 Multi-Jurisdictional Participation

CFR requirement §201.6(a)(3) calls for multi-jurisdictional planning in the development of hazard mitigation plans which impact multiple jurisdictions. This All Hazards Mitigation Plan is applicable to the following Jurisdictions:

- Latah County, Idaho
- City of Bovill
- City of Deary
- City of Genesee
- City of Juliaetta
- City of Kendrick
- City of Moscow
- City of Onaway
- City of Potlatch
- City of Troy

In addition, the University of Idaho, Risk Management Department, participated in the planning committee meetings, provided input, and exchanged information used in the hazard mitigation plan.

All of these jurisdictions were represented on the planning committee, in public meetings, and participated in the development of hazard profiles, risk assessments, and mitigation measures. The monthly planning committee meetings were the primary venue for authenticating the planning record. However, additional input was gathered from each jurisdiction in a combination of the following ways:

- Planning committee leadership visits to scheduled municipality public meeting (e.g., County Commission meetings, City Hall meetings) where planning updates were provided and information was exchanged.
- One-on-one visits between the planning committee leadership and the representatives of the municipality (e.g., meetings with County Commissioners, or City Councils in chambers).

- Special meetings at each jurisdiction by the planning committee leadership requested by the municipality involving elected officials (mayors and County Commissioners), appointed officials (e.g., County Assessor, Sheriff, City Police), municipality employees, local volunteers (e.g., fire district volunteers), business community representatives, and local citizenry.
- Written correspondence was provided monthly between the planning committee leadership and each municipality updating the cooperators in the planning process, making requests for information, and facilitating feedback.

Planning committee leadership (referenced above) included: Sandy Rollins, Latah County Disaster Services Coordinator, Dr. William E. Schlosser, Vincent P. Corrao, Toby Brown, Tera Duman, Dennis Thomas, and Vaiden Bloch, all of Northwest Management, Inc., and Dan Pierce, Clearwater Resource Conservation and Development Council, Inc., Coordinator.

Like other rural areas of Idaho and the USA, Latah County's human resources have many demands put on them in terms of time and availability. None of the elected officials (County Commissioners and City Mayors) serve in a full-time capacity: all of them have other employment and serve the community through a convention of community service. Recognizing this, many of the jurisdictions decided to identify a representative from the jurisdiction to cooperate on the planning committee and then report back to the remainder of their organization on the process and serve as a conduit between the planning committee and the jurisdiction. This was the case with the Latah County Commissioners where one of the Commissioners attended the planning committee meetings as a regular attendee. It should be noted that all of the County Commissioners attended multiple hazard mitigation planning committee meetings.

At the city level, all of the City Mayor offices were represented in a variety of ways. In some instances the Mayor personally attended the meetings (e.g., City of Troy). More commonly, the Mayor of a municipality appointed a representative from the municipality to provide this representation on the committee meetings. For example, the Chief of the Kendrick Fire Department represented the Mayor of the City of Kendrick, the Moscow Fire Chief (a paid full-time position) represented the Mayor of Moscow (a part-time position). In the cases when the Mayors were unable to attend, the planning committee leadership provided communications and feedback with the municipality directly to insure the multi-jurisdictional planning necessitated by this process.

2.3 Public Involvement

Public involvement in this plan was made a priority from the inception of the project. There were a number of ways that public involvement was sought and facilitated. In some cases this led to members of the public providing information and seeking an active role in protecting their own homes and businesses, while in other cases it led to the public becoming more aware of the process without becoming directly involved in the planning process.

2.3.1 News Releases

Under the auspices of the Latah County All Hazards Mitigation Planning Committee, news releases were submitted to the Latah Eagle newspaper. Informative flyers were also distributed around town and to local offices through the committee.

2.3.1.1 Newspaper Articles

Committee and public meeting announcements were published in the local newspapers ahead of each meeting. The following is an example of one of the newspaper announcements that ran in the local newspaper.

2.3.2 Public Mail Survey

In order to collect a broad base of perceptions about wildland fire and individual risk factors of homeowners in Latah County, a mail survey was conducted. Approximately 266 residents of Latah County were randomly selected to receive a mail survey.

The public mail survey developed for this project has been used in the past by Northwest Management, Inc., during the execution of other Hazard Mitigation Plans. The survey used The Total Design Method (Dillman 1978) as a model to schedule the timing and content of letters sent to the selected recipients. Copies of each cover letter, mail survey, and communication are included in Appendix III.

The first in the series of mailings was sent August 24, 2004, and included a cover letter, a survey, and an offer of receiving a custom GIS map of the area of their selection in Latah County if they would complete and return the survey. The free map incentive was tied into assisting their community and helping their interests by participating in this process. Each letter also informed residents about the planning process. A return self-addressed enveloped was included in each packet. A postcard reminder was sent to the non-respondents on September 7, 2004, encouraging their response. A final mailing, with a revised cover letter pleading with them to participate, was sent to non-respondents on September 17, 2004.

Surveys were returned during the months of August, September, October, and November. A total of 123 residents responded to the survey as of November 23, 2004. The effective response rate for this survey was 46%. Statistically, this response rate allows the interpretation of all of the response variables significantly at the 99% confidence level.

2.3.2.1 Survey Results

A summary of the survey's results will be presented here and then referred back to during the ensuing discussions on the need for various treatments, education, and other information.

Of the 123 respondents in the survey, approximately 46% were from the Moscow area, 10% from Troy, 9% were from Potlatch, 7% from Deary, 10% from Viola, 4% from Kendrick, 4% form Juliaetta, with the remaining respondents from other areas in the county.

The vast majority of the respondents (98%) correctly identified that they have emergency telephone 911 services in their area. Structure fire protection in Latah County is limited to those living within the rural fire districts. Many of the residents living in the rural areas of the west and northwestern regions of the county and in the Kendrick-Juliaetta area are without rural structural fire protection. Approximately 97% of the respondents to the survey indicated they have rural structural fire protection. Analysis of this data indicates that 4% of those living outside of a fire protection district believe they have structural fire protection. However, approximately 100% of those respondents who live inside of a structure fire protection area reported they believe they have rural fire protection services.

Respondents were asked to indicate the type of roofing material covering the main structure of their home. Approximately 58% of respondents living in a rural area indicated their homes were covered with a composite material (asphalt shingles). About 38% of these residents indicated

their homes were covered with a metal (eg., aluminum, tin) roofing material. Roughly 8% of the rural respondents indicated they have a wooden roofing material such as shakes or shingles.

The average driveway length of respondents to the survey was 432 feet long (0.08 miles). The longest reported was 3,960 feet (0.75 miles). Of those respondents (3%) with a driveway over ½ mile long, approximately 33% do not have turnouts allowing two vehicles to pass. Approximately 66% of the respondents indicated an alternate escape route was available in an emergency which cuts off their primary driveway access.

Survey recipients were asked to report emergency services training received by members of the household. Their responses are summarized in Table 2.1.

Table 2.1. Emergency Services Training received by household.

Type of Training	Percent of Households
Wildland Fire Fighting	30%
City or Rural Fire Fighting	17%
EMT (Emergency Medical Technician)	14%
Basic FirstAid/ CPR	79%
Search and Rescue	11%

Residents were asked to indicate which, if any, of the disasters listed in Table 2.2 have affected their home, property or business within Latah County during the past 10 years.

Table 2.2. Disasters affecting homes in Latah County.

↓Hazard↓	Percent of respondents reporting hazard occurrence during the period 1993-2003, near their home.	If YES, Complete these questions…	Percent of respondents experiencing damage to their home or property.	Approximate average damage caused by each hazard (during the period 1993-2003)
Wildfire	8%	→	3%	$650
Flood	18%	→	11%	$2,417
Earthquake	4%	→	--	$--
Landslide	4%	→	2%	$5,300
Wind Storm	34%	→	13%	$1,121
Severe Weather	16%	→	9%	$1,446
Civil Unrest / Terrorism	1%	→	--	$--

Respondents were asked to complete a fuel hazard rating worksheet to assess their home's fire risk rating. An additional column titled "results" has been added to the table, showing the percent of respondents circling each rating (Table 2.3).

Circle the ratings in each category that best describes your home.

Table 2.3. Fuel Hazard Rating Worksheet		Rating	Results
Fuel Hazard	Small, light fuels (grasses, forbs, weeds, shrubs)	1	51%
	Medium size fuels (brush, large shrubs, small trees)	2	33%
	Heavy, large fuels (woodlands, timber, heavy brush)	3	15%
Slope Hazard	Mild slopes (0-5%)	1	53%
	Moderate slope (6-20%)	2	35%
	Steep Slopes (21-40%)	3	9%
	Extreme slopes (41% and greater)	4	3%
Structure Hazard	Noncombustible roof and noncombustible siding materials	1	30%
	Noncombustible roof and combustible siding material	3	40%
	Combustible roof and noncombustible siding material	7	4%
	Combustible roof and combustible siding materials	10	26%
Additional Factors	Rough topography that contains several steep canyons or ridges	+2	Average -2.2 pts
	Areas having history of higher than average fire occurrence	+3	
	Areas exposed to severe fire weather and strong winds	+4	
	Areas with existing fuel modifications or usable fire breaks	-3	
	Areas with local facilities (water systems, rural fire districts, dozers)	-3	

Calculating your risk

Values below are the average response value to each question for those living in both rural and urban areas.

Fuel hazard __1.6___ x Slope Hazard ___1.6___ = ____2.6____		
Structural hazard	+	____4.4__
Additional factors	(+ or -)	____-2.2__
Total Hazard Points	=	____4.8_.

Table 2.4. Percent of respondents in each risk category as determined by the survey respondents.
00% – Extreme Risk = 26 + points
05% – High Risk = 16–25 points
33% – Moderate Risk = 7–15 points
62% – Low Risk = 6 or less points

Values below are the average response value to each question for those living in **rural** areas only.

Fuel hazard	1.8	x Slope Hazard 1.7 =	3.1
Structural hazard		+	4.4
Additional factors		(+ or -)	-1.8
Total Hazard Points		=	5.7 .

Values below are the average response value to each question for those living in **urban** areas only.

Fuel hazard	1.3	x Slope Hazard 1.5 =	2.0
Structural hazard		+	4.4
Additional factors		(+ or -)	-2.7
Total Hazard Points		=	3.7 .

Table 2.5. Percent of rural respondents in each risk category as determined by the survey respondents.

00% – Extreme Risk = 26 + points
08% – High Risk = 16–25 points
35% – Moderate Risk = 7–15 points
56% – Low Risk = 6 or less points

Table 2.6. Percent of urban respondents in each risk category as determined by the survey respondents.

00% – Extreme Risk = 26 + points
00% – High Risk = 16–25 points
31% – Moderate Risk = 7–15 points
69% – Low Risk = 6 or less points

Many Latah County residents have been affected by at least one of the hazards covered by the All Hazards Mitigation Plan (wildfire, flood, landslide, and severe storm). The survey included a series of questions asking respondents to rank (scale of 1-7) the importance or risk to the county as a whole from the hazards specified in Table 2.7.

Table 2.7 Respondent's ranking of risk to Latah County.

Type of Hazard	Ranking "1"	Ranking "2"	Ranking "3"	Ranking "4"	Ranking "5"	Ranking "6"	Ranking "7"
Wildfire	42%	5%	7%	6%	3%	7%	19%
Flood	12%	22%	12%	18%	13%	16%	7%
Earthquake	21%	17%	5%	4%	16%	23%	15%
Landslide	9%	15%	24%	15%	19%	12%	6%
Wind Storm	8%	20%	19%	17%	16%	12%	8%
Winter Storm/Tornado	8%	9%	17%	26%	16%	17%	6%
Civil Unrest/Terrorism	16%	8%	13%	11%	12%	7%	31%

Finally, respondents were asked "If offered in your area, would members of your household attend a free or low cost, one-day training seminar designed to share with homeowners how to reduce the potential for casualty loss surrounding your home?" 40% of respondents indicated a desire to participate in this type of training.

Homeowners were also asked, "How Hazard Mitigation projects should be funded in the areas surrounding homes, communities, and infrastructure such as power lines and major roads?" Responses are summarized in Table 2.8.

Table 2.8. Public Opinion of Hazard Mitigation Funding Preferences.

	100% Public Funding	Cost-Share (Public & Private)	Privately Funded (Owner or Company)
Home Defensibility Projects →	13%	42%	45%
Community Defensibility Projects →	46%	49%	5%
Infrastructure Projects Roads, Bridges, Power Lines, Etc. →	72%	20%	8%

We wish to thank all Latah County residents completing and returning these surveys.

2.3.3 Committee Meetings

The following list of people who participated in the planning committee meetings, volunteered time, or responded to elements of the Latah County All Hazard Mitigation Plan's preparation.

NAME **ORGANIZATION**

- Alan Martinson ..... Latah County Disaster Services
- Alice Pope Barbut ..... Latah County Resident
- Bill Krick ..... Genesee City and Rural Fire Department
- Bob Leonard..... South Latah County Highway District
- Brad Dorendorf..... Mayor, City of Boville
- Brett Bennett ..... Bennett Lumber Products
- Charles Craig ..... Gritman Medical Center
- Charles Doty ..... President, Clearwater RC&D
- Dan Carscallen..... North Latah County Highway District
- Dan Pierce ..... USDA-NRCS and Clearwater RC&D
- Dana Magnuson..... Mayor, City of Kendrick
- Darrell Kilgore ..... Chief, Genesee City Fire Department
- David Brown..... Mayor, City of Potlatch
- Dick Hodge..... Clearwater RC&D
- Don Strong ..... Chief, Moscow Fire Department
- Ed Button ..... Moscow Fire Department
- Greg Yuncevich..... Bureau of Land Management
- Jeff Halbrook..... Hazard Mitigation Contractor
- Jeff Lohman ..... Mayor, City of Juliaetta
- John A. "Jack" Nelson ..... Latah County Commissioner
- John Henderson..... Mayor, City of Deary
- John Oppenheimer..... Idaho Conservation League
- Ken Whitney..... Mayor, City of Troy
- KT Whiteley..... Troy Police Department
- Larry Dawson ..... Forest Supervisor, Clearwater National Forest

- Marshall Comstock.....Mayor, City of Moscow
- Michael Linderman.....Latah County Emergency Planning Committee
- Michelle Fuson.....Latah County Planning and Building
- Mike McGee.....Juliaetta Fire Department
- Nancy Spink.....University of Idaho
- Paul J. Kimmell .....Latah County Commissioner
- Rex Benson.....Mayor, City of Onaway
- Roger Kechter.....Idaho Department of Lands
- Ron Stearns .....Troy Rural Fire District
- Sandy Rollins .....Latah County Disaster Services
- Steve Fiscus.....Latah County Assessor
- Tami Parkinson .....USDA Forest Service
- Tim Sperber .....Mayor, City of Genesee
- Tom S. Stroschein.....Latah County Commissioner
- Tom McWilliams.....USDA Forest Service
- Val Norris .....Chief, Kendrick Fire Department
- Vincent Corrao .....Northwest Management, Inc.
- Wayne Rausch.....Latah County Sheriff
- William Schlosser.....Northwest Management, Inc.

2.3.3.1 Committee Meeting Minutes

Committee Meetings were scheduled and held from September 2004 through February 2005.

2.3.3.1.1 September 28th, 2004 – Latah County Courthouse

Members the Latah County All Hazards Committee would like to see at the Meetings:

- Idaho Department of Lands
- County Sheriff's Office
- City of Moscow- Les McDonald
- LECP Chair- Tom Eisenberg + hospital
- Bennett Lumber
- Potlatch Corp and other major landowners
- University of Idaho
- Moscow Fire Dept.- Ed Button
- Highway Districts
- Idaho State Police Troopers- Lonnie Richardson
- Idaho Transportation Department- John Ward
- Idaho Conservation League

Debbie Ruppe, North Central Field Officer, Idaho Bureau of Homeland Security, may not give money unless a disaster actually happens but there are funds available for pre-mitigation activities if the plan identifies them.

Don Strong Chief (Moscow Fire Dept.): How are the communities on the fire list chosen (since they are all cities = lower risk from fire)?

Vinny: Communities are listed by population but funding usually covers outside areas (by WUI)

Don: Different communities need to talk to each other and coordinate even train together? Most don't even know if they can talk. There are mutual aid agreements but who knows if everything will work when a disaster actually happens. The Flannigan Ck. Fire had about 13 agencies involved and it worked okay but no one knew what would happen. Also, many communities have equipment but not enough manpower.

Debbie Ruppe: Go to www.sidc.id.gov and fill out the assessment of community capabilities. The state is putting together a plan for communication (even between states).

Don: The County needs a full-time person to apply for grants to get assistance. Maybe there is funding to get a grant writer.

Ruppe: Pre-Disaster- FEMA prioritized properties who've continually received damages, there are none in Latah so we would get no pre-disaster money.

MAPS: Were displayed and discussed

Floods: Highway District (esp. South) are getting information about 100-yr flood and determine if the culverts can handle the flows.

Fires: Districts are determined by taxes (Boise) some questioned there accuracy. (Don says they should be accurate)

Ruppe: Does response time determines some district boundaries?

Mutual aid agreements should help prevent insurance problems (not crossing district boundaries because insurance stops)

Don: But rates are sometimes based on mileage (over 5 miles increases insurance)

Kt: The state doesn't do structures so the area in the middle of the districts is not covered.

Ruppe: Should boundaries be expanded? This is a big issue for other counties in the region.

Michelle: The focus should be on property vs. structures (unrealistic because the area is so rural). A lot of people don't really know what protection they have!

Vinny: Education for those outside 15-20 minute response time could help a lot. (Everyone on Committee agrees)

Alice Barbut: Many people don't know what defensible space, how long response time is, or how everything affects their neighbors (access, turnarounds, etc.).

Primary Access:

Keep open Highways 95, 8, 9, 3, & 6

Secondary Access:

Highway 99? (may close)

Ruppe: No FMP/AHMP plans have been completely approved by FEMA (all ours have been conditionally approved, meaning they need "minor tweaking").

Sandy Rollins: Nov. 6 Safety Fair might be a good place to advertise since she will have a booth there anyway. Just give out some information, press releases, maps (WUI Severity)…

Ruppe: Everything has to be paid by the end of the funding period (May 31, 2005) and the final to FEMA

Sandy: Next meeting could be a working lunch Nov. 9 at 12 noon… 3 to 4 PM??

2.3.3.1.2 November 9th, 2004 – Latah County Courthouse

Minutes updated from September meeting add the attendance records for each meeting.

Review of what each chapter in the plan contains and what will be included.

Explanation of the WUI and population density.

State monitors well, springs, and surface water. Juliaetta water collection from the Potlatch River is necessity.

Troy City is having a plan written and is an open water collection from the Reservoir. Primary water source.

Nez Perce Latah Sperry grade out of Kendrick bridge is not adequate to cover the weight of fire trucks.

WUI Round it off to cover Viola community.

Invite the USFS and the CPTPA to the next meeting.

Genesee Fire requires more training and recruitment for volunteers. The Rurals can fight Wildland fire.

Kendrick equipment not readily available. Currently, they rely heavily on Nez Perce County Sheriff's Posse to respond to fires in the area; however, this service will not be available much longer. Juliaetta needs facility and rolling stock. Brick and mortar is also necessary. Juliaetta and Kendrick are not rural fire districts.

New rural fire district in Kendrick and Juliaetta proposal that needs to happen

Brett Bennett to share their GIS data on the rural fire districts boundaries.

Hazard Profiling- Hazards ignitions and extent of fires.

Flood plains are established throughout the entire County.

Landslide risk and where roads fail or restrict the primary or secondary roads. Troy near Puffy's place major slide.

Sandy has the landslides file folder to put events on the map.

Discussion on seismic index and also fault lines within the County. Little risk in Latah County.

Contact Tami Parkinson for Forest Service input of treatment areas and past fuel treatment areas.

Public meeting locations- Moscow/ Juliaetta Kendrick/ Potlatch/ Deary

Put in the Lewiston paper also the advertisement of public meetings.

Sandy to write a letter to the newspapers Moscow, Lewiston, and the Eagle about the meetings.

Reference the Troy water plan in the AHMP. Tentatively Jan 17-20 for the public meetings. Could have the Courthouse or Fairgrounds or the 1912 Building. 5:30 PM for Moscow, Potlatch noon, Kendrick Juliaetta maybe noon at Senior Centers, Potlatch at 7:00 PM

Next Committee Meeting February 1 at noon at the Courthouse.

Communications between groups and for radio communications.

Mutual Aid Agreement need to be established between all Rural Districts- update all of them, many are out-dated. Standardize the Mutual Aid Agreements are available.

Hospital is in a low spot and could need assistance from the County. Health Districts to be invited for water quality and health issues.

2.3.3.1.3 February 1, 2005 – Latah County Courthouse

The purpose of the February 1st committee meeting was to present the draft plan to committee members for review. Sandy Rollins provided lunch for the nearly 30 members that attended. Bill Schlosser and Tera Duman of Northwest Management, Inc. began the meeting by passing out copies of the Draft All Hazards Mitigation Plan as well as the Draft Wildfire Mitigation Plan and Draft Appendices document. Bill went through each document explaining the overall setup and nature of the information. Comments and questions were received. Bill also explained the appropriate avenues for submitting comments during the review period and set the next meeting date for March 1st.

Following are some of the comments that were brought up at the meeting.

- Add Kendrick and Juliaetta to participants list.
- Add “rural” and “urban” to table headings in survey results.
- Remove “Terrorism” from table on page 12.
- Check earthquake data in Table 2.7.
- Make changes and corrections to committee member names and affilitations.
- Add Forest Service Resources and Capabilities.
- Clarify Hazus data.
- Add February 1996 flood information.
- Reword section 4.6.
- Add Juliaetta flood assessment.
- Highway districts need GPS in pickups to record slide data.
- Change Cherry Lane reference to McGary Grade.
- Add and change names on signature page.

2.3.4 Public Meetings

Public meetings were scheduled in a variety of communities in Latah County during the hazard assessment phase of the planning process. Public meetings were scheduled to share information on the planning process, inform details of the hazard assessments, and discuss potential mitigation treatments. Attendees at the public meetings were asked to give their impressions of the accuracy of the information generated, and provide their opinions of potential treatments.

The initial schedule of public meetings included four locations in the county and were attended by a number of individuals on the committee and from the general public. The planning committee was approached by some community members requesting another public meeting

after the initial series was completed. The planning team quickly agreed to the additional location and time in Moscow, Idaho, and advertised the meeting and held it on February 15, 2005. Meeting announcements for both rounds of public meetings are attached below in Figures 2.1 and 2.2.

Figure 2.1. Public meeting announcement for January 2005 meetings.

Latah County, Idaho All Hazard Mitigation Plan

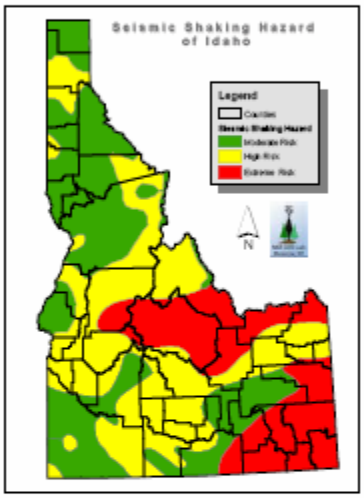
Public Meetings!

Deary: January 25, 2005, Deary Fire Hall, 7 - 9 pm.
Potlatch: January 26, 2005, Potlatch Train Depot, 12 - 2 pm.
Moscow: January 26, 2005, 1912 Building, 412 E. 3rd, 7 - 9 pm.
Kendrick: January 27, 2005, Kendrick Golden Sun Center, 7 - 9 pm.

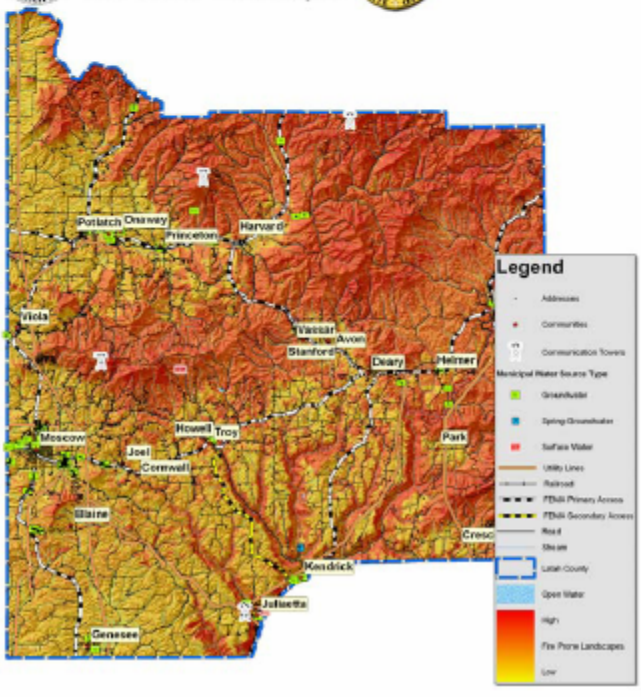
These public meetings will address the **All Hazards Mitigation Plan** for our communities. These meetings are open to the public and will include slideshow presentations from hazard mitigation specialists working on the Latah County All Hazards Mitigation Plan. Public input is being sought in order to better frame the County's efforts of hazard mitigation treatments, fire district resource enhancements, and public land management.

This meeting will last for approximately 1.5 hours.

Please attend and participate!



Latah County, Idaho
All Hazards Mitigation Plan
Fire Prone Landscapes



Topics of discussion include:

- Landslides
- Severe Weather
- Earthquakes
- Floods
- Wildfire

Discuss ***YOUR*** priorities for how our communities can best mitigate these risks.

This meeting will last for approximately 1.5 hours and include refreshments, a slideshow, information on the planning process, and schedules for completion. We want your input.

For more information on Hazard Mitigation Plan projects in Latah County, contact your County Commissioners, Dan Pierce at the Clearwater RC&D office at 208-882-4960 ext. 4, William E. Schlosser at the Northwest Management, Inc., office in Moscow at 208-883-4488, or Sandy Rollins at Latah County Disaster Services Department at 208-883-2265. ***We'll see you there!***

Figure 2.2. Public meeting announcement for February 2005 meetings.

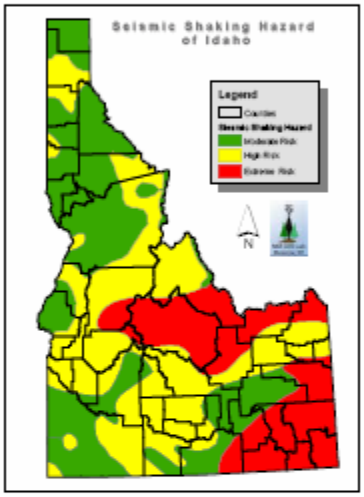
Latah County, Idaho All Hazard Mitigation Plan Public Meeting!

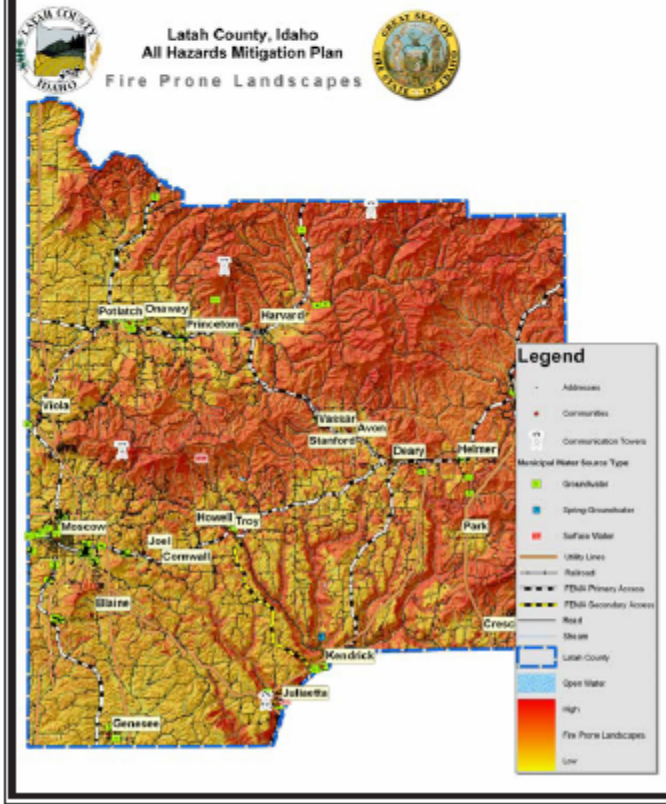
Moscow: February 15, 2005, Latah County Fairgrounds - 7:30 - 9:00 pm.

This public meeting will address the **All Hazards Mitigation Plan** for Latah County. This meeting is open to the public and will include slideshow presentations from hazard mitigation specialists working on the Latah County All Hazards Mitigation Plan. Public input is being sought in order to better frame the County's efforts of hazard mitigation treatments, fire district resource enhancements, and public land management.

This meeting will last for approximately 1.5 hours.

Please attend and participate!





Topics of discussion include:

- Landslides
- Severe Weather
- Earthquakes
- Floods
- Wildfire

Discuss *YOUR* priorities for how our communities can best mitigate these risks.

This meeting will last for approximately 1.5 hours and include refreshments, a slideshow, information on the planning process, and schedules for completion. We want your input.

For more information on Hazard Mitigation Plan projects in Latah County, contact your County Commissioners, Dan Pierce at the Clearwater RC&D office at 208-882-4960 ext. 4, William E. Schlosser at the Northwest Management, Inc., office in Moscow at 208-883-4488, or Sandy Rollins at Latah County Disaster Services Department at 208-883-2265. ***We'll see you there!***

Wall maps detailing risk assessments, hazard profiles, and a slide show were presented at each meeting. Public meetings were conducted by Project Manager William Schlosser, and Project Specialists Toby Brown and Tera Duman on the following dates and locations:

2.3.4.1 January 26th, 2005, Deary Fire Hall

Attendees:	Tera Duman	Northwest Management, Inc.
	Brian Robertson	Deary Rural Fire District
	Tim Jones	Deary Rural Fire District
	Sandy Rollins	Latah County Disaster Services
	William Schlosser	Northwest Management, Inc.
	Rob Lundy	Deary Rural Fire District

Bill Schlosser began the presentation at 7 pm. The group had several questions about the general organization of the All Hazard Mitigation Plan and how it would help them secure funding for mitigation projects and emergency services enhancements.

Several issues facing the Deary Rural Fire District and area residents were discussed. A summary of these discussions follows:

The fire department would like to be informed of building permits filed within their jurisdiction, so that they are not only aware of the new structure, but also so they can help the new owners meet the International Fire Code guidelines adopted by the state (County has not yet adopted). They believe this would help alleviate some of the emergency water source and access issues commonly found on new construction sites in the wildland urban interface. Currently, the county building inspectors do not check new construction sites for compliance to the International Fire Code.

Currently, the Deary and Troy Rural Fire Districts travel out of their district to respond to emergency calls in the Kendrick-Juliaetta area. This is a liability and personnel risk to these departments, but it also costs them money, which they are not compensated for. They believe that a new fire district should be formed to help protect the Kendrick and Juliaetta residents.

There is currently no wildland fire protection in a large area stretching from just south of Genesee to the Nez Perce – Latah County line. This area is characterized by south aspect breaklands and are at high risk of experiencing an uncontrolled rangeland fire. An abundance of CRP in this area adds to the risk as these fuels typically burn more intensely than cultivated farmland. Annual burning of fields by local farmers adds to the fire potential. Genesee provides some wildland fire protection; however, their department is not equipped to handle this type of fire. Attendees at the meeting would like the All Hazards Mitigation Plan to recommend that the Idaho Department of Lands annex this area into their wildland fire protection district.

Home address signs were erected throughout the county several years ago as part of the Enhanced 911 service. These signs have become difficult to see or are no longer present. The Deary Rural Fire District recommended that these signs should be made visible once again and possibly more permanent to aid in emergency response.

Several years ago the repeater used by the Deary Rural Fire District and officials in Bovill was moved from McGary Butte to Elk Butte due to the loss of affordable power. Since the move, the radio coverage has decreased from about 95% to approximately 70% throughout these districts. Recently, power has been restored to McGary Butte and it would be beneficial to either add an additional repeater on McGary Butte to supplement the Elk Butte repeater or move the repeater location entirely. This would drastically improve radio and dispatch communications across this part of the county. They believe it would cost approximately $7,500 to move the repeater location back to McGary Butte.

There is a need for road improvements throughout Latah County. Specific areas mentioned include: Flat Creek crossing on Highway 9 frequently floods the road, flooding over the road near the White Pine Café in Troy, and water drainage off streets in Deary due to runoff from Spud Hill.

Other Deary Rural Fire District needs include:

Daytime Volunteers

Additional Training

Younger Volunteers – (Possible implementation of the "CERT" program)

Renegotiation of district boundaries with Troy Rural Fire District in order to better serve residents of both districts (some areas within the Troy district are closer and more efficient for the Deary Department to respond to and vice versa)

2.3.4.2 January 27th, 2005, Potlatch Train Depot

Attendees:	Toby Brown	Northwest Management, Inc.
	Tera Duman	Northwest Management, Inc.
	Sandy Rollins	Latah County Disaster Services
	Dan Pierce	Clearwater RC&D
	Sara McCullough	Clearwater RC&D

Toby went through an abbreviated version of the presentation due to the lack of attendees that hadn't seen the slides before and answered any questions that came up. Primary topics included how the FEMA funding worked locally and the impacts of the Healthy Forests Restoration Act on mitigation projects in the wildland urban interface, particularly those administered by the USDA Forest Service.

2.3.4.3 January 27th, 2005, Moscow 1912 Building

Attendees:	Tera Duman	Northwest Management, Inc.
	Toby Brown	Northwest Management, Inc.
	Sandy Rollins	Latah County Disaster Services
	Chris King	Moscow Resident
	Dan Pierce	USDA-NRCS Clearwater RC&D
	Jeff Handel	Idaho Department of Lands
	Don Strong	Moscow Fire Department
	Michael Linderman	Latah County Emergency Planning Committee
	Diane Corrao	Northwest Management, Inc.

Toby began the presentation at 7pm. Attendees discussed some of the funding opportunities afforded by adoption of the All Hazards Mitigation Plan and some of the mitigation steps the city of Moscow and the County have taken already. The County Courthouse, Latah Health Services, and Latah County Fairgrounds as well as the Colfax radio station (99.5) were set up with generators in preparation for Y2K. Some of the other issues discussed were:

- IDL cannot provide wildland fire protection to the currently unprotected area near Genesee because there is no timber. This could be changed by state legislation or possible on a subscription basis. Genesee Rural Fire District is semi-equipped to handle these fires.
- Not necessarily the Moscow Dept., but other fire departments have trouble getting volunteers that are available during the day. Implementation of the "CERT" program

(Community Emergency Response Team) may assist in minimizing some of this need. Volunteers in most departments are also in need of additional training. New programs may be able to pay volunteers to go to training, if their employers will allow them to miss work.

- Latah County needs to update rural addressing and post signs that are visible at the end of driveways.
- The County needs to involve fire districts in new permit and inspection process. Most fire districts are unaware of new structures and their addresses within their jurisdiction. New sites and access issues should be inspected by the fire department or at least by an inspector who can enforce the International Fire Code. The State has already adopted the International Fire Code, but the County has not enforced the regulations.
- The IDL can communicate fairly well with the fire depts. and the Sheriffs office, but many local departments have dead spots due to the poor location of repeaters. County should consider sharing repeaters amongst some or all of the different response organizations.
    - New narrow band radios do not get very good long range coverage and may require several additional repeaters, but they do offer twice as many frequencies.
- Some of the smaller shelters throughout the county do not have back up power. Busch distributors will provide fuel trucks to refill tanks if power goes out for an extended period. Generators can also be fueled by natural gas. Many area buildings are not currently hardwired for generator hookup. Communities also need to have an emergency number to call utility companies, so they can avoid automated systems.
- Several bridge crossings throughout the county are either not signed with weight rating information or will not accommodate emergency equipment. Many private driveways are not adequate for emergency vehicles. They lack the necessary width, turnouts, turnaround areas, and many are too steep. County needs to enforce road requirements. Several county roads dead end at homes. Planning and Zoning department is as much accountable for the current situation as homeowners. Response teams need a current map of the county that shows “safe” bridge crossings, water availability, etc.
- Public education is important. “Code of the West” pamphlets are good for private landowners. Education campaigns are cheap and effective. Voluntary actions by homeowners benefit everyone.
- Need to establish more dry hydrants or underground tanks in denser housing areas such as the Nearing Edition. These are general requirements of onsite water sources, which the county needs to enforce.
- Many of the county mutual aid agreements are out-dated or non-existent. There are some regional models to base these from.
- Sheriffs office has obtained a mobile command unit, but there are currently no employees trained to use it.

2.3.4.4 January 28th, 2005, Kendrick Golden Sun Senior Center

Attendees:	Tera Duman	Northwest Management, Inc.
	Toby Brown	Northwest Management, Inc.
	Sandy Rollins	Latah County Disaster Services
	Lizzie Baumgardner	JCIA and Juliaetta Volunteer Fire Department
	Roger Kechter	Idaho Department of Lands
	Mike McGee	Juliaetta Fire Department
	Dan Pierce	USDA-NRCS Clearwater RC&D
	Val Norris	Kendrick Fire Department
	Betty J. McMahon	Kendrick Fire Department
	Rose Norris	Kendrick Fire Department/City Councilwoman

Toby began the presentation at 7 pm. The group had several questions about the meaning of the maps and the funding opportunities that may come out of the All Hazard Mitigation Plan.

After the presentation, the discussion was primarily concentrated on the current state of the local fire departments and the lack of a rural fire district. The following are the highlights and needs of these departments.

- There is currently no rural fire district for the Kendrick-Juliaetta area. The city fire chiefs have been trying for several years to start a new rural department, but the local residents have repeatedly voted “no”. The city fire chiefs believe that locals do not understand the financial benefit of having the rural coverage. The city departments respond to some rural calls, but they mostly rely on neighboring districts or locals with their own equipment. The ambulance responds to calls without the assistance of the fire department.
    - The Nez Perce Sheriffs office will not be responding to emergencies in the Kendrick-Juliaetta area any more.
- The Juliaetta Fire Department is in dire need of updated equipment. Their 1956, open cab truck has failed during emergency calls and their personal safety equipment is not up to current standards. Since this is the first year they have received a budget from the city council, they are not even eligible to apply for grants. Due to the lack of space in their truck storage garage, they must keep the rest of their equipment either at the Kendrick Fire Department or in a storage unit, which slows their response time significantly. They believe that if they were a self-sufficient, functioning department, they would attract more volunteers.
    - Primary needs at this time are: rolling stock and associated equipment, PPEs, training, and a bigger storage facility.

Other emergency response issues affecting the Kendrick-Juliaetta area are:

- Dispatch is the only facility in the area that has back up power or is capable of receiving a generator. The city wells do not have back up power, but they do have a spring that helps refill part of their water supply. Attendees suggested acquiring mobile repeaters with their own back up power.
- Moscow Mountain is the only repeater in the county that has back up power, but reception from this repeater is not very good in Kendrick or Juliaetta.
- Kendrick and Juliaetta hire a state building inspector from Lewiston. Fire departments are not notified of new building permits or involved in the inspection process at all. Latah County needs to enforce current building codes and adopt the International Fire Code, which the State has already adopted.
- Rural addressing throughout the county is very poor. Road signs are also mismarked or completely missing in many areas. The County’s taxing addresses are incorrect and in need of updating. Many districts rely on Bennett Lumbers Map Books rather than County produced maps.
- McGary and Sperry bridges are not adequate for large, heavy trucks and either need redecked, reinforced, or replaced.
- Ambulance crew is in need of additional training, although this is a private company. The local fire departments are working on joint training with the ambulance team.

- There are very few HAZMAT certified people in the area for the high traffic volume that travels through and the presence of the bulk plants within the towns.

Toby Brown presented an overview of the hazards mitigation planning efforts for Latah County. Questions and comments from the audience focused on hazard preparedness, impacts of multiple hazards (fire, flood, severe weather) and how well prepared the county is to provide emergency services.

The creation of additional protection areas for structural fire protection were discussed and ideas were shared on how to make it happen.

2.3.4.5 February 15, 2005 – Latah County Fairgrounds

Attendees:

Gregory Bassler	Richard Lyon
Tera Duman	Diane Albright
Dan Pierce	Alice Pope-Barbut
Mary Ann Green	Sandy Rollins
Bob Hassolis	Jeff Halbrook
Jo Campbell	Willemina Kardong
Dick Hodge	Ciara Cusack
Roberty Barkley	Tom McWilliams
Roger Kechter	Harley Wright
Vincent Corrao	And others not signed in

This public meeting was added to the schedule after concern came up that not enough of the public was informed of the previous meetings. NMI agreed to do another meeting to insure public participation. This meeting was well attended by both committee members and Latah County residents, especially residents of the Nearing Subdivision north of Moscow. Tera Duman of Northwest Management, Inc. began the presentation at 7:30. There were several comments and questions throughout the presentation. Many of the area resident attendees were interested in the wildfire aspect of the plan.

After the formal presentation, Tera and Vinny went over some of the critical issues that have come up in the previous meetings including the creation of a Kendrick-Juliaetta Rural Fire District, lack of back-up power for infrastructure components (shelters, water systems, radio stations, etc.), and current and ongoing mitigation projects. Other issues that came up during the discussion were: appropriate radio stations to listen to for emergency broadcasts, repeater capabilities, back-up power systems for shelters and administration buildings, availability of funding for hazardous fuel reduction projects, and educational avenues for spreading the word about hazard mitigation.

The meeting concluded at approximately 8:45 pm; however, most attendees spent some time reviewing the wall maps and asking committee members questions.

Figure 2.3. Public meeting slideshow overview.

The public meeting slide show (title slide above) is outlined below.

Table 2.9. Public meeting slide show

Slide 1

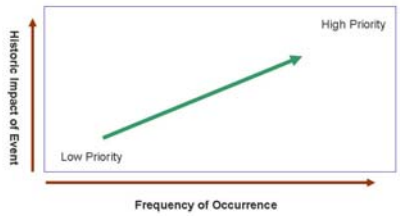
Slide 2

Slide 3

Slide 4

Slide 5

Phase I Hazard Profile



Slide 6

FEMA Requirements

(Outstanding Rating)

- Adoption by Local Government Body
- Multi-Jurisdictional Planning
- Identification of Hazards & Risk Assessment
  - Profiling Hazard Events
  - Mapping Juxtaposition of Hazards, Structures, Infrastructure
  - Potential Dollar Losses to Vulnerable Structures (B/C Analysis)
- Documented Planning Process
- Assessing Vulnerability
- Mitigation Goals
- Analysis of Mitigation Measures
- Monitoring, Evaluating & Updating the Plan (5 year cycles)
- Implementation Through Existing Programs
- Public Involvement

Slide 7

Wildfire Mitigation: National Policy

- **National Fire Plan (2000)**
  - Preparedness
  - Rehabilitation & Restoration
  - Hazardous Fuel Reduction
  - Community Protection
  - Accountability
- **Statewide Implementation Strategy**
  - Idaho Bureau of Homeland Security
  - Idaho Implementation Strategy of the National Fire Plan

Slide 8

Healthy Forests Restoration Act

- Strengthens public participation in developing high priority projects;
- Reduces the complexity of environmental analysis allowing federal land agencies to use the best science available to actively manage land under their protection;
- Creates a pre-decisional objections process encouraging early public participation in project planning; and
- Issues clear guidance for court action challenging HFRA projects.

Slide 9

Funding Opportunities

- **Federal Monies**
  - National Fire Plan
  - Healthy Forests Restoration Act
  - Federal Emergency Management Agency
- **State Monies**
  - Statewide Implementation Efforts
  - Idaho Bureau of Homeland Security
- **The Goal is Hazard Reduction**
  - Protection of People and Structures
  - Protection of Infrastructure
  - Protection of Economy
  - Protection of Ecosystems

Slide 10

Recommendations

- WUI Safety & Policy
- People & Structures
- Infrastructure
- Resources & Capabilities
- Regional Land Management Recommendations

We will revisit this list at the end of the presentation…

Slide 11

Slide 12

Slide 13

Slide 14

Slide 15

Slide 16

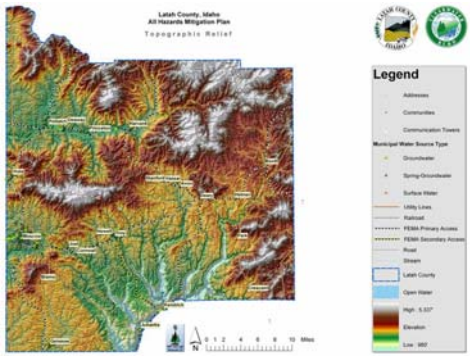
Slide 17

Slide 18

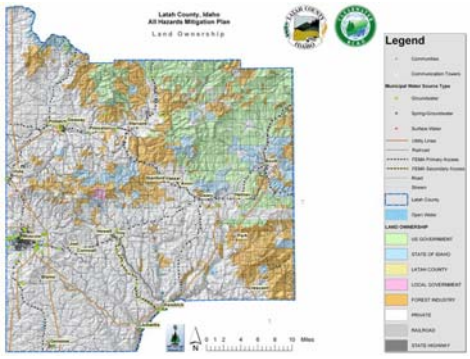
Hazard Mitigation Approach

- Hazard Profile
- Risk Assessment
- Vulnerability Appraisal
- Mitigation Strategy Development
- Prioritization and Planning
- Implement the Plan!

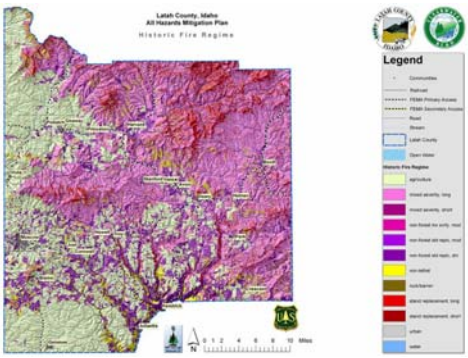
Slide 19



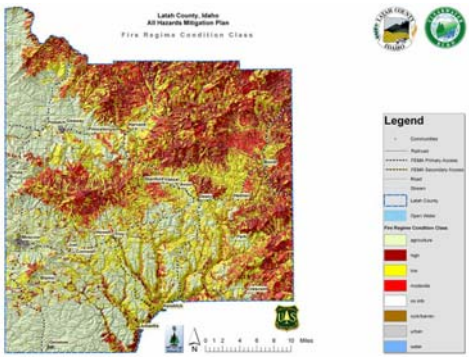
Slide 20



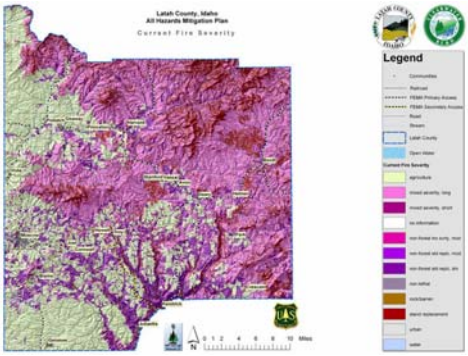
Slide 21



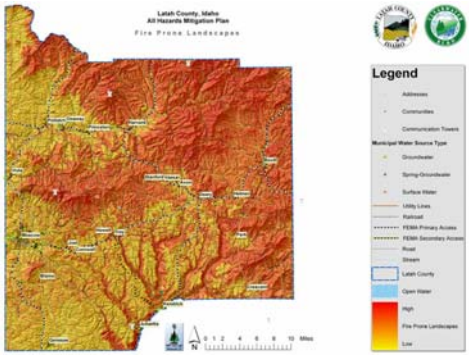
Slide 22



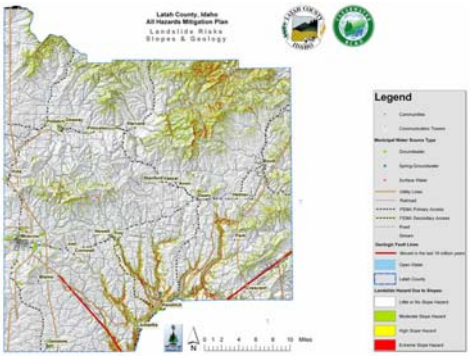
Slide 23



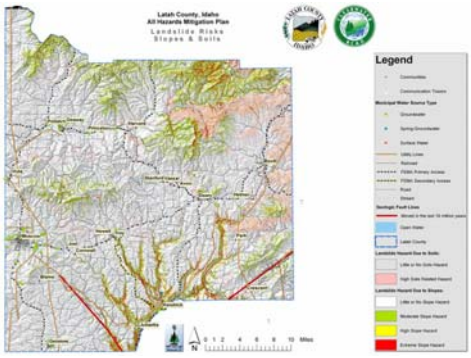
Slide 24



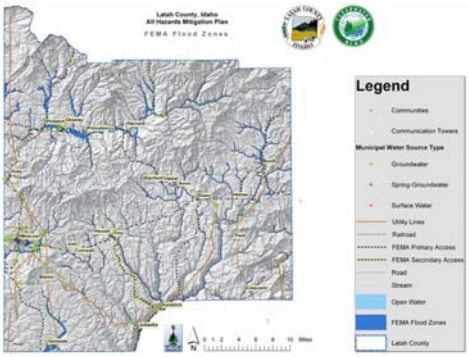
Slide 25



Slide 26



Slide 27



Slide 28

Wildland-Urban Interface

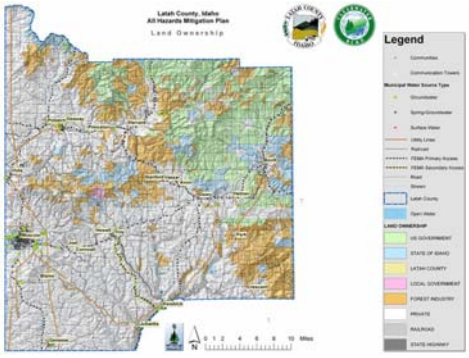
- **Interface Condition** – a situation where structures abut wildland fuels. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;
- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation, the wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres;
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuels (park or open space). There is a clear line of demarcation between the structures and the wildland fuels along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size; and
- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuels. There may be miles between these clusters.

Slide 29

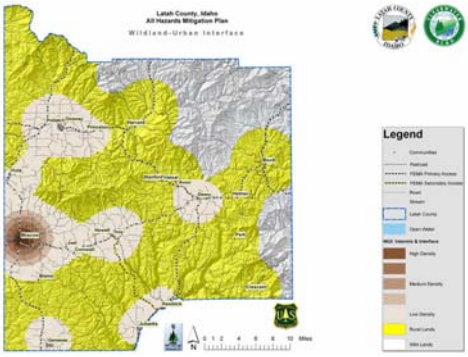
Defining Latah County's Wildland-Urban Interface

- Unique to each area & it changes over time
- Based on where structures are currently located
- Uses mathematical formulae and geospatial relationships to visually represent where the WUI exists
- *When you see it, you'll understand what we mean*

Slide 30



Slide 31



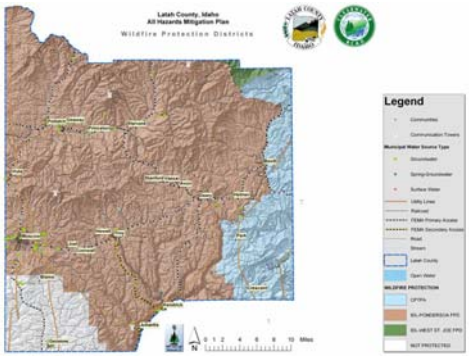
Slide 32

Slide 33

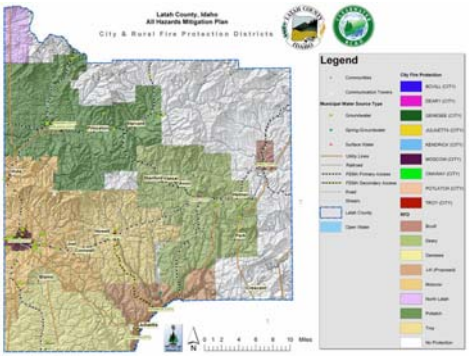
Preparedness

- City Fire Protection
- Rural Fire Protection
- Wildland Fire Protection

Slide 34



Slide 35

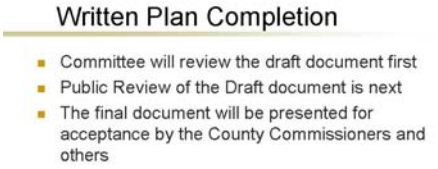


Slide 36

Public Involvement

- Public Mail Survey was sent to 230 households in Latah County
  - A total of 122 surveys were returned so far (53% response rate)
- Four Public Meetings will be held in January
- Public Review of the DRAFT Plans will be facilitated once all sections have been completed and reviewed by the committee

Slide 37



Slide 38

Slide 39

2.3.5 Documented Review Process

Review and comment on these plans has been provided through an number of avenues for the Committee members as well as the members of the general public.

During regularly scheduled committee meetings in the Fall of 2004 and winter of 2005, the committee met to discuss findings, review mapping and analysis, and provide written comments on draft sections of the document. During the public meetings attendees observed map analyses, photographic collections, and discussed general findings within the All Hazards Mitigation Plan.

The first draft of the document was prepared after the public meetings and presented to the committee on February 1, 2005, for a full committee review. The committee was given 1 month to provide comments to the plan.

On March 1, 2005, the planning committee met again to review changes in the document and to prepare a public review version of the documents. The revised draft was available at selected locations around Latah County for open public review with announcements in the local media regarding the month long review period. The public review period officially closed on April 6, 2005.

A pre-adoption FEMA review of the plan was submitted to the Idaho Bureau of Homeland Security and forwarded to FEMA. Review comments by FEMA were integrated into a revised version of the planning documents and finalized on June 17, 2005. This plan was adopted by the Latah County Commissioners and all listed municipalities beginning on June 20, 2005.

2.3.6 Continued Public Involvement

Latah County is dedicated to involving the public directly in review and updates of the All Hazard Mitigation Plan. The Latah County Commissioners, through the Interface Hazard Mitigation

Committee are responsible for the annual review and update of the plan as recommended in the "Recommendations" section of this document.

The public will have the opportunity to provide feedback about the Plan annually on the anniversary of the adoption of this plan, at the meeting of the County Commissioners. Copies of the Plan will be catalogued and kept at all of the appropriate agencies in the county. The existence and location of these copies will be publicized. Instructions on how to obtain copies of the plan will be made available on the County's Internet web site. The Plan also includes the address and phone number of the county Planning Division, responsible for keeping track of public comments on the Plan.

In addition, copies of the plan and any proposed changes will be posted on the county website. This site will also contain an email address and phone number to which people can direct their comments and concerns.

A public meeting will also be held as part of each annual evaluation or when deemed necessary by the Interface Hazard Mitigation Committee. The meetings will provide the public a forum for which they can express its concerns, opinions, or ideas about the Plan. The County Public Information Officer will be responsible for using county resources to publicize the annual public meetings and maintain public involvement through the public access channel, webpage, and newspapers.

Chapter 3: Latah County Characteristics

3 Background and Area Description

3.1 Demographics

Latah County reported a total population of 34,935 in 2000 with approximately 13,838 housing units. Latah County has nine incorporated communities; Moscow (pop. 21,291), Potlatch (pop. 791), Deary (pop. 552), Troy (pop. 798), Juliaetta (pop. 609), Kendrick (pop. 369), Bovill (pop. 305), Onaway (pop. 230), and Genesee (pop. 965). The total land area of the county is roughly 1,076.89 square miles (689,209.6 acres).

Table 3.1 summarizes some relevant demographic statistics for Latah County.

Table 3.1 Selected demographic statistics for Latah County, Idaho from the Census 2000.

Subject	Number	Percent
Total population	**34,935**	**100.0**
SEX AND AGE		
Male	18,107	51.8
Female	16,828	48.2
Under 5 years	1,897	5.4
5 to 9 years	2,090	6.0
10 to 14 years	1,827	5.2
15 to 19 years	3,872	11.1
20 to 24 years	5,756	16.5
25 to 34 years	5,130	14.7
35 to 44 years	4,374	12.5
45 to 54 years	4,214	12.1
55 to 59 years	1,527	4.4
60 to 64 years	965	2.8
65 to 74 years	1,556	4.5
75 to 84 years	1,102	3.2
85 years and over	625	1.8
Median age (years)	28.4	(X)
18 years and over	27,857	79.7
Male	14,469	41.4
Female	13,388	38.3
21 years and over	24,124	69.1
62 years and over	3,838	11.0
65 years and over	3,283	9.4
Male	1,444	4.1
Female	1,839	5.3

Table 3.1 Selected demographic statistics for Latah County, Idaho from the Census 2000.

Subject	Number	Percent
RELATIONSHIP		
Population	**34,935**	**100.0**
In households	31,010	88.8
Householder	13,063	37.4
Spouse	6,783	19.4
Child	7,849	22.5
Own child under 18 years	6,845	19.6
Other relatives	493	1.4
Under 18 years	124	0.4
Nonrelatives	2,822	8.1
Unmarried partner	668	1.9
In group quarters	3,925	11.2
Institutionalized population	355	1.0
Noninstitutionalized population	3,570	10.2
HOUSEHOLDS BY TYPE		
Households	**13,063**	**100.0**
Family households (families)	7,879	60.3
With own children under 18 years	3,823	29.3
Married-couple family	6,791	52.0
With own children under 18 years	3,113	23.8
Female householder, no husband present	673	5.2
With own children under 18 years	448	3.4
Nonfamily households	5,184	39.7
Householder living alone	3,431	26.3
Householder 65 years and over	891	6.8
Households with individuals under 18 years	3,944	30.2
Households with individuals 65 years and over	2,965	22.7
Average household size	2.37	(X)
Average family size	2.92	(X)
HOUSING TENURE		
Occupied housing units	**13,059**	**100.0**
Owner-occupied housing units	7,661	58.7
Renter-occupied housing units	5,398	41.3
Average household size of owner-occupied unit	2.56	(X)
Average household size of renter-occupied unit	2.11	(X)

(X) Not applicable
[1] Other Asian alone, or two or more Asian categories.
[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.
[3] In combination with one or more other races listed. The six numbers may add to more than the total population and the six percentages may add to more than 100 percent because individuals may report more than one race.
Source: U.S. Census Bureau, Census 2000 Summary File 1, Matrices P1, P3, P4, P8, P9, P12, P13, P,17, P18, P19, P20, P23, P27, P28, P33, PCT5, PCT8, PCT11, PCT15, H1, H3, H4, H5, H11, and H12.

3.2 Socioeconomics

Latah County had a total of 13,838 housing units and a population density of 32.4 persons per square mile reported in the 2000 Census (Table 3.1). Ethnicity in Latah County is distributed: white 93.9%, black or African American 0.6%, American Indian or Alaskan Native 0.6%, Asian 2.1%, two or more races 1.5%, and Hispanic or Latino 2.1%.

Specific economic data for individual communities is collected by the US Census; in Latah County this includes Moscow, Potlatch, Deary, Troy, Juliaetta, Kendrick, Bovill, Onaway, and Genesee. Latah County households earn a median income of $32,524 annually. In 2000, Deary, Troy, Juliaetta, Bovill, Onaway, and Genesee had median household incomes of $36,167, $36,250, $33,295, $36,875, and $39,821, respectively, which were all above the County median income during the same period. The communities of Moscow, Potlatch, and Kendrick had median household incomes of $26,884, $28,021, and $31,000 in 2000, which is below the Latah County median income during the same period. Table 3.2 shows the dispersal of households in various income categories of all communities.

Table 3.2 Income in 1999.

Households	**13,063**	**100.0**
Less than $10,000	1,871	14.3
$10,000 to $14,999	1,127	8.6
$15,000 to $24,999	2,134	16.3
$25,000 to $34,999	1,757	13.5
$35,000 to $49,999	2,009	15.4
$50,000 to $74,999	2,390	18.3
$75,000 to $99,999	1,001	7.7
$100,000 to $149,999	547	4.2
$150,000 to $199,999	110	0.8
$200,000 or more	117	0.9
Median household income (dollars)	32,524	(X)

(Census 2000)

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, directs federal agencies to identify and address any disproportionately high adverse human health or environmental effects of its projects on minority or low-income populations. In Latah County, a significant number of families are at or below the poverty level. Approximately 7.9% of Latah County families are below poverty level (Table 3.3).

Table 3.3 Poverty Status in 1999 (below poverty level).

Families	620	(X)
Percent below poverty level	(X)	7.9
With related children under 18 years	381	(X)
Percent below poverty level	(X)	9.8
With related children under 5 years	248	(X)
Percent below poverty level	(X)	15.4
Families with female householder, no husband present	146	(X)
Percent below poverty level	(X)	21.7

Table 3.3 Poverty Status in 1999 (below poverty level).		
With related children under 18 years	133	(X)
Percent below poverty level	(X)	28.8
With related children under 5 years	48	(X)
Percent below poverty level	(X)	46.6
Individuals	5,186	(X)
Percent below poverty level	(X)	16.7
18 years and over	4,451	(X)
Percent below poverty level	(X)	18.5
65 years and over	162	(X)
Percent below poverty level	(X)	5.4
Related children under 18 years	712	(X)
Percent below poverty level	(X)	10.2
Related children 5 to 17 years	399	(X)
Percent below poverty level	(X)	7.8
Unrelated individuals 15 years and over	3,355	(X)
Percent below poverty level	(X)	41.9

(Census 2000)

The unemployment rate was 4.9% in Latah County in 1999, compared to 4.4% nationally during the same period. Approximately 5.6% of the Latah County employed population worked in natural resources, with much of the indirect employment relying on the employment created through these natural resource occupations; Table 3.4 (Census 2000).

Table 3.4 Occupation and Industry	Latah County	
	Number	Percent
OCCUPATION		
Management, professional, and related occupations	6,807	39.5
Service occupations	2,831	16.4
Sales and office occupations	4,165	24.2
Farming, fishing, and forestry occupations	421	2.4
Construction, extraction, and maintenance occupations	1,432	8.3
Production, transportation, and material moving occupations	1,567	9.1
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	972	5.6
Construction	807	4.7
Manufacturing	941	5.5
Wholesale trade	282	1.6
Retail trade	1,969	11.4
Transportation and warehousing, and utilities	435	2.5
Information	442	2.6
Finance, insurance, real estate, and rental and leasing	513	3.0
Professional, scientific, management, administrative, and waste management services	1,131	6.6
Educational, health and social services	6,847	39.8

Table 3.4 Occupation and Industry	Latah County	
	Number	Percent
Arts, entertainment, recreation, accommodation and food services	1,507	8.7
Other services (except public administration)	802	4.7
Public administration	575	3.3

Approximately 55% of Latah County's employed persons are private wage and salary workers, while around 36.4% are government workers (Table 3.5).

Table 3.5 Class of Worker	Latah County	
	Number	Percent
Private wage and salary workers	9,498	55.1
Government workers	6,275	36.4
Self-employed workers in own not incorporated business	1,350	7.8
Unpaid family workers	100	0.6

(Census 2000)

3.2.1 Description of Latah County

Information summarized from the Latah County Area soil survey manuscript.

Latah County area, Idaho is in the southwestern part of the Idaho Panhandle. It is the location of the University of Idaho. Towns in the area are Moscow, Bovill, Onaway, Deary, Genesee, Juliaetta, Kendrick, Potlatch, and Troy. Most of the survey area is a broad loess-covered plain about 2,400 to 3,000 feet above sea level. A large part of this area is cultivated. The main crops are wheat, barley, and peas. Woodland is mostly in the higher rainfall zones in the northern and eastern parts of the survey area. The western part includes the dunelike topography of the Palouse hills. Dissecting the loess-covered plain are deep canyons along the Potlatch River and its tributaries in the southern part of the survey area. Most areas of these canyons are in woodland. Rangeland is on south-facing slopes near Juliaetta and Kendrick. Elevation ranges from about 1,000 feet above sea level along the Potlatch River to about 2,800 feet. Wooded ridges and low mountains occur above the loess-covered plain along Paradise Ridge, Tomer Butte, and the Palouse Range and in the northern part of the soil survey area. The highest elevation in the survey area is Moscow Mountain, which is 4,983 feet above sea level.

3.2.1.1 Recreation

This region offers a variety of recreational opportunities. The Clearwater National Forest offers easily accessible opportunities to hunt, fish, hike, or camp. The Palouse and Potlatch Rivers and Spring Valley and Moose Creek Reservoirs provide many fishing and other recreational opportunities; however, many of the lesser known tributaries are popular holes for the more adventuresome. Hunting for deer, elk, black bear, moose, and game birds including Hungarian partridges, valley quail, grouse, and ring-necked pheasant is especially intense every fall. During the winter, snowmobiling has become a very popular sport, with a smaller amount of cross-country skiing and snowshoeing.

Moscow has become well-known as the "Heart of the Arts", partially due to the presence of the University of Idaho. There are many recreational opportunities both on and off campus. The community offers several theatres, art exhibits, and music and dance festivals throughout the year. The annual Renaissance Fair, Rendezvous in the Park, and Latah County Fair celebrations keep the community spirit alive and attract visitors from all around.

The economic impacts of these activities to the local economy and the economy of Idaho have not been enumerated. However, they are substantial given the many months of the year that activities take place and the staggering numbers of visitors that travel to this location.

3.2.1.2 Resource Dependency

The communities of Latah County have been evaluated by the University of Idaho College of Natural Resources Policy Analysis Group (PAG) for the degree of natural resource dependency each community experiences. The findings of this group indicate that Genesee was the only community experiencing significant growth, 30%, between 1990 and 2000 (Harris *et al.* 2003).

Idaho communities with more than 10% employment in resource-based sectors (wood products, travel & tourism, agriculture, and mining) were evaluated by Harris *et al.* (2003). Kendrick was not included in this study. Their findings indicated:

- Moscow ..... Travel & Tourism
- Potlatch ..... Wood Products and Mining
- Deary ..... Wood Products and Travel & Tourism
- Troy ..... Agriculture Only
- Juliaetta ..... Wood Products and Agriculture
- Genesee ..... Agriculture Only

Harris *et al.* (2003) further evaluated Idaho communities based on their level of direct employment in several industrial sectors. Their findings for communities in Latah County are summarized in Table 3.6.

Table 3.6. Levels of direct employment by industrial sector

Community	Economic Diversity Index	Agriculture	Timber	Travel and Tourism	State/Local Government	Federal Government	Mining and Minerals
Moscow	Med. High	Low	Low	High	High	Low	Low
Potlatch	Med. High	Med. Low	High	Med. Low	Med. High	Low	Med. High
Deary	Med. High	Low	High	Med. High	High	Low	Med. Low
Troy	Med. Low	High	Med. Low	Low	High	Low	Low
Juliaetta	Med. Low	Med. High	High	Low	High	Low	Low
Genesee	Med. Low	High	Low	Low	High	Low	Low

NA = Not Available

A “low” level of direct employment represents 5% or less of total employment in a given sector; “med. low,” 6 to 10%; “med. high” 11 to 19%; and “high” 20% or more of total employment in a given sector.

Source: Harris *et al.* 2000

3.2.1.2.1 Forestry, Agriculture, and Ranching

Over the past century, employment through agricultural farming, timber harvesting, and livestock ranching has been significant in the region. As one of the most productive non-irrigated wheat growing regions in the world, agriculture is the major contributor to the economic stability of the County. Most of the southern and western parts of the county are used for cultivated crops, mainly wheat, dry peas, barley, lentils, oats, hay, and pasture. Smaller acreages are

used for production of alfalfa, grass, rape, and clover seed. High yields are obtained, especially of winter wheat and peas.

Latah County Area's woodland resource has been a major economic factor for more than 100 years. Pioneer farmers began by clearing forested land on the eastern side of the county and using the logs and lumber as building materials. Around the turn of the century the lumber industry began extensive operations in the northern, northeastern, and eastern parts of the county. Today, about 115,000 acres in the county is privately owned woodland. The woodland is owned by about 1,400 individuals and corporations. In addition, about 81,000 acres is administered by federal and state agencies. There are several lumber mills operating in the area including Bennett Lumber Products, Idaho Cedar Sales, Potlatch Corporation, and Plummer Forest Products with many independent logging operators keeping the mills supplied with logs from state and national forest land and from private woodland. The University of Idaho, College of Natural Resources, located at Moscow, assists the forest industry through its research programs and extension services. Several commercially valuable species of trees are produced on the woodland soils in the area. Ponderosa pine and Douglas-fir are the main lumber producing species, although grand fir, larch, western white pine, western redcedar, and lodgepole pine also are important.

About 196,000 acres of native grazing land is in Latah County. Of this total, about 15,000 acres is rangeland and 181,000 acres is grazable woodland. About 5 percent of the agricultural income of the survey area is from the sale of livestock products. The rangeland is mainly in the canyon adjacent to the lower part of the Potlatch River and it tributaries. It is mainly on south-facing slopes. The grazable woodland is in the open forested areas and where timber harvesting, fire, or other disturbance has opened the forest canopy sufficiently to allow the production of understory vegetation. Cow and calf operations are the primary type of operation, although some calves are held over or are purchased to be sold as yearlings. The average size of the ranches is about 1,000 acres. Typically, there is a winter feeding period of 5 or 6 months. Feed for winter is usually produced on farms. Those few livestock operations that have canyon rangeland available can shorten the winter feeding period to 3 or 3 1/2 months. The grazing season begins early in April on the rangeland and lasts until mid-December. Grazing on the forested land begins in mid-May and lasts until late in October. Most livestock spend summer and fall on forested range. Calving usually occurs from late in January until early in March. The natural vegetation on much of the rangeland has been largely depleted by continuous heavy use early in spring since the 1880's. Much of the original bluebunch wheatgrass and Idaho fescue has been replaced by annual bromegrasses and sod-forming bluegrasses. The amount of forage produced in the woodland areas depends mainly on the amount of light that reaches the forest floor. After logging or fire, there is a large increase in the production of understory vegetation for a number of years. As the canopy closes, the understory production decreases. In many areas the diversity of the tree canopy in the potential plant community allows only sparse production of understory vegetation.

3.3 Cultural Resources

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their proposals on historic properties, and to provide state historic preservation officers, tribal historic preservation officers, and, as necessary, the Advisory Council on Historic Preservation a reasonable opportunity to review and comment on these actions.

Cultural resource impacts were qualitatively assessed through a presence/absence determination of significant cultural resources and mitigation measures to be employed during potential mitigation activities such as thinning, prescribed fire, road construction, flood abatement, and other activities.

Typical archeological sites include settlements, lithic scatters, village sites, rock art, and hunting blinds. The Nez Perce had a network of trails throughout the area which included various trade routes, as well as gathering and hunting routes. Some of the same trails were later used by homesteaders and miners. Traditional Cultural Properties (TCPs) are cultural resources defined as a significant place or setting, and does not necessarily have any associated material remains. For example, a TCP can be a mountain, river, or natural feature (i.e., rock formation, meadow, etc.). Some of these are present in Latah County. The integrity of some cultural resources has been impacted in the past by logging activities, road building, mining, and grazing.

The National Park Service maintains the National Register of Historical Places as a repository of information on significant cultural locale. These may be buildings, roads or trails, places where historical events took place, or other noteworthy sites. The NPS has recorded sites in its database. These sites are summarized in Table 3.7.

Table 3.7. National Register of Historic Places in Latah County, Idaho.

Item Number	Resource Name	Address	City	Listed	Multiple
1	**Administration Building, University of Idaho**	University of Idaho campus	Moscow	1978	Tourtellotte,J.E. & Co
2	**American Legion Cabin**	US Alt. 95	Potlatch	1986	
3	**Bank of Juliaetta**	301 Main St.	Juliaetta	1998	Nave, James H., Penland, Bun
4	**Bethany Memorial Chapel**	Kendrick-Deary Hwy	Kendrick	1979	
5	**Green Boarding House**	850 Pine St	Potlatch	1986	White,C. Ferris
6	**Commercial Historic District**	Roughly Pine St. between Seventh and Fifth Sts	Potlatch	1986	White,C. Ferris, Homes,A.M
7	**Cordelia Lutheran Church**	S. of the jct. of Genesee-Troy and Danielson Rds.	Moscow	1995	
8	**Cornwall, Mason, House**	308 S. Hayes St	Moscow	1977	Taylor & Lauder
9	**Davids' Building**	3rd and Main Sts	Moscow	1979	
10	**First Methodist Church**	322 E. 3rd St	Moscow	1978	Black,H.N.
11	**Fort Russell Neighborhood Historic District**	Roughly bounded by Jefferson, Monroe, 2nd and D Sts	Moscow	1980	Multiple
12	**Four-Room House**	1015 Pine St	Potlatch	1986	
13	**Freeze Community Church**	1 mi. W of US 95	Potlatch	1990	
14	**Genesee Exchange Bank**	Walnut St	Genesee	1979	Klapp,Frank & Son
15	**Hotel Bovill**	602 Park St	Bovill	1994	
16	**Hotel Moscow**	4th and Main Sts	Moscow	1978	Shields,M.J. & Co., Taylor & Lauder
17	**Hotel Rietmann**	525 and 529 S. Main St	Troy	2001	
18	**Kappa Sigma Fraternity, Gamma Theta Chapter**	918 Blake St	Moscow	1996	
19	**Kenworthy Theatre**	508 S. Main St	Moscow	2001	

Table 3.7. National Register of Historic Places in Latah County, Idaho.					
Item Number	Resource Name	Address	City	Listed	Multiple
20	**Kirby, Thomas, House**	102 N. 9th St	Kendrick	1999	
21	**Lieuallen, Almon Asbury, House**	101 S. Almon St	Moscow	1978	
22	**McConnell, W. J., House**	110 S. Adams St	Moscow	1974	Stick/Eastlake
23	**McConnell-McGuire Building**	Main and 1st Sts	Moscow	1978	Lewis,W.J., Ogilbee,M.D.
24	**Memorial Gymnasium**	University of Idaho campus	Moscow	1977	Lange,David
25	**Moscow Carnegie Library**	110 S. Jefferson St	Moscow	1979	Vernon,Watson
26	**Moscow High School**	410 3rd E	Moscow	1992	
27	**Moscow Post Office and Courthouse**	Washington and 3rd Sts	Moscow	1973	US Treasury Dept
28	**Nob Hill Historic District**	Roughly bounded by Fourth, Spruce, Third, and Cedar Sts.	Potlatch	1986	White,C. Ferris, Holmes,A.M
29	**Nu Art Theatre**	516 S. Main St.	Moscow	2001	Moscow
30	**Ridenbaugh Hall**	University of Idaho campus	Moscow	1977	Ritchie,W.A
31	**Sigma Alpha Epsilon Fraternity House**	920 Deakin St	Moscow	1993	Carpenter, Charles
32	**Skattaboe Block**	Main and 4th Sts	Moscow	1978	Taylor & Lauder
33	**St. Joseph's Catholic Church**	1st and Cedar	Bovill	1982	Tourtellotte & Hummel
34	**Terteling, Joseph A., House**	1015 Fir St	Potlatch	1986	Holmes,A.M.
35	**Three-Room House**	940 Cedar St	Potlatch	1986	White,C. Ferris
36	**University of Idaho Gymnasium and Armory**	University of Idaho campus	Moscow	1983	Tourtellotte,John E. & Company
37	**Vollmer Building**	Walnut St	Genesee	1979	Shepherd,J.J., Mesker Bros.
38	**White Spring Ranch**	1004 Lorang Rd	Genesee	2004	
39	**Workers' Neighborhood Historic District**	Roughly Spruce St. between Eighth and Fifth	Potlatch	1986	White,C. Ferris

Hazard mitigation activities in and around these sites has the potential to affect historic places. In all cases, mitigation work will be intended to reduce the potential of damaging the site due to natural and man caused disasters. Areas where ground disturbance will occur will need to be inventoried depending on the location. Such actions may include, but are not be limited to, constructing firelines (handline, mechanical line, etc.), building new roads to creeks to fill water tankers, mechanical treatments, etc. Only those burn acres that may impact cultural resources that are sensitive to burning (i.e., buildings, peeled bark trees, etc.) would be examined. Burns over lithic sites are not expected to have an impact, as long as the fire is of low intensity and short duration. Some areas with heavy vegetation may need to be examined after the burn to locate and record any cultural resources although this is expected to be minimal. Traditional Cultural Properties (TCPs) may also need to be identified. Potential impact to TCPs will depend on what values make the property important and will be assessed on an individual basis.

3.4 Transportation & Infrastructure

Primary access to and from Latah County is provided by US Highway 95. This is a two-lane paved road with turnouts that traverses the western side of the county running north and south. This access is a primary north-south route for Idaho transportation networks, as the only road providing access between northern and southern Idaho. State highways 3, 6, 8, and 9 provide additional access to the smaller, more remote towns and recreation areas in the central and eastern parts of Latah County. These routes also offer paved, two-lane connections between communities. Secondary roads (many gravel) provide access to the adjoining areas within the county. A variety of trails and closed roads are to be found throughout the region.

Many of the roads in the county were originally built to facilitate logging and farming activities. As such, many of these roads can support timber harvesting equipment, logging trucks, farming equipment, and fire fighting equipment referenced in this document. However, many of the new roads have been built for home site access, especially for new sub-divisions of homes. In most cases, these roads are adequate to facilitate equipment. County building codes for new developments should be adhered to closely to insure this tendency continues.

The most limiting points of access generally occur along the state highways connecting the smaller communities on the east side of the county. These routes are prone to closure due to extreme winter weather or wildfire due to their abutment to wildland fuels. In some cases the highway route is the only maintained route accessing the community, especially during the winter months.

Latah County has both significant infrastructure and unique ecosystems within its boundaries. Of note for this Hazard Mitigation Plan is the existence of the only state highway route connecting north and south Idaho (US Highway 95) and the presence of high tension power lines supplying the communities of Latah, Benewah, Nez Perce, Clearwater, and Shoshone Counties as well as neighboring communities in nearby Washington state.

3.5 Vegetation & Climate

Vegetation in Latah County is a mix of forestland and agricultural ecosystems. An evaluation of satellite imagery of the region provides some insight to the composition of the vegetation of the area. The full extent of the county was evaluated for cover type as determined from Landsat 7 ETM+ imagery in tabular format, Table 3.8.

The most represented vegetated cover type is agricultural land at approximately 28% of the total area. The next most common vegetation cover type represented is a foothills grassland at 12%. Mixed mesic forests represent approximately 12% of the total area as well (Table 3.8).

Table 3.8. Vegetative Cover Types in Latah County	Acres	Percent of County's Total Area
Agricultural Land	190,819	28%
Foothills Grassland	81,752	12%
Mixed Mesic Forest	80,584	12%
Western Red Cedar/Grand Fir Forest	54,989	8%
Warm Mesic Shrubs	42,176	6%
Douglas-fir	37,596	5%
Mixed Xeric Forest	33,271	5%
Grand Fir	31,320	5%
Ponderosa Pine	30,815	4%
Western Hemlock	18,853	3%

Table 3.8. Vegetative Cover Types in Latah County	Acres	Percent of County's Total Area
Douglas-fir/Grand Fir	16,934	2%
Cloud	10,910	2%
Lodgepole Pine	9,511	1%
Shrub Dominated Riparian	6,940	1%
Mixed Needleleaf/Broadleaf Forest	4,385	1%
Douglas-fir/Lodgepole Pine	4,340	1%
Western Red Cedar/Western Hemlock	3,829	1%
Needleleaf/Broadleaf Dominated Riparia	3,593	1%
Mixed Riparian (Forest and Non-Forest)	3,378	0%
Western Larch	3,147	0%
Needleleaf Dominated Riparian	2,792	0%
Urban	2,584	0%
Mixed Barren Land	2,574	0%
Western Larch/Douglas-fir	2,393	0%
Mixed Non-forest Riparian	1,258	0%
Exposed Rock	1,188	0%
Western Red Cedar	1,154	0%
Western Larch/Lodgepole Pine	1,009	0%
Broadleaf Dominated Riparian	929	0%
Montane Parklands and Subalpine Meadow	800	0%
Subalpine Fir	463	0%
Cloud Shadow	418	0%
Cottonwood	394	0%
Disturbed Grassland	283	0%
Water	211	0%
Curlleaf Mountain Mahogany	143	0%
Graminiod or Forb Dominated Riparian	115	0%
Mixed Subalpine Forest	14	0%
Engelmann Spruce	6	0%
Total	**687,874**	

Vegetative communities within the county follow the strong moisture and temperature gradient related to the major river drainages. Limited precipitation and steep slopes result in a relatively arid environment in the southern portion of the county, limiting vegetation to drought-tolerant plant communities of grass and shrublands, with scattered clumps of ponderosa pine and Douglas-fir at the higher elevations. As moisture availability increases, so does the abundance of conifer species, with subalpine forest communities present in the highest elevations where precipitation and elevation provide more available moisture during the growing season.

3.5.1 Monthly Climate Summaries in Latah County

3.5.1.1 Potlatch, Idaho

Period of Record Monthly Climate Summary

Period of Record : 3/ 1/1915 to 9/30/2002

Table 3.9 Climate summaries for Potlatch, Idaho in Latah County.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	35.8	41.6	48.3	57.3	66.2	73.0	82.7	82.9	73.3	60.5	45.3	37.4	58.7
Average Min. Temperature (F)	20.8	24.7	28.3	32.8	37.8	43.1	45.6	44.1	38.7	33.1	28.5	23.2	33.4
Average Total Precipitation (in.)	2.88	2.48	2.38	2.06	2.11	1.88	0.82	0.81	1.35	1.92	2.97	3.11	24.77
Average Total SnowFall (in.)	14.9	8.0	4.5	1.2	0.1	0.0	0.0	0.0	0.0	0.3	4.9	11.4	45.4
Average Snow Depth (in.)	3	2	0	0	0	0	0	0	0	0	0	2	1

Percent of possible observations for period of record. Max. Temp.: 93% Min. Temp.: 92.9% Precipitation: 93.1% Snowfall: 91.9% Snow Depth: 84%

3.5.1.2 Moscow, Idaho

Period of Record Monthly Climate Summary

Period of Record : 11/7/1893 to 9/30/2004

Table 3.10 Climate summaries for Moscow, Idaho in Latah County.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	34.7	40.1	47.5	56.9	65.3	72.7	82.8	82.5	72.9	60.0	44.4	36.3	58.0
Average Min. Temperature (F)	22.5	26.0	30.6	35.7	41.2	46.3	50.3	49.8	44.1	37.4	30.6	25.0	36.6
Average Total Precipitation (in.)	2.97	2.20	2.26	1.89	2.02	1.64	0.73	0.80	1.23	1.85	3.03	2.94	23.56
Average Total SnowFall (in.)	16.2	9.1	5.0	1.2	0.1	0.0	0.0	0.0	0.0	0.3	5.3	12.5	49.6
Average Snow Depth (in.)	4	2	0	0	0	0	0	0	0	0	0	2	1

Percent of possible observations for period of record. Max. Temp.: 99.1% Min. Temp.: 99.1% Precipitation: 99.3% Snowfall: 98.3% Snow Depth: 80%

3.5.1.3 Elk River, Idaho (Clearwater County)

Period of Record Monthly Climate Summary Adjacent too Latah County, near city of Bovill

Period of Record : 1/ 1/1952 to 9/30/2004

Table 3.11 Climate summaries for Elk River, Idaho in Clearwater County.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	34.3	39.9	46.0	54.3	63.9	71.6	81.2	81.4	71.8	58.6	42.2	34.5	56.6
Average Min. Temperature (F)	18.1	20.4	24.1	30.5	36.8	42.9	45.4	44.0	37.1	30.3	25.5	19.7	31.2
Average Total Precipitation (in.)	5.41	4.11	3.42	2.80	2.92	2.35	1.11	1.17	1.75	2.75	4.55	5.01	37.37
Average Total SnowFall (in.)	30.9	17.7	12.3	2.6	0.4	0.0	0.0	0.0	0.0	0.3	12.5	26.6	103.3
Average Snow Depth (in.)	23	24	15	2	0	0	0	0	0	0	2	11	7

Percent of possible observations for period of record. Max. Temp.: 97.9% Min. Temp.: 97.5% Precipitation: 98.7% Snowfall: 98.4% Snow Depth: 97.4%

The following is summarized from the Soil Survey for the Latah County area:

In winter the average temperature is 32 degrees F, and the average daily minimum temperature is 25 degrees. The lowest temperature on record, which occurred at Moscow on December 30, 1968, is -42 degrees. In summer the average temperature is 63 degrees, and the average daily maximum temperature is 80 degrees. The highest recorded temperature, which occurred at Moscow on August 4, 1961, is 109 degrees.

The total annual precipitation is 23.37 inches. Of this, 8 inches, or 35 percent, usually falls in April through September, which includes the growing season for most crops. In 2 years out of 10, the rainfall in April through September is less than 7 inches. The heaviest 1-day rainfall during the period of record was 2.1 inches at Moscow on November 26, 1964. Thunderstorms occur on about 16 days each year, and most occur in summer.

Average seasonal snowfall is 47 inches. The greatest snow depth at any one time during the period of record was 36 inches. On an average of 20 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in midafternoon is about 50 percent. Humidity is higher at night, and the average at dawn is about 65 percent.

3.6 Ecosystems

Latah County is a diverse ecosystem with a complex array of vegetation, wildlife, and fisheries that have developed with, and adapted to fire as a natural disturbance process. A century of wildland fire suppression coupled with past land-use practices (primarily timber harvesting and farming) has altered plant community succession and has resulted in dramatic shifts in the fire regimes and species composition (USDA 1999). As a result, forests and rangelands in Latah County have become more susceptible to large-scale, high intensity fires posing a threat to life, property, and natural resources including wildlife and special status plant populations and habitats. High-intensity, stand-replacing fires have the potential to seriously damage soils and native vegetation. In addition, an increase in the number of large high intensity fires throughout the nation's forests and rangelands, has resulted in significant safety risks to fire fighters and

higher costs for fire suppression (House of Representatives, Committee on Agriculture, Washington, DC, 1997).

Plant community and structure within Latah county is best represented by a combination of dry, semi mesic on the southern portions of the county, and mesic forest types on the northern boundaries. The drier, semi mesic sites consist of more open park-like stands of fire-adapted ponderosa pine, western larch, and Douglas-fir that have been replaced through ecological succession with dense and decadent stands of fire intolerant species such as grand fir. These species are more susceptible to high intensity wildland fire. In some dry meadows and grassland habitats, a shift in fire regimes has resulted in changes in ecological succession patterns, such as accelerated encroachment of trees and shrubs. A shift in plant species composition, due to invasion and spread of invasive herbaceous species, has also influenced fire regime and frequency. The more mesic sites are best represented by western white pine, Douglas fir, western larch, grand fir and some ponderosa pine on the southerly slopes and ridgetops with a climax species being western hemlock and western redcedar. These sites typically experienced a longer fire interval that was stand replacing in nature. The conditions of these stands have declined at a faster rate than historically due to the introduction of blisterrust to western white pine causing a high mortality rate within this species. This ongoing mortality coupled with other insects and disease affecting other species has increased the fuel loads beyond natural accumulations. This shift in forest composition and structure has had an influence on the fire regimes and frequency of these wetter sites.

3.7 Soils

Soil is the most important natural resource in the survey area. Among the marketable products derived from the soil are the crops produced on the farms; the livestock that graze the rangeland, pastures, and woodland; and the trees that are harvested. To provide adequate water for the farms, several hundred ponds have been built to supplement the water available from streams. No extensive areas of underground water have been found in sufficient volume for irrigation. About 271,000 acres in the county is used as cropland, which includes hayland and pastureland. The major crops are winter wheat, dry peas, barley, lentils, oats, and hay. The most productive cropland soils are those of the Palouse series. About 60,000 acres of the soils in the county have been identified as prime farmland. The soils that make up this acreage are the Athena, Palouse, Hampson, Taney, and Thatuna soils; the Larkin and Southwick silt loams that have slopes of less than 7 percent; and the Latah, Latahco, Lovell, and Westlake soils that have slopes of 0 to 3 percent.

Most of the survey area is a broad loess-covered plain about 2,400 to 3,000 feet above sea level. These soils are generally very deep, loamy, and gently sloping to steep. Dissecting the loess-covered plain are deep canyons along the Potlatch River and its tributaries in the southern part of the county. These soils generally are shallow and moderately deep on south-facing slopes and very deep on north-facing slopes. These areas tend to be steep to very steep. Rock fragments are common. Wooded ridges and low mountains occur above the loess-covered plain along Paradise Ridge, Tomer Butte, and the Palouse Range and in the northern part of the county. Here the soils generally are deep to very deep and rock fragments are common. These soils are often found on steep slopes. Volcanic ash is common on north-facing slopes.

Soil erosion began soon after the land was first cultivated or cleared of trees. Voluntary soil conservation associations were established in four communities in 1936 to begin a concerted effort to combat soil erosion and the resultant siltation on the flood plain. The Latah Soil Conservation District was formed in 1940 under Idaho State Law Title 22, Chapter 27, known as the Soil Conservation Districts Laws. It was the first legal soil conservation district to be formed in Idaho. The topography of the area contributes to the serious hazard of erosion, especially in

steep concave areas on north-facing slopes where drifted snow collects. The cropland that extends into the cutover timbered soils is more severely limited as to crops that can be grown, tillage practices that can be used, and other management considerations. Much of the cutover area is used for pasture and hayland. Appropriate cropland management is vital to the effective control of erosion. Annual cropping, minimum tillage, cross-slope farming, divided-slope farming, and critical area seeding are important to the success of any cropping system. In addition, such practices as waterways, diversions, and tile lines can be used where needed.

3.8 Hydrology

The Idaho Water Resource Board is charged with the development of the Idaho Comprehensive State Water Plan. Included in the State Water Plan are the statewide water policy plan and component basin and water body plans which cover specific geographic areas of the state (IDEQ 2003). The Idaho Department of Water Resources has prepared General Lithologies of the Major Ground Water Flow Systems in Idaho. The majority of Latah County has not been designated by the IWRB as a ground water system. The state may assign or designate beneficial uses for particular Idaho water bodies to support. These beneficial uses are identified in sections 3.35 and 100.01 - .05 of the Idaho water quality standards (WQS). These uses include:

- **Aquatic Life Support:** cold water biota, seasonal cold water biota, warm water biota, and salmonid spawning;
- **Contact Recreation:** primary (swimming) and secondary (boating);
- **Water Supply:** domestic, agricultural, and industrial; and
- **Wildlife Habitat and Aesthetics**.

While there may be competing beneficial uses in streams, federal law requires DEQ to protect the most sensitive of these beneficial uses (IDEQ 2003).

The geology and soils of this region lead to moderate moisture infiltration. Slopes are moderate to steep, however, headwater characteristics of this watershed lead to a high degree of infiltration as opposed to a propensity for overland flow. Thus sediment delivery efficiency of first and third order streams is fairly low on stable soils. The bedrock is typically well fractured and moderately soft. This fracturing allows excessive soil moisture to rapidly infiltrate into the rock and thus surface runoff is rare. Natural mass stability hazards associated with slides are low. Natural sediment yields are low for these watersheds. However, disrupted vegetation patterns from logging (soil compaction) and wildland fire (especially hot fires that increase soil hydrophobic characteristics), can lead to increased surface runoff and debris flow to stream channels.

A correlation to mass wasting due to the removal of vegetation caused by logging, grazing, and high intensity wildland fire has been documented. Burned vegetation can result in changes in soil moisture and loss of rooting strength that can result in slope instability, especially on slopes greater than 30%. The greatest watershed impacts from increased sediment will be in the lower gradient, depositional stream reaches.

Timberlands in the region have been extensively harvested for the past four decades, therefore altering riparian function by removing streamside shade and changing historic sediment deposition. Riparian function and channel characteristics have been altered by ranch and residential areas as well. The current conditions of wetlands and floodplains are variable. Some wetlands and floodplains have been impacted by past management activities.

Table 3.12. Idaho Water Resources database of municipal water supplies in Latah County.

NAME	SERVICE TYPE	SOURCE NAME	SOURCE TYPE	LATITUDE	LONGITUDE	POPULATION
APPALOOSA HORSE CLUB	Non-community Non-transient	WELL #1	Groundwater	46.73338	-117.03836	50
ARNYS MOBILE HOME PARK	Community	WELL #1	Groundwater	46.71966	-116.96487	35
BEL AIR MOBILE HOME PARK	Community	NEW WELL	Groundwater	46.75019	-116.99589	125
BEL AIR MOBILE HOME PARK	Community	OLD WELL	Groundwater	46.75049	-116.99546	125
BENNETT LUMBER COMPANY	Non-community Non-transient	N WELL BY HWY	Groundwater	46.92105	-116.76853	150
BENNETT LUMBER COMPANY	Non-community Non-transient	S WELL BY POND	Groundwater	46.91986	-116.76836	150
BENSONS MOBILE HOME PARK	Community	ORIGINAL WELL#1	Groundwater	46.65685	-116.99725	27
BOVILL WATER DEPT	Community	WELL #2 N OF CH	Groundwater	46.86184	-116.39793	275
BOVILL WATER DEPT	Community	WELL #1 CITY H	Groundwater	46.86111	-116.39758	275
BOVILL WATER DEPT	Community	WELL #3 E OF CH	Groundwater	46.86113	-116.39741	275
CAMP GRIZZLY BOY SCOUTS	Non-community Transient	WELL #1	Groundwater	46.94225	-116.65723	210
CONE DELFRED SUBD	Community	WELL	Groundwater	46.91342	-116.83678	40
COUNTRY HOMES MOBILE PARK	Community	WELL #2 PITLESS	Groundwater	46.71108	-116.95141	116
COUNTRY HOMES MOBILE PARK	Community	WELL #1 IN W H	Groundwater	46.71134	-116.95186	116
DEARY CITY OF	Community	WELL #2 PITLESS	Groundwater	46.79106	-116.51925	529
DEARY CITY OF	Community	WELL #1 IN W H	Groundwater	46.79116	-116.51926	529
EMPIRE MOBILE HOME PARK	Community	NORTH WELL	Groundwater	46.74999	-116.99390	35
EMPIRE MOBILE HOME PARK	Community	OLD WELL	Groundwater	46.74839	-116.99365	35
EMPIRE MOBILE HOME PARK	Community	EAST WELL	Groundwater	46.74876	-116.99282	35
EVERGREEN TRAILER COURT	Community	NORTHEAST WELL	Groundwater	46.71899	-116.96220	65
GENESEE CITY OF	Community	N W WELL #5	Groundwater	46.55956	-116.93236	775

Table 3.12. Idaho Water Resources database of municipal water supplies in Latah County.

NAME	SERVICE TYPE	SOURCE NAME	SOURCE TYPE	LATITUDE	LONGITUDE	POPULATION
GENESEE CITY OF	Community	WELL #3 S W	Groundwater	46.54968	-116.92416	775
HELMER WATER ASSN	Non-community Transient	WELL	Groundwater	46.80189	-116.46968	30
HIDDEN VILLAGE MOBILE HOME COURT	Community	WELL #7 N W	Groundwater	46.65915	-117.00304	94
HIDDEN VILLAGE MOBILE HOME COURT	Community	WELL #6 S W	Groundwater	46.65875	-117.00492	94
HOO DOO HARVARD WATER AND SEWER DIST	Community	WELL NEW	Groundwater	46.94729	-116.79245	80
JULIAETTA CITY OF	Community	WELL #9	Groundwater	46.57924	-116.71054	609
JULIAETTA CITY OF	Community	WELL #7	Groundwater	46.59181	-116.72485	609
KENDRICK CITY OF	Community	WELL 4,NEW WELL	Groundwater	46.61295	-116.65905	325
KENDRICK CITY OF	Community	WELL #2 CITY CE	Groundwater	46.61429	-116.65046	325
KENDRICK CITY OF	Community	WELL #1 SOUTH	Groundwater	46.61169	-116.66288	325
LONE JACK STEAK COMPANY	Non-community Transient	WELL #1	Groundwater	46.92977	-116.93327	25
MINERAL MOUNTAIN REST AREA IDT	Non-community Transient	WELL	Groundwater	47.04130	-116.87222	100
MOSCOW ELKS GOLF COURSE	Non-community Transient	WELL	Groundwater	46.72400	-116.94257	100
MOSCOW WATER DEPT	Community	WELL #6	Groundwater	46.74102	-116.99537	14,000
MOSCOW WATER DEPT	Community	WELL #2	Groundwater	46.73484	-117.00232	14,000
MOSCOW WATER DEPT	Community	WELL #8	Groundwater	46.74036	-117.01328	14,000
MOSCOW WATER DEPT	Community	WELL #3	Groundwater	46.73518	-117.00221	14,000
MOSCOW WATER DEPT	Community	WELL #9	Groundwater	46.73455	-117.03223	14,000
MOUNTAIN MART	Non-community Transient	WELL #1	Groundwater	46.70749	-117.00477	100
MOUNTAIN VIEW M H PLAZA	Community	WELL #2 S W	Groundwater	46.71637	-116.96693	89
MOUNTAIN VIEW M H PLAZA	Community	WELL #3 N	Groundwater	46.71726	-116.96662	89

Table 3.12. Idaho Water Resources database of municipal water supplies in Latah County.

NAME	SERVICE TYPE	SOURCE NAME	SOURCE TYPE	LATITUDE	LONGITUDE	POPULATION
MOUNTAIN VIEW M H PLAZA	Community	WELL #1 S E	Groundwater	46.71638	-116.96491	89
NORTH TOMER BUTTE	Community	EASTMAN #3	Groundwater	46.71700	-116.90987	259
NORTH TOMER BUTTE	Community	WOODLAND #2 W	Groundwater	46.71761	-116.91066	259
ONAWAY WATER AND SEWER ASSN	Community	WELL	Groundwater	46.92840	-116.88882	290
PALOUSE HILLS ADVENTIST SCHOOL	Non-community Non-transient	N WELL	Groundwater	46.71998	-116.96292	60
POTLATCH CITY OF	Community	WELL #3 BALL FL	Groundwater	46.92784	-116.90316	880
POTLATCH CITY OF	Community	WELL #4 S W POT	Groundwater	46.92073	-116.90349	880
POTLATCH CITY OF	Community	WELL #2 W POT	Groundwater	46.92562	-116.90599	880
POTLATCH CITY OF	Community	WELL #1 RIDGE W	Groundwater	46.93054	-116.91939	880
POTLATCH PACK IRELANDS CAFE	Non-community Transient	WELL #1	Groundwater	46.92889	-116.93424	75
SCHIERMANS SLURP AND BURP	Non-community Transient	WELL #1	Groundwater	46.72664	-116.96254	50
STADIUM DRIVE MOBILE HOME PARK	Community	WELL NEW	Groundwater	46.72008	-117.03481	96
SYRINGA MOBILE HOME PARK	Community	WELL #10 N OF L	Groundwater	46.74230	-116.94176	300
SYRINGA MOBILE HOME PARK	Community	WELL #1 S W	Groundwater	46.74118	-116.94795	300
SYRINGA MOBILE HOME PARK	Community	WELL #2 S E	Groundwater	46.74134	-116.94601	300
SYRINGA MOBILE HOME PARK	Community	WELL #3 REC	Groundwater	46.74227	-116.94745	300
SYRINGA MOBILE HOME PARK	Community	WELL #4 E PMPHS	Groundwater	46.74252	-116.94532	300
SYRINGA MOBILE HOME PARK	Community	WELL #7 E CNTRL	Groundwater	46.74236	-116.94486	300
SYRINGA MOBILE HOME PARK	Community	WELL #8 RES	Groundwater	46.74268	-116.94460	300
TROY CITY OF	Community	DUTHIE PARK	Groundwater	46.73972	-116.76901	860
TROY CITY OF	Community	WELL #1 BIG ME	Groundwater	46.75030	-116.76591	860
UNIVERSITY OF IDAHO	Community	WELL #3	Groundwater	46.73692	-117.02088	8,589

Table 3.12. Idaho Water Resources database of municipal water supplies in Latah County.

NAME	SERVICE TYPE	SOURCE NAME	SOURCE TYPE	LATITUDE	LONGITUDE	POPULATION
UNIVERSITY OF IDAHO	Community	WELL #4	Groundwater	46.73512	-117.02492	8,589
USFS GIANT WHITE PINE CAMPGROUND	Non-community Transient	WELL	Groundwater	47.01055	-116.67771	25
USFS LAIRD PARK CAMPGROUND	Non-community Transient	WELL	Groundwater	46.94301	-116.64575	86
USFS LITTLE BOULDER CREEK CAMPGROUND	Non-community Transient	WELL 2	Groundwater	46.78538	-116.45799	25
USFS LITTLE BOULDER CREEK CAMPGROUND	Non-community Transient	WELL 1	Groundwater	46.77093	-116.45750	25
VALHALLA HILLS MHP	Community	WELL #1 HLSD W	Groundwater	46.69344	-117.01341	75
VIOLA WATER AND SEWER DIST	Community	WELL #2 S	Groundwater	46.83561	-117.03955	98
Y TRAILER COURT	Community	WELL #1	Groundwater	46.93212	-116.93302	55
JULIAETTA CITY OF	Community	COX SPRING	Spring-Groundwater	46.58213	-116.70260	560
KENDRICK CITY OF	Community	STANTON SPRING	Spring-Groundwater	46.64149	-116.65355	325
JULIAETTA CITY OF	Community	POTLATCH RIVER	Surface Water	46.58398	-116.70058	560
TROY CITY OF	Community	BIG CREEK	Surface Water	46.80389	-116.81111	860

3.9 Air Quality

The primary means by which the protection and enhancement of air quality is accomplished is through implementation of National Ambient Air Quality Standards (NAAQS). These standards address six pollutants known to harm human health including ozone, carbon monoxide, particulate matter, sulfur dioxide, lead, and nitrogen oxides (USDA Forest Service 2000).

Smoke emissions from fires potentially affect an area and the airsheds that surround it. Climatic conditions affecting air quality in central Idaho are governed by a combination of factors. Large-scale influences include latitude, altitude, prevailing hemispheric wind patterns, and mountain barriers. At a smaller scale, topography and vegetation cover also affect air movement patterns. In Latah County, winds are generally from a southwesterly direction throughout the year. Air quality in the area and surrounding airshed is generally good to excellent. However, locally adverse conditions can result from occasional wildland fires in the summer and fall, and prescribed fire and agricultural burning in the spring and fall. All major river drainages are subject to temperature inversions which trap smoke and affect dispersion, causing local air quality problems. This occurs most often during the summer and fall months.

Latah County is in the North Idaho Airshed Unit 12A: Montana/Idaho Airshed Group Operating Guide (Levinson 2002). An airshed is a geographical area which is characterized by similar

topography and weather patterns (or in which atmospheric characteristics are similar, e.g., mixing height and transport winds). The USDA Forest Service, Bureau of Land Management, and the Idaho Department of Lands are all members of the Montana/Idaho State Airshed Group, which is responsible for coordinating burning activities to minimize or prevent impacts from smoke emissions. Prescribed burning must be coordinated through the Missoula Monitoring Unit, which coordinates burn information, provides smoke forecasting, and establishes air quality restrictions for the Montana/Idaho Airshed Group. The Monitoring Unit issues daily decisions which may restrict burning when atmospheric conditions are not conducive to good smoke dispersion. Burning restrictions are issued for airsheds, impact zones, and specific projects. The monitoring unit is active March through November. Each Airshed Group member is also responsible for smoke management all year.

The Clean Air Act, passed in 1963 and amended in 1977, is the primary legal authority governing air resource management. The act established a process for designation of Class I and Class II areas for air quality management. Class I areas receive the highest level of protection and numerical thresholds for pollutants are most restrictive for this Class.

Some of the Class I airsheds in northern Idaho include:

- **Hell's Canyon Wilderness Area:** A sensitive Class I airshed, the Hell's Canyon Wilderness Area (86,116 acres), is located south of Latah County. This area is managed for high scenic and recreation values.
- **Selway-Bitterroot Wilderness:** Another Class I Airshed is the Selway-Bitterroot Wilderness (1.1 million acres). The Selway-Bitterroot Wilderness is southeast of Latah County.

All of the communities within Latah County could be affected by smoke or regional haze from burning activities in the region. Idaho Department of Environmental Quality maintains Air Pollution Monitoring Sites throughout Idaho. The Air Pollution Monitoring program monitors all of the six criteria pollutants. Measurements are taken to assess areas where there may be a problem, and to monitor areas that already have problems. The goal of this program is to control areas where problems exist and to try to keep other areas from becoming problem air pollution areas (Louks 2001).

The Clean Air Act provides the principal framework for national, state, and local efforts to protect air quality. Under the Clean Air Act, OAQPS (Organization for Air Quality Protection Standards) is responsible for setting standards, also known as national ambient air quality standards (NAAQS), for pollutants which are considered harmful to people and the environment. OAQPS is also responsible for ensuring these air quality standards are met, or attained (in cooperation with state, Tribal, and local governments) through national standards and strategies to control pollutant emissions from automobiles, factories, and other sources (Louks 2001).

3.10 Wildland-Urban Interface

3.10.1 People and Structures

The Wildland-Urban Interface has gained attention through efforts targeted at wildfire mitigation, however, this analysis technique is also useful when considering other hazards because the concept looks at where people and structures are concentrated in any particular region. For Latah County, the WUI shows the relative concentrations of structures scattered across the county.

A key component in meeting the underlying need for protection of people and structures is the protection and treatment of hazards in the wildland-urban interface. The wildland-urban interface refers to areas where wildland vegetation meets urban developments, or where forest fuels meet urban fuels in the case of wildfires (such as houses). These areas encompass not only the interface (areas immediately adjacent to urban development), but also the continuous slopes that lead directly to a risk to urban developments be it from wildfire, landslides, or floods. Reducing the hazard in the wildland urban interface requires the efforts of federal, state, local agencies, and private individuals (Norton 2002). "The role of [most] federal agencies in the wildland-urban interface includes wildland fire fighting, hazard fuels reduction, cooperative prevention and education and technical experience. Structural fire protection [during a wildfire] in the wildland urban interface is [largely] the responsibility of Tribal, state, and local governments" (USFS 2001). Property owners share a responsibility to protect their residences and businesses and minimize danger by creating defensible areas around them and taking other measures to minimize the risks to their structures (USFS 2001). With treatment, a wildland-urban interface can provide fire fighters a defensible area from which to suppress wildland fires or defend communities against other hazard risks. In addition, a wildland-urban interface that is properly thinned will be less likely to sustain a crown fire that enters or originates within it (Norton 2002).

By reducing hazardous fuel loads, ladder fuels, and tree densities, and creating new and reinforcing defensible space, landowners would protect the wildland-urban interface, the biological resources of the management area, and adjacent property owners by:

- minimizing the potential of high-severity ground or crown fires entering or leaving the area;
- reducing the potential for firebrands (embers carried by the wind in front of the wildfire) impacting the WUI. Research indicates that flying sparks and embers (firebrands) from a crown fire can ignite additional wildfires as far as 1¼ miles away during periods of extreme fire weather and fire behavior (McCoy *et al.* 2001 as cited in Norton 2002);
- improving defensible space in the immediate areas for suppression efforts in the event of wildland fire.

Four wildland-urban interface conditions have been identified for use in wildfire control efforts (Norton 2002). These include the Interface Condition, Intermix Condition, Occluded Condition, and Rural Condition. Descriptions of each are as follows:

- **Interface Condition** – a situation where structures abut wildland fuels. There is a clear line of demarcation between the structures and the wildland fuels along roads or back fences. The development density for an interface condition is usually 3+ structures per acre;
- **Intermix Condition** – a situation where structures are scattered throughout a wildland area. There is no clear line of demarcation, the wildland fuels are continuous outside of and within the developed area. The development density in the intermix ranges from structures very close together to one structure per 40 acres;
- **Occluded Condition** – a situation, normally within a city, where structures abut an island of wildland fuels (park or open space). There is a clear line of demarcation between the structures and the wildland fuels along roads and fences. The development density for an occluded condition is usually similar to that found in the interface condition and the occluded area is usually less than 1,000 acres in size; and

- **Rural Condition** – a situation where the scattered small clusters of structures (ranches, farms, resorts, or summer cabins) are exposed to wildland fuels. There may be miles between these clusters.

The location of structures in Latah County have been mapped and are presented on a variety of maps in this analysis document; specifically in Appendix I. The location of all structures was determined by examining two sets of remotely sensed images. The more detailed information was garnered from digital ortho-photos at a resolution of 1 meter (from 1998). For those areas not covered by the 1 meter DOQQ images, SPOT satellite imagery at a resolution of 10 meters was used (from 2002). These records were augmented with data collected on hand-held GPS receivers to record the location of structures, especially in areas where new housing developments were seen.

All structures are represented by a "dot" on the map. No differentiation is made between a garage and a home, or a business and a storage building. The density of structures and their specific locations in this management area are critical in defining where the potential exists for casualty loss in the event of a disaster in the region.

By evaluating this structure density, we can define WUI areas on maps by using mathematical formulae and population density indexes to define the WUI based on where structures are located. The resulting population density indexes create concentric circles showing high density areas of Interface and Intermix WUI, as well as Rural WUI (as defined by Secretary Norton of the Department of Interior). This portion of the analysis allows us to "see" where the highest concentrations of structures are located in reference to high risk landscapes, limiting infrastructure, and other points of concern.

It is critical to understand that in the protection of people, structures, infrastructure, and unique ecosystems, this portion of the analysis only serves to identify structures and by some extension the people that inhabit them. It does not define the location of infrastructure and unique ecosystems. Other analysis tools will be used for those items.

Figure 3.1. Wildland-Urban Interface in Latah County

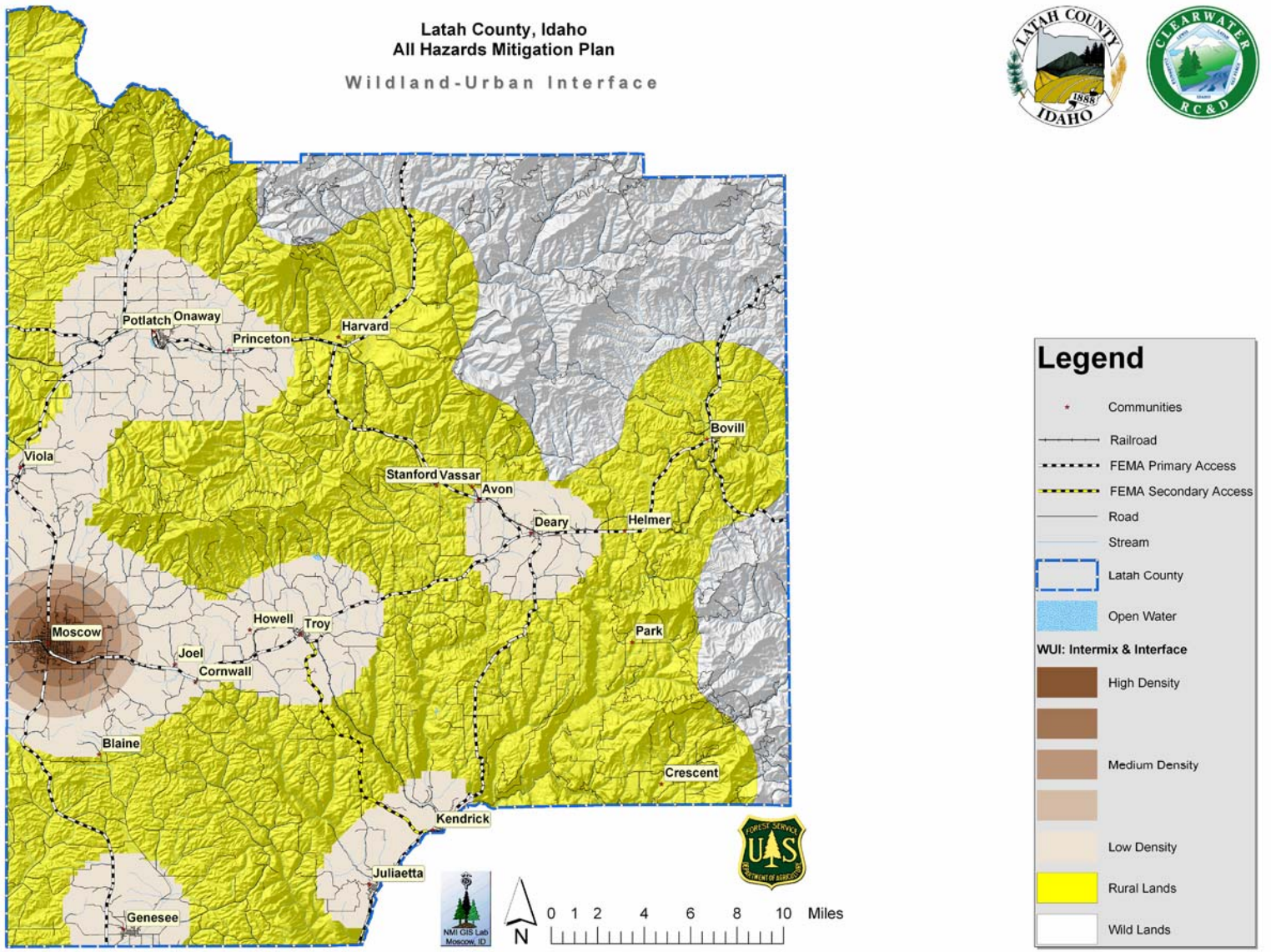


Figure 3.2. Topographic relief of Latah County, Idaho.

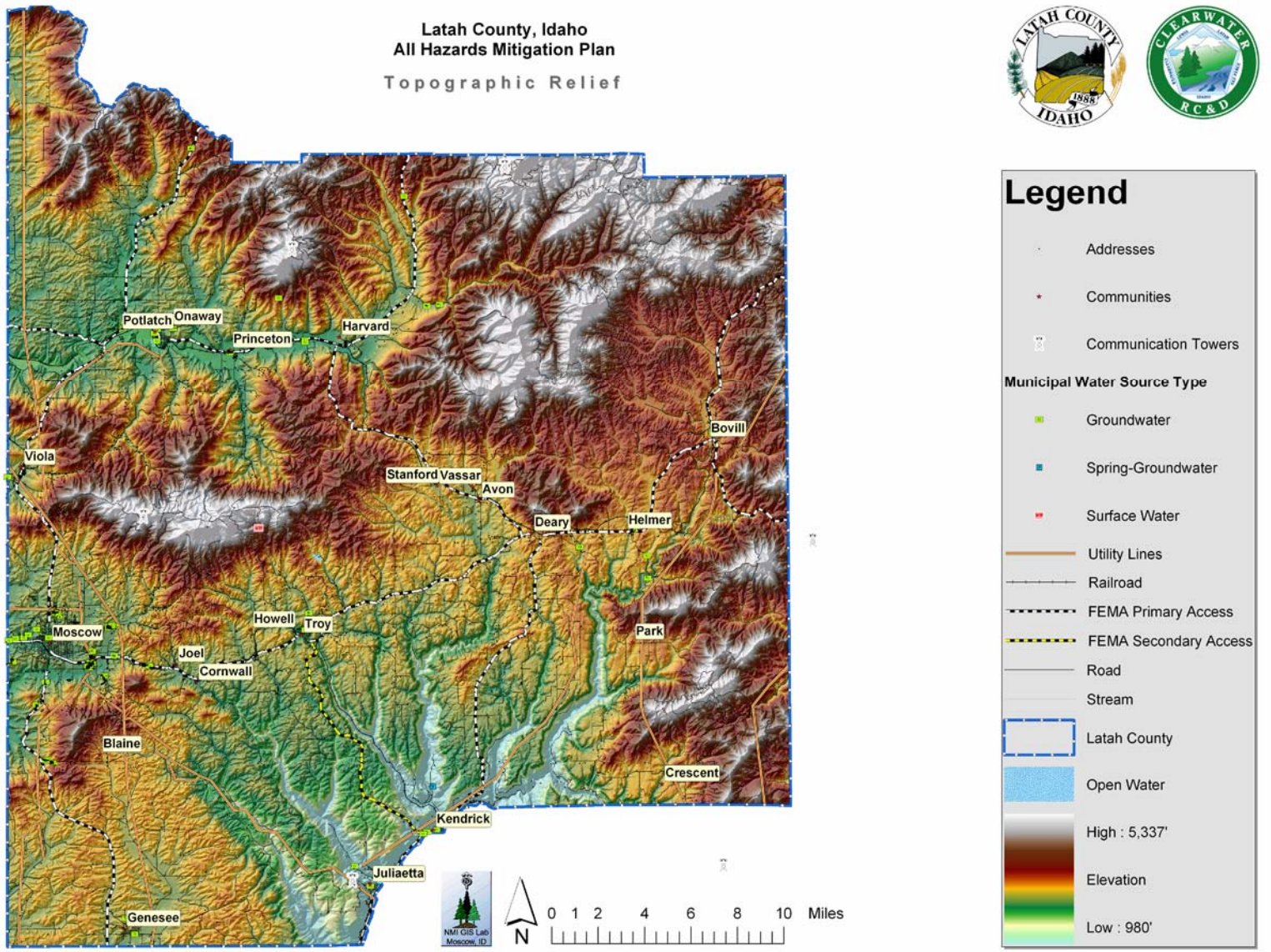
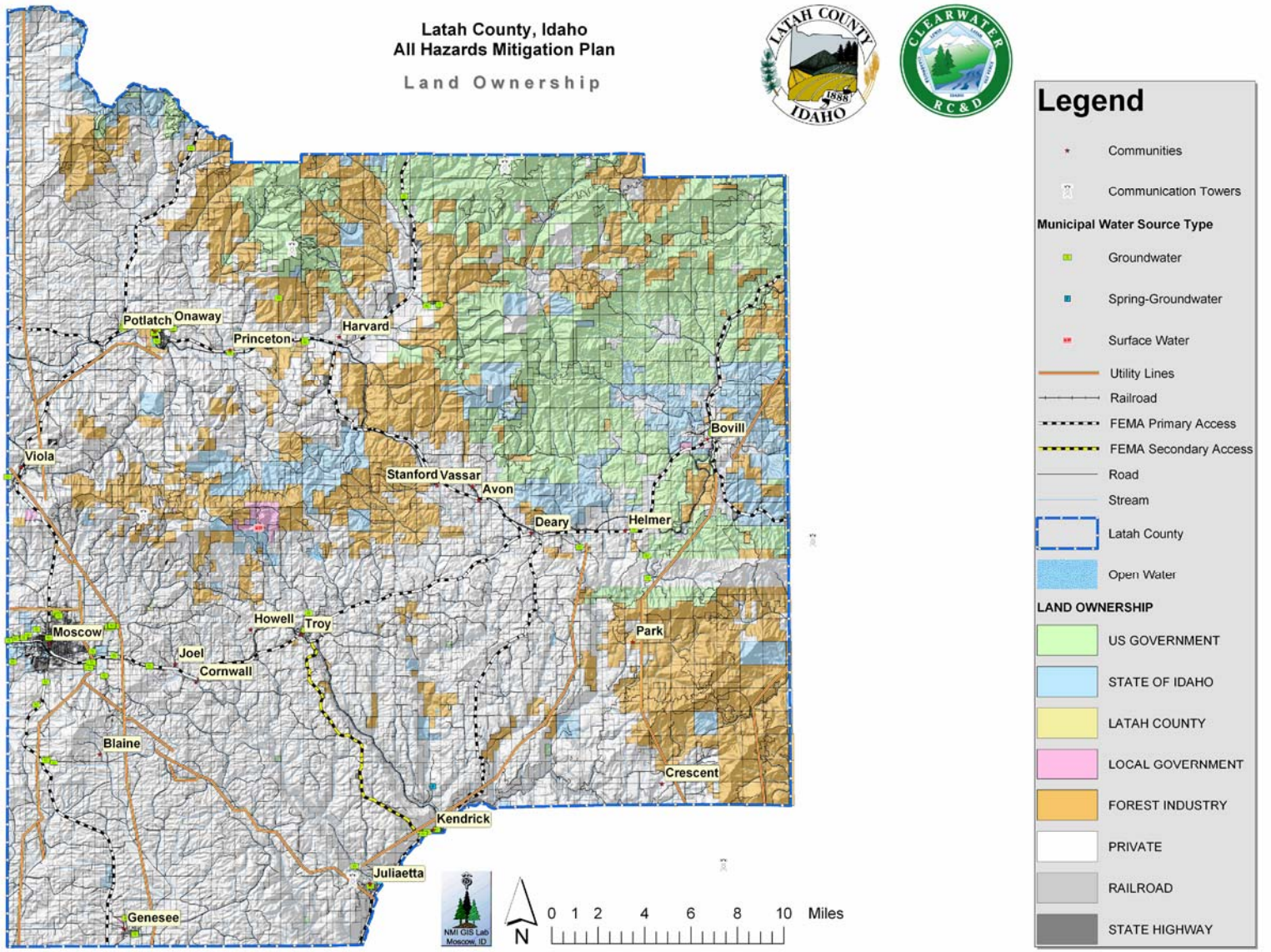


Figure 3.3. Land Ownership in Latah County.



3.11 Rural & City Fire Districts

Rural and city fire district personnel are often the first responders during emergencies. In addition to house fire protection, they are called on during wildland fires, floods, landslides, and other events. There are many individuals in Latah County serving fire protection districts in various capacities. The following is a summary of the departments and their resources.

3.11.1 Bovill Rural Fire Protection District

Bob Shook, Chief, Bovill, ID Phone: (208) 826-3220.

Bovill Rural Fire Protection District is a town based volunteer organization housed in a 1910 building, and is managed by the Chief who reports to three fire district commissioners. Bovill Rural Fire Protection District responds to structural and wildland. Bovill Rural Fire Protection District area is 6 square miles. Currently the incident capacity is one structural fire, as large as approximately 20,000 square feet. The recovery requirements is to refill water tanks, and fuel, and replace SCBA tanks (currently there is no way to refill locally), roll up water hoses and dry out equipment, go over procedures and check status of members involved.

Table 3.13 Bovill Rural Fire Protection District Bob Shook, Chief, Bovill, ID Phone: (208) 826-3220 11/03/02

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Very little training and/or experience	12	5	Need volunteer fire fighters with SCBA and Essentials of Fire Fighting training
	Intermediate Member	Some Essential Fire Fighting Training	2		
	Advanced Member				There are currently no advanced members.
Training	Basic Wildland Training	Red Card Standards			2 days training at state fire school
	Gas and Electrical				
	Hazmat				16 hours
	Basic Structural Training			18	
	FirstAid Training	Refresher Course		20	Provided by local EMT trainers
Protective Equipment	Shirts	Turnouts	10		
	Pants	Turnouts	10		
	Boots	Leather	10		
	Gloves	Leather	5	15	
	Hard Hats	Wildland Helmets		20	

Table 3.13 Bovill Rural Fire Protection District 11/03/02		Bob Shook, Chief, Bovill, ID Phone: (208) 826-3220			
	Goggles	Wildland Goggles		20	
	Oxygen Mask		1		
	First Aid Kits		4		
	Breathing Apparatus	SCBA	10	4	
Hand Tools	Shovels		10	5	
	Pike Poles		2		
	Hooligan Tool		1		
	Fire Extinguisher		6		
	Axes		2		
	Pulaski		5	5	
	Bars		5	10	
	Chainsaw	Pioneer	1	2	Need Newer/ any make
Communications	Radio	Motorola Sp 50	10		
	Mobile Units	Motorola		5	
	Base Station			1	
	Dispatch	Latah County Sheriffs Dispatch	1		
Vehicles	Brush Truck	1968 Kaiser 6x6 with 1500 gal tank and pump	1		
	Engine	1960 IHC pumper, 500 gpm	1		
	Tanker	1976 IHC tanker, 2000 gal tank, no pump	1		
Other Equipment	Portable Pump			1	
	Nozzel	2 ½”	2		
	Nozzel	1 ½”	4		
	Scuba Air Packs	MSA	10		
	Exhaust Fan	Ventury (portable)	1		
	Foam Equipment			1	

3.11.2 Deary Rural Fire District

Tim Jones, Chief, Deary, ID Phone: (208) 877-1271(H)

Deary Fire District is a volunteer organization housed in a 2 bay 50' x 100' station, with attached meeting hall and kitchen, and is managed by three elected fire district commissioners and a fire chief. Deary responds to structural and wildland fires. Currently the incident capacity is one single family incident, or a small grass fire and the recovery takes one to two hours.

Deary Rural Fire District has Mutual Aide Agreements with: Bovill, Troy, Moscow, Potlatch and IDL.

Table 3.14. Deary Rural Fire District.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Very basic training	13		Only 1 or 2 members are available during daytime hours
	Intermediate Member		4		3 or 4 members regularly attend the monthly training sessions provided
	Advanced Member				4 or 5 members are trained on SCBA
Training	Basic Wildland Training		5		Attendance at already provided training is poor
	Basic Structural Training		5		
	Basic SCBA Training		12		
	FirstAid Training		5		Certified EMT's trained as fire fighters
Protective Equipment	Shirts	Nomex	10	5	
	Pants	Nomex	10	5	
	Boots	Wildland Leather		15	
	Gloves	Leather	10	5	
	Hard Hats		10	5	
	Goggles	Wildland	10	5	
	Headlamps			15	
	Fire Shelters		2	13	
	Breathing Apparatus	SCBA	8		
Hand Tools	Shovels		8		
	Pulaski's		4		
	Swatters		2		
	McLeod Rake		2		
	Chainsaw	1995 Stihl	1		
	Chainsaw	2002 Stihl	1		
Communications	Mobile Radios	Motorola / Kenwood	10		
	Hand-held Radios	Motorola	15	5	
	Base Station	Motorola	1		
	Repeaters	Motorola	2	1	
	Dispatch	Latah County 911	1		24 hours 7 days a week
Vehicles	Water Tender	1985 Autocar 5000 gal	1		
	Structural Engine	2005 International 4x4 pumper, 1000 gal tank, 1500 gpm pump	1		
	Structural Engine	1970 Mack	1		

Table 3.14. Deary Rural Fire District.

	Item	Description	Existing	Needed	Details
	Wildland Engine	1970 6X6 Army Brush truck	1		
	Wildland Engine	1971 6X6 Army Brush truck	1		
	Wildland Engine	1977 Ford F-600 4X4	1		
	Quick Response	1995 Ford	1		
	Ambulance	2002 Ford / Wheeled Coach	1		
Other Equipment	Portable Pump	1993 Waterous Pressure	1		
	Portable Pump	2002 Waterous Volume	1		
	ATV	2005 Zodiak 4x4 ATV	1		
	Extrication Equipment	Holmatro spreader, cutter, ram, and air lifting bags	1		
	Foam Equipment	Foam injection brush	1		
	Foam Equipment	1995 Foam Injection (QRU)	1		

3.11.3 Genesee City and Rural Fire Department

Darrel Kilgore, Chief, Genesee, ID Phone: (208) 285-0144 (H)

Genesee Volunteer Fire Department is a volunteer organization housed in a 2 bay building, which stores 3 vehicles per bay, and is managed by board of directors comprised of the volunteers. The City of Genesee and the Genesee Fire District provides annual funding for the organization. Genesee responds to structural, agricultural, and vehicle fires. Currently the incident capacity is two single family incidents or one large incident and recovery takes one half hour to approximately one hour.

Table 3.15. Genesee City and Rural Fire Department.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	In-House training and equipment practice, not certified	25		
	Intermediate Member	Formal Training and certifications			Need volunteer EMTs that meet National Registry standards
	Advanced Member	Veteran and Nationally certified			Need paid or volunteer trainers for Structural, Wildland, and HazMat
Training	Basic Wildland Training				All aspects of wildland firefighting
	Basic Structural Training				Any and all aspects of structural fire review and training
	HazMat Training				Need volunteers to be certified for HazMat

Table 3.15. Genesee City and Rural Fire Department.

	Item	Description	Existing	Needed	Details
					incidences and situations.
Protective Equipment	Shirts	Nomex			
	Pants	Nomex			
	Turnouts	Full Turnout Suit	27	5	
	Boots	Wildland Leather			
	Gloves	Leather	27	10	
	Hard Hats				
	Goggles	Wildland			
	Headlamps				
	Fire Shelters		0	2	
	Breathing Apparatus	MSA	6	6	
	Breathing Apparatus	SCBA	6	6	
Hand Tools	Shovels		15	0	
	Pulaski's		8	0	
	Fire Swatter		1	9	
	Chainsaw	1985 Homelite	1	1	
Communications	Mobile Radios	Midland FM	5		
	Handheld Radios	Motorola Radius P 1225	20		
	Base Station	Station Radio	1		
	Repeaters	Moscow Mountain	1		
	Repeaters	McGary Butte	1		
	Dispatch	Latah County 911	1		24 hours 7 days a week
Vehicles	Structural Engine	1964 International Pumper 4X4	1	1	Need newer
	Wildland Engine	1983 Chevy 1 ton Brush Truck 4X4	1	1	
	Wildland Engine	1996 International Chief Series4X4	1		Rural truck
	Wildland Engine	1975 International 4X4	1	1	Rural truck
	Ambulance	1994 Ford E350 Type III	1		
	Water Truck		1		Available from local chemical/fertilizer companies in Genesee
	Dozer		1		Available from Roach Construction in Genesee
	Agricultural Tractors		1		Available from farmers
	Back hoe		1		Available from City of Genesee

Table 3.15. Genesee City and Rural Fire Department.

	Item	Description	Existing	Needed	Details
	Utility Vehicles	4X4	1		Personal vehicles are available
	Excavators with Thumb		1		Available from Roach Construction in Genesee
Other Equipment	Smoke Ejector	1999 Honda	1		
	Smoke Ejector	1965 Electric	1		
	Smoke Ejector	1968 Electric	1		
	Foam Equipment	Fire Foam 103	1	1	Mounted on truck
	Extrication	Holmatro Combi-Cutter Spreader	1		
	Portable Generator	4500 watt	1		
	Scene Lights		2	2	
	Air bags for lifting vehicles and debris		2	2	

3.11.4 Juliaetta Volunteer Fire Department

Mike McGee, Chief, Juliaetta, ID Phone: (208) 276-7022 (H)

Juliaetta Volunteer Fire Department is an all volunteer department of the City of Juliaetta. The response service area is the corporate City Limits of Juliaetta. The Juliaetta VFD responds to residential, commercial and industrial structural fires, motor vehicle accidents, HAZMAT Incidences and assists J-K Ambulance at their request. Current capacity is one incident at this time. Recovery time is approximately ½ to one hour.

Table 3.16 Juliaetta Volunteer Fire Department.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member		5	15	Fire Fighters Essential Training to achieve Fire Fighter Certification
	Intermediate Member		1	15	
	Advanced Member		1	15	
Training	Basic Wildland Training		0	15	
	Basic Structural Training		5	15	
	Incident Command (ICS)		5	15	
	Vehicle Extrication		5	15	
	HazMat		1	15	
	Basic Safety Training		1	15	
	Advanced Safety Training		5	15	
	FirstAid	Refresher Course	3	15	

Table 3.16 Juliaetta Volunteer Fire Department.

	Item	Description	Existing	Needed	Details
Protective Equipment	Bunker Gear	Structural	2	15	Balance of current bunker
	NFPA 1991				Gear purchased in 1982, in need of replacement
	Headlamps		0	15	In need of replacement
	Bunker boots	Structural	15	15	In need of replacement
	Helmets	Structural	2	15	Balanced purchased in 1982
	1 piece jump suits		0	15	
	Photo Ionization Detector (PID)		1	1	
	SCBA's	MSA	8	16	With space bottles
	Gloves	Leather	20	10	
	Nomex hoods		12	15	Existing hoods are short style; need long style
	Hard Hats	Wildland	0	15	
	Survivair		16	16	Near end of 15 year service life
	Goggles	Wildland	10	4	
	Fire Shelters		12		
Hand Tools	Shovels	#2 round nose, #2 flat nose	1	10	
	Pulaski's		2	15	
	Fire Swatters		0	5	
	Garbage Rake		0	2	
	Signal Whistles		0	15	
	Chainsaw	2004 Stihl 029	1	2	
	Fire Axes		3	0	
	McLeod's		0	1	
Communications	Mobile Radios	Motorola Radius CM 300	2	5	
	Portable Radio	Motorola T110 6 channel	4	0	Nearing end of service life
	Base Station	Motorola Radius CM 300	1	1	
	Pagers	Motorola minitor IV	10	15	
	Cell Phones		0	15	
	Bull Horn		0	1	
	County-wide Tactical Channel	Monitored and dispatched by Latah County	0		
	Laptop Computers	Wireless	0	1	
	Repeater		0	0	
	Dispatch	Latah County Sheriffs Department	1	0	911 System
Vehicles	Structural Engine	1956 Seagrave w/ 500 gallon tank, 1250 gpm pump	1	2	Current vehicle is 49 years old, parts are no longer available

Table 3.16 Juliaetta Volunteer Fire Department.

	Item	Description	Existing	Needed	Details
	Utility Vehicle	Dodge 1985 4x4 150 pickup	1	1	Out of service due to lack of funding for repairs
	Command vehicle		0	1	
	Quick Response Engine		0	1	
	Brush Truck		0	1	
Facility	Fire Station		1	1	Current facility inadequate due to small size (24x30 ft), no storage
Other Equipment	Float pump		0	2	
	1-3/4" structural hose		450'	600'	
	2-1/2" fire hose		2200'	2400'	Existing hose dates back to 1941
	Generator	Honda 3500 Watt minimum	0	1	
	Akron Foam Nozzles-induction system		0	1	
	Hallingon Tool		0	1	
	Scene lighting		0	many	
	Smoke ejector		1	0	
	Portable Pump		0	1	
	Power Cord		0	300'	

3.11.5 Kendrick Volunteer Fire Department

Val Norris, Chief, Kendrick, ID Phone: (208) 289-3066 (H)

Kendrick Volunteer Fire Department is a volunteer organization housed in a 4 bay building furnished by the city of Kendrick. It stores 1 fire vehicle and is managed by the fire department volunteers. The City of Kendrick provides annual funding for the organization. Kendrick responds to structural, agricultural, and vehicle fires in the town of Kendrick.

Table 3.17. Kendrick Volunteer Fire Department.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	In-house training and equipment practice, not certified	5	4	Additional members
	Intermediate Member	Formal training and certification	7	5	Remaining members need to be certified
	Advanced Member	Veteran and Nationally certified	0	1	Need a member of the department to be certified to train members in Fire Essentials.
Training	Basic Wildland Training	Wildland Basic Course	2	10	All aspects of wildland fire fighting.
	Basic Structural Training		7	5	Any and all aspects of structural fire review and training.
	HazMat		3	9	Need volunteers to be certified for the HazMat incidences and

Table 3.17. Kendrick Volunteer Fire Department.

	Item	Description	Existing	Needed	Details
					situations.
Protective Equipment	Helmets	NFPA Compliance	12	4	
	Wildland Shirts	Nomex	0	12	Perimeter wildland fire fighting
	Wildland Pants	Nomex	0	12	Perimeter Wildland fire fighting
	Flashlights	PPE	15	4	Need 4 large scene flashlights
	Turnouts	Full Turnout Suits	12	4	
	Gloves	Leather	15	5	
	Goggles	Wildland	0	12	
	Wildland Boots	Leather	0	12	
	Breathing Apparatus	SCBA	6 Scotts	6 Survivair	
	Air Bottles		32	20	
	Headlamps		0	12	
	Hardhats		1	11	
	Boots	PPE	15	4	
Hand Tools	Pulaski		6	4	
	Fire Swatter		0	4	
	Halligan Tool		0	1	Forcible Entry
	Piercing, Nozzle		0	1	
	Pike Pole		1	1	Additional equipment
	Chainsaw	2002 65 cc Stihl	1	1	
	Shovels		6	6	
Communications	Mobile Radio	Motorola 1225	1	1	
	Handheld Radio	3 Kenwood, 3 Motorola	6	12	Upgrade to Motorola 1250 w/ alpha numeric
	Pagers	Motorolas	5	7	Equip all personnel with pagers
	Repeaters	J-K & Moscow Mountain	1		
	Base Stations	Station radio and truck radio	2	0	
	Dispatch	Latah 911			24 hours a day, 7 days a week
Vehicles	Structural Engine	1974 American LaFrance 1250 gallon pump	1	1	
	Structural Engine	1000 gallon	0	1	Need newer backup and to meet water flows for the High School and other facilities in town.
	Dump Truck		1		Available from City of Kendrick
	Back hoe		1		Available from City of Kendrick
	Water Trucks		0	0	Available from local chemical/fertilizer companies in Kendrick
	Quick Response Vehicle		0	1	Quicker Response and use for extrication and wildland around the perimeter of the town

Table 3.17. Kendrick Volunteer Fire Department.

	Item	Description	Existing	Needed	Details
	Utility Vehicle	4x4	1		Personal vehicles available
Other Equipment	Positive Pressure Ventilation Fan		1	0	
	Water Curtain		0	2	To cool exposures
	Monitor	500 gpm	0	1	Cooling LP tanks in town and cooling exposures
	Portable generator	3000 Watt Honda Generator	1	0	
	Scene Lights		0	2 sets	Scene Lighting needed for fire truck
	Air bags		0	2	Lifting debris and assisting in extrication

3.11.6 Moscow Rural Fire District

Don Strong, Chief, Moscow, ID 229 Pintail Lane Phone: (208) 882-2831, Fax: (208)-882-5746

There is a Moscow Volunteer Fire Department and a Moscow Rural Fire Department. There is a great deal of overlap in the two departments in terms of response to fires, equipment and personnel within and outside the Moscow city limits. Many of the same personnel serve both organizations. All volunteers in Moscow Rural must first take structural fire suppression training before being eligible to join Moscow Rural. The Moscow Rural Fire District shares space with the Moscow Fire Department at 229 Pintain Lane and maintains its own station at 1420 White Avenue. Three elected fire district commissioners manage Moscow Rural. The Moscow Volunteer Fire Department administration is organized as a department of city management. The Chief is appointed by Moscow and serves as the Chief for both the Moscow Fire Department and Moscow Rural. The district and department respond to structural, wildland, agricultural, and vehicle fires. Currently the incident capacity is two incidents, one large and one small and the recovery takes approximately one hour.

Table 3.18. Moscow Volunteer Fire Department and Moscow Rural Fire District.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	All members have been trained beyond the Idaho State requirements for structural fires	25		Several members are Idaho State Certified Red Card fire fighters, other members do not meet red card standards for wildland fires.
	Trainer	Paid training officer with wildland fire certification and experience		1	
Training	Basic Wildland Training			25	Need additional wildland fire training.
	Basic Structural Training				Internal training provider
	HazMat Training				Internal training provider
	Basic Safety Training				Internal training provider
	EMT Training				Internal training provider

Table 3.18. Moscow Volunteer Fire Department and Moscow Rural Fire District.

	Item	Description	Existing	Needed	Details
	Weapons of Mass Destruction			25	
Protective Equipment	Shirts	Nomex	25	15	
	Pants	Nomex	25	15	
	Boots	Wildland Leather	15	10	
	Gloves	Leather	25	15	
	Hard Hats		25	10	
	Goggles	Wildland	25	15	
	Headlamps			30	
	Fire Shelters		20	10	
	Breathing Apparatus	SCBA	20	10	
	Fire fighter Day Packs		20	10	
	Hot Shield Fire Protector		20	10	
Hand Tools	Hose Clamps		4	6	
	Saw Chaps		3	3	
	McLeod	1995 Homelite Super e-Z Auto 16" bar	3	3	
	Chainsaw	2000 Stihl- 044 20" bar	2	3	
	Chainsaw	1989 Husqvarna - 272 20" bar	1		
Communications	Mobile Radios	Motorola; HT1000, P1225	25	10	
	Base Station		2	1	Located at White Ave. Station, and S. Main Station
	Repeaters		1		
	Dispatch	Moscow Police/Fire Dispatch	1		24 hours 7 days a week
Vehicles	Structural Engine	2002 Pierce/Kenworth 4X4 1250 gpm, Type 1 pumper, 1,000 gal tank, compressed air foam system	1		
	Structural Engine	1991 International Type 3	1		
	Structural Engine	1993 International 4X4, Type 1, 1,000 gpm, 750 gal tank, class A foam system	1		
	Wildland Engine	1973 Ford 4X4 Type 2 pumper 500 gpm, 750 gal tank		1	250 gpm pump and Class A compressed air foam system with 1000 gallon tank
	Wildland Engine	1995 Ford 1 ton 4X4 Type 6, 150 gpm, 300 gal tank, class A foam system	1		

Table 3.18. Moscow Volunteer Fire Department and Moscow Rural Fire District.					
	Item	**Description**	**Existing**	**Needed**	**Details**
	Wildland Engine	1995 Ford 1 ton 4X4 Type 6, 150 gpm, 300 gal tank, class A foam system	1		
	Wildland Engine	1989 International 4X4 2 1/2 ton Type 3, 300 gpm, 750 gal tank, class A foam system	1		
	Water Tender	2000 Freightliner, Type 2, 250 gpm, 3,500 gal tank	1		
	Water Tender	1991 Navistar 4X4, Type 3, 350 gpm, 1,800 gal tank	1		
	Water Tender	1962 White 4X4, Type 3, 350 gpm, 1,500 gal tank	1		
	Pickup	4X4 Crew Cab	1		
Other Equipment	Drip Torch			6	
	Portable Pumps	300 gpm portable pumps	3		
	Portable Tank	Folding water tanks with frame, 1,500 gal	3		One is a 3500 gallon tank and the other two are 2000 gallons a piece.

3.11.7 Troy Rural Fire District

Ron Stearns, Chief, Troy, ID Phone: (208) 835-2427 (H)

Troy Volunteer Fire Department is a volunteer organization housed in 30' x 100' building with a 30' x 30' meeting/office area upstairs, and is managed by a board of directors. The City of Troy and the fire district own the equipment and building. Both the city and district provide annual operating funds for the volunteer department. The district mill levy does not apply to city residents. Troy responds to structural, agricultural, and wildland fires. Currently the incident capacity is one single structure or one medium sized wildland fire and the recovery takes one half hour to approximately one hour.

Troy Volunteer Fire Department has Mutual Aide Agreements with Deary Rural Fire District.

Table 3.19 Troy Volunteer Fire Department

Ron Stearns, Chief, Troy, ID Phone: (208) 835-2427 (H) 11/15/02

	Item	**Description**	**Existing**	**Needed**	**Details**
Personnel	Basic Member	Less than one year on the department	3	0	
	Intermediate Member	One to Five years on the department	10	0	
	Advanced Member	Over Five years of experience	14	0	
Training	Basic Wildland Training		15	12	
	Basic Structural Training		17	10	

Table 3.19 Troy Volunteer Fire Department
Ron Stearns, Chief, Troy, ID Phone: (208) 835-2427 (H) 11/15/02

	HazMat Training		20	7	
Protective Equipment	Shirts	Nomex	30		
	Pants	Nomex	30		
	Turnouts	Full Turnout Suit	30		
	Boots	Wildland Leather	15		
	Gloves	Leather	30		
	Hard Hats		30		
	Goggles	Wildland	30		
	Headlamps			30	
	Fire Shelters		0	0	
	Breathing Apparatus	SCBA	12		
Hand Tools	Chainsaw	1989 Stihl	1		
	Chainsaw	1997 Stihl	1		
Communications	Radios	Motorola	35		
	Base Station	Motorola	1		
	Repeaters	SAR. Moscow Mtn.	1		
	Dispatch	Latah County 911	1		24 hours 7 days a week
Vehicles	Structural Engine	1969 Crown	2		
	Wildland Engines	1985 GMC G30 1 ton	1	1	
	Wildland Engines	1976 International 1600 1 1/2 ton	1		
	Water Tender	1976 International 1850 2 ton 750 gal	1		
	Water Tender	1984 MAC 4,000 gal	1		
	Agricultural Tractors				As available from farmers
	Ambulance	2004 F-350	1	1	
Other Equipment	Foam Equipment		2		Installed on two trucks

3.11.8 Potlatch (Palouse Valley) Rural Fire District

Gary Nagle, Chief, Potlatch, ID Phone: (208) 875-0571 (H)

Potlatch Rural Fire District is a volunteer organization housed in a single story building, and is managed by three elected fire district commissioners. Potlatch responds to structural, agricultural, industrial, and vehicle fires. Currently the incident capacity is one single family incident or two small grass fires and the recovery takes one half hour to approximately one hour.

Potlatch Rural Fire District has Mutual Aide Agreements with: Palouse, WA, Moscow Fire District, Farmington, WA, Deary Rural Fire District, Idaho Department of Lands, and Bennett Lumber Fire Department.

Table 3.20. Potlatch (Palouse Valley) Rural Fire District.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Up to approx. 40 hours of training/experience	6		9 Additional Ambulance crew members are also trained.
	Intermediate Member	From 40 - 150 hours of training/experience	18		3 members are Idaho State Certified Red Card fire fighters
	Advanced Member	Over 150 hours of training/experience			
Training	Basic Wildland Training				Beginning for some members/ refresher for others
	Basic Structural Training				Beginning for some members/ refresher for others
	HazMat Training				Beginning for some members/ refresher for others
Protective Equipment	Shirts	Nomex	10	5	
	Pants	Nomex	10	5	
	Turnouts	Full Turnout Suit	30		
	Boots	Wildland Leather		15	
	Gloves	Leather	10	5	
	Hard Hats		10	5	
	Goggles	Wildland	10	5	
	Headlamps				
	Fire Shelters				
	Breathing Apparatus	SCBA	6	6	
Hand Tools	Shovels		12	20	
	Pulaski's		6	20	
	Chainsaw	1995 Homelite Super e-Z Auto 16" bar	1	1	
	Chainsaw	2002 Stihl 021 18" bar	1	1	
Communications	Mobile Radios	Sheriff's primary	4		
	Mobile Radios	Search and Rescue	7		
	Mobile Radios	Hospital	3		
	Portable Radios	Search and Rescue	16	15	
	Base Station	Search and Rescue	1		At fire station
	Dispatch	Latah County 911	1		24 hours 7 days a week
Vehicles	Structural Engine	1986 Grumman International Pumper 4X4 1,000 gpm, 1,000 gal tank	1		
	Structural Engine	1995 International 4X4 500 gpm,	1		Used for Structural and

Table 3.20. Potlatch (Palouse Valley) Rural Fire District.

	Item	Description	Existing	Needed	Details
		1,000 gal tank			Agricultural
	Structural Engine	2001 International 4X4 500 gpm, 1,000 gal tank	1		Used for Structural and Agricultural
	Agricultural Engine	1952 GMC 6X6 200 gpm 1,000 gal tank	1		
	Quick Response	Crew Cab, 1 ton, cabinets for equip. 200 gpm, 300 gal tank, with hose reel		1	
	Water Tender/Tanker	300 gpm, 3,000 gal tank, with hose reel		1	
Other Equipment	Foam Equipment	Low expansion gun	1		
	Foam Equipment	High expansion gun	1		
	Foam Equipment	1995 Foam unit	1		On truck
	Blower	1997 Unifire power blower, model DS-3P4 18", 22,000 CFM	1	1	
	Extrication	Holmatro Spreader and Squeezer 3260 UL		1	
	Hose	1" soft wildland 1,000 ft hose		1	

3.12 Wildland Fire Districts

3.12.1 USDA Forest Service – Palouse Ranger District

Tom McWilliams, Potlatch, ID Phone: (208) 875-1131

Palouse Ranger District is a federal based organization that has protection responsibilities for wildland fire, although the Palouse Ranger District is active in fuel management programs, they are not responsible for suppression in the District. The District is protected by the Idaho Department of Lands, based in Deary, and Clearwater-Potlatch Timber Protection Agency based in Elk River. They have a fire cache on each Forest Service compound.

Table 3.21. Palouse Ranger District - USDA Forest Service.

	Item	Description	Existing	Details
Personnel	Crew	A crew exists of about 20 people		
Protective Equipment	Shirts	Nomex	60	
	Pants	Nomex	60	
	Gloves	Leather	60	
	Hard Hats		30	
	Goggles		30	
	Headlamps		30	
	Fire Shelters		40	
	Breathing Apparatus		N/A	
Hand Tools	Shovels		30	
	Pulaskis		30	
	Chainsaw	36	13	
	Chainsaw	44	13	
Communications	Hand Held Radio	King Model GPH	11	

Table 3.21. Palouse Ranger District - USDA Forest Service.

	Item	Description	Existing	Details
	Base Station	In office	2	
	Dispatch	Grangeville Dispatch	1	24 hours 7 days a week
Vehicles	Wildland Engine	Ford 750 gal	1	
	Wildland Engine	Chevrolet 300 gal	1	
	Pickup 4X2	1997 6 Passenger	3	
	Pickup 4X4		3	
Other Equipment	Drip Torch	Propane	30	
	Terra Torch		1	

3.12.2 Idaho Department of Lands – Ponderosa Fire Protection District

Roger Kechter, Fire Warden Phone (208)-877-1121

Ponderosa Fire Protection District is a state based organization with protection responsibilities for forested lands in most of Latah and the northern most part of Nez Perce County. Forest land in the eastern most portion of Latah County is protected by the Clearwater-Potlatch Timber Protection Association out of Orofino and Elk River. There is a 50 person fire cache at the Ponderosa FPD office.

Table 3.22. Idaho Department of Lands-Ponderosa Fire Protection District.

Equipment Type	Size	Year	Make	Model	Capacity
18 Chainsaws	Various	1982-2002	Stihl	032 to 046	20" to 28" Bars
ATV	350 cc	1988	Yamaha	Big Bear	
ATV	350 cc	1997	Yamaha	Big Bear	
ATV	350 cc	1999	Yamaha	Big Bear	
ATV	600 cc	1999	Yamaha	Grizzly	14 Gal.
ATV	400 cc	1999	Yamaha	Kodiak	
ATV	400 cc	2001	Yamaha	Big Bear	
Crew-Cab	1 T 4X4	1993	GMC	3500	
Crew-Cab	1 Ton 4X4	1995	Chevrolet	3500	
Engine	Type 6 4X4	1968	Jeep	M-715	200 Gal.
Engine	Type 4 4X2	1996	Ford	F-700	650 Gal.
Engine	Type 6 4X4	1992	GMC	3500	200 Gal.
Engine	Type 5 4X4	2000	Ford	F-550	500 Gal.
Pickup	1/2 Ton 4X4	1991	GMC	1500	
Pickup	1/2 Ton 4X4	1994	GMC	1500	
Pickup	1/2 Ton 4X4	1994	GMC	1500	
Pickup	1/2 Ton 4X4	1996	Dodge	1500	
Pickup	1/2 Ton 4X4	1997	Chevrolet	1500	
Pickup	1/2 Ton 4X4	1999	Chevrolet	1500	
Pickup	1/2 Ton 4X4	1999	Chevrolet	1500	
Pickup	1/2 Ton 4X4	1999	Chevrolet	1500	

Table 3.22. Idaho Department of Lands-Ponderosa Fire Protection District.

Equipment Type	Size	Year	Make	Model	Capacity
Pump	1 1/2 Inch	1989	Wajax-Pacific Mark III	Pressure	83 GPM
Pump	1 1/2 Inch	1990	Wajax-Pacific Mark III	Pressure	83 GPM
Pump	1 1/2 Inch	1971	Gorman Rupp	Pressure	55 GPM
Pump	1 Inch	1991	Shindaiwa GP-25	Mini	37 GPM
Pump	2 Inch Volume	1990	Homelite	Volume	170 GPM
Pump	1 1/2 Inch Volume	2002	Honda	Volume	106 GPM
Slip-in Pump			Simms Tank/WA-7 Pump		100 Gal.
Slip-in Pump			Simms Tank/Eco Pump		50 Gal.
Snowmobile		1990	Ski-Doo	Tundra	
Snowmobile		1990	Ski-Doo	Tundra	
Tank, Portable			Fold-a-Tank	Self Supporting	1800 Gal
Tank, Portable			Aluminum		2800 Gal
Trailer	Utility				1 Ton
Trailer	Snowmobile	1990	Trac-Pac		
Trailer	ATV	1990	Homemade		1/4 Ton

3.12.3 Clearwater-Potlatch Timber Protective Association – Elk River Area

Howard Weeks, Fire Warden, Phone: (208) 476-5612

Table 3.23. Clearwater-Potlatch Timber Protective Association-Elk River Area.

	Item	Description	Existing	Details
Protective Equipment	Shirts	Nomex	53	
	Pants	Nomex	46	
	Hard Hats	Wildland	10	
	Goggles	Wildland	5	
	Headlamps		50	
	Fire Shelters		16	
Hand Tools	Shovels		96	
	Pulaski's		78	
	McLeod's		22	
	Combination		10	
	Chainsaw	Stihl 046	2	
	Chainsaw	Stihl 064	5	
Communications	Mobile Radios	King	4	
	Mobile Radios	Phoenix	2	
	Mobile Radios	Uniden	2	
	Portable Radios	King	10	
	Portable Radios	King	8	

Table 3.23. Clearwater-Potlatch Timber Protective Association-Elk River Area.

	Item	Description	Existing	Details
	Base Station	King	4	
	Repeaters		2	
Vehicles	Wildland Engine	6X6, Type 4	4	
	Wildland Engine	1971 Gamma Goat,	3	
	Wildland Engine	3/4 ton, Type 7	4	
	Dozer	1963 Cat D-6	1	
	Backhoe	Case	1	
	ATV	Yamaha	2	
Other Equipment	Drip Torch		5	
	Propane Torch		6	
	Portable Pump	Mark III	2	
	Portable Pump	1 ½" Homelite	6	
	Portable Pumps	1" Homelite	2	
	Portable Pumps	BB4	2	
	Portable Pumps	3" Homelite	3	

3.13 Additional Entities with Fire Suppression Capabilities

3.13.1 Bennett Lumber Fire Department

Brett Bennett, Chief, Princeton, ID Phone: (208) 875-1121.

Bennett Lumber Fire Department is a company based organization housed on the Bennett Lumber mill site, and is managed by the privately owned company's board of directors. Bennett Lumber Fire Department responds to structural, wildland, and saw mill fires. Currently the incident capacity is two or three small wildland fires, or one large fire.

Bennett Lumber Fire Department has mutual aide agreements with Potlatch Rural Fire Department and Idaho Department of Lands.

Table 3.24. Bennett Lumber Fire Department.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Red Card Certified	20		Also have additional support of approximately 7 other members
Training	Fire Behavior	S-290 training course	0	All personnel	
	Urban Interface	S-215 training course	0	All personnel	
	Crew Boss		1	2	
Protective Equipment	Boots	Leather	15	5	
	Gloves		15	5	
	Goggles			25	
	Headlamps			20	
	Fire Shelters		15	5	
	Breathing Apparatus	151 SCBA 4500 PSI	10		

Table 3.24. Bennett Lumber Fire Department.

	Item	Description	Existing	Needed	Details
	Breathing Apparatus	Survivair SCBA 2250 PSI	12		
Hand Tools	Pulaski		25		
	Combi Tools		15		
	McLeod		15		
	Rakes		10		
	Chainsaw	1998 Stihl 066	2		
	Chainsaw	1999 Stihl 044	5		
	Chainsaw	1999 Stihl 036	3		
Communications	Hand-held Radio	Motorola HT1000 16 Channel	10	10	
	Base Station	Uniden Base	1		
	Repeaters	Uniden	1		Moscow Mountain
	Repeaters	GE	1		Puffer Butte
	Repeaters	Motorola	1		Elk Butte
	Dispatch	2-3 Trained Staff	1		Bennett Lumber, Princeton, Idaho
Vehicles	4 X 4 Pickup	3/4 Ton Chevrolet	1		
	Water Tender	1995 Peterbuilt 4000 gal.	1		
	Water Tender	1965 Mack 3000 gal	1		
	Water Tender	1990 Chevrolet 2000 gal	1		
	ATV	1998 Honda 4-Wheeler	1		
	ATV	1999 Honda 4-Wheeler	1		
	ATV	1998 Yamaha 4-Wheeler	2		
	Shop Truck	1998 Chevrolet ¾ Ton	1		
	Fuel Truck	1998 Chevrolet ¾ Ton	1		
	Truck	1998 Peterbuilt	2		
	Structural Engine	1995 Peterbuilt 378/ Tender Engine	1		
	Wildland Engine	1997 Type 6	1		
	Wildland Engine	1990 Type 6	1		
	Wildland Engine	2001 Type 6	1		
	Wildland Engine	1999 Type 5	1		
Other Equipment	Dozer	Caterpillar D7E	1		
	Dozer	Caterpillar D5H	1		
	Backhoe	1978 Case 580	1		

Table 3.24. Bennett Lumber Fire Department.

Item	Description	Existing	Needed	Details
Backhoe	1998 Caterpillar 416C4E	1		
Lowboy	1997 Aspen 65 ton	1		
Helicopter	Bell 206B	1		
Trailer	Trailmax 20 ton	1		
Trucks	1997 - Tractors for Trailers	1		
Portable Pump	1975 Overhead Truck fill	1		
Portable Pump	1999 Honda 650 6pm	1		
Drip Torch		8		
4-Wheeler mounted Torch		3		
Hose	5" LDH 650'	1		
Hose	2 1/2" Truck Hose, 4000'	1		
Hose	1 1/2" Attack Hose 4000'	1		
Hose	1" Forestry Hose 2500'	1		
Hose	3/4" Mop up Forestry 3500"	1		

3.13.2 North Latah Fire District – Farmington

Jerry Wagner, Chief, Farmington, WA Phone: (509) 287-2343

The Farmington Volunteer Fire Department provides the second station for Whitman County Fire District No. 10. It is the primary responder to fires in the North Latah Fire District which contracts annually with Whitman County Fire District No. 10 for the service. It has 24 members. Incident capacity is two single-family dwellings and two 25 acre wildland fires. Recovery time is one hour.

Table 3.25. North Latah Fire District-Farmington.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Minimum 40 hours	10	10	More hours and experience needed
	Intermediate Member	150 hours	9	9	Continued training needed
	Advanced Member	Special training	1	1	FirstAid and CPR
Training	Basic Wildland Training	80 hours	8	8	
	Basic Structural Training	20 hours	12	12	
	HazMat Training	None	None	None	
Protective Equipment	Shirts	Nomex	None	None	
	Pants	Nomex	None	None	

Table 3.25. North Latah Fire District-Farmington.

	Item	Description	Existing	Needed	Details
	Turnouts	Full Turnout Suit	20	2	Includes boots, pants, coat and hat
	Boots	Wildland Leather	2	None	
	Coats		6		
	Gloves	Leather	None	None	
	Hats	N/A	6	N/A	
	Goggles		5		
	Headlamps		N/A	None	
	Fire Shelters		N/A	None	
	Breathing Apparatus	Air packs	7	None	
Hand Tools	Shovels		11	None	
	Pike Pole		4	None	
	Axes		10	None	
	Chainsaw	Stihl 034	1	None	
Communications	Portable Radios	Kenwood	9	1	
	Base Station	Midland	1	1	
	Repeater	Steptoe Butte	1	1	
	Dispatch	Whitcom	1	None	24 hours 7 days a week at Washington State University
Vehicles	Structural Engine	1936 Ford	1		
	Wildland Engine	1957 International	1		
	Wildland Engine	1971 International	1		
	Wildland Engine	1976 International	1		
Other Equipment	Air Bottles		9		
	Gas Mask		1		
	Foam Bucket		5		

3.13.3 North Latah Fire District – Oakesdale

Joe Fox, Chief, Oakesdale, WA Phone: (509)285-5055.

Oakesdale is one of two stations in the Whitman County Fire District No.10, which is managed by three fire district commissioners. The Oakesdale station serves as an additional resource for the Farmington Volunteer Fire Department when fire suppression is necessary for the North Latah County Fire District. It has 23 members, responds to structural, agricultural, and wildland fires and emergency medical calls. Incident capacity at one time is 2-25 acre wildland fire. Recovery takes about 11/2 hours.

Table 3.26. North Latah Fire District-Oakesdale.

	Item	Description	Existing	Needed	Details
Personnel	Basic Member	Minimum 40 hours	10	10	More hours and experience
	Intermediate Member	200 hours	10	10	More hours and experience

Table 3.26. North Latah Fire District-Oakesdale.

	Item	Description	Existing	Needed	Details
	Advanced Member	Special training	2	2	FirstAid and CPR
Training	Basic Wildland Training	100 hours	10	10	
	Basic Structural Training	20 hours	10	10	
	HazMat Training	None	None	None	
Protective Equipment	Shirts	Nomex	None	None	
	Pants	Nomex			
	Turnouts	Full Turnout Suit	25	None	
	Boots	Wildland Leather	5	5	
	Gloves	Leather	10	10	
	Hard Hats		25	5	
	Goggles	Wildland	10	5	
	Headlamps		2	2	
	Fire Shelters		0	2	
	Breathing Apparatus	SCBA	8	5	
Hand Tools	Shovels		9	5	
	Pike Pole		2	4	
	Axes		4	4	
Communications	Portable Radios	Motorola SP 50	10	5	
	Portable Radios	Kenwood	4	2	
	Portable Radios	Midland	4	4	
	Mobile Radios	Motorola, Midland	5	2	
	Base Station	Midland	1		
	Repeater	Steptoe Butte	1		
	Dispatch	Whitcom	1		24 hours 7 days a week at Washington State University
Vehicles	Structural Engine	1965 Int. American LaFrance 750 gpm	1	1	
	Wildland Engine	1957 International Brush 1000gal tank	1	1	
	Wildland Engine	1972 International 4X4 Attack 1,200 gal tank	1	1	
	Wildland Engine	1990 International Attack 1,200 gal tank	1	1	
	Ambulance	1984 Chevrolet 4X4 Squad Suburban	1		
	Water Trucks	Available from local chemical companies	3		
Other Equipment	Winch	200 foot winch mounted on 1990 Engine	1		

3.14 All Hazards Event Profile

Table 3.27 lists many of the hazards experienced in Latah County between 1984 and 2003. This table is a useful reference when looking at the individual hazard sections.

Table 3.27. Hazard Incidents in Latah County from 1984 – 2003.

Date	Incident
3/7 – 10/03	6-12 inches of snow fell in Latah County; Troy and Genesee schools closed; Snowstorm causes 16 accidents in Latah County, six were in Moscow
2/03	Minor small stream flooding in county
1/30/04	Disaster declaration declared due to drought conditions experienced on the Palouse
9/9/03	Funnel cloud, Burnt Ridge Road NE of Troy
12/02/02	Bovill and Elk River without power for 10 hours, Deary out for 8 hours
10/21/02	20-acre grass and brush wildfire east of Kendrick High School
10/21/02	Prescribed burn fire on Hatter Creek Road
10/20/02	Chimney fire in Troy
10/18/02	Wildfire between Troy and Kendrick
08/12/02	20-acre field and timber fire north of Harvard near Big Creek Road
5/02/02	SW Winds 25-35 mph with gusts over 45 mph in Moscow
4/22/02	Winds 25-35 mph with gusts over 50 mph in Moscow
4/15/02	Flooding near Bovill; Heavy rain and winds cause power outages
4/14/02	Moscow wind advisory, winds of 30 mph and gusts of 45 mph expected
3/7/02	Snow causes numerous minor vehicle accidents, including vehicle slide-offs and non-injury collisions in Latah County
2/28/02	Parts of Moscow without power for 2 hours & 15 mins; animal tripped off part of power grid
2/24/02	Flooding of roadways, these include: State Highway 9 at Flat Creek, State Highway 6 east of Princeton and Kennedy Ford Road west of Potlatch
2/21/02	High wind advisory for Latah County, winds of 40 to 60 mph with gusts of 75 mph or greater
2/08/02	Winds 20-40 mph in Latah County; Bovill-Deary, Genesee, Troy, Moscow, Potlatch and Juliaetta-Kendrick school districts closed; roads and highways experiencing white outs due to blowing snow
2/8/02	Highway 6 near Palouse and portions of State Route 270 between Pullman and Moscow closed due to snow; 5 slide-offs occurred in Latah County
2/4/02	15 cars slide off Latah County roads due to slick roads
1/31/02	9” of snow fell in Moscow; Juliaetta-Kendrick School District run 2 hours late
1/25/02	Weather related power outages in Bovill, Deary; Bovill-Deary school district closed
1/12/02	Moscow wind advisory, winds of 25-35 mph with gusts of 50 mph
12/14/01	Moscow wind advisory, 20-30 mph winds with gusts up to 45 mph
12/5/01	Snow causes 8 traffic accidents in Latah County
11/29/01	8” of snow in Moscow; 16 traffic accidents in Latah County
11/26/01	4-6” snow in higher elevations of Latah County, 2” in Moscow; numerous non-injury traffic accidents reported in Latah County
10/23/01	High winds in Moscow and Latah County; large tree fell across state highway 6, 2 miles E of Harvard
9/26/01	Storm damage causes UI, parts of Pullman and Moscow, to be without power for almost 8 hrs
07/12/01	Small grass fire south of Moscow on U.S. 95

Table 3.27. Hazard Incidents in Latah County from 1984 – 2003.

Date	Incident
06/27/01	UI Wood Utilization Laboratory Fire
2/11/01	Freezing roads cause head-on collision between car and semi-tractor on U.S. Hwy95S, no serious injuries.
1/18/01	4 separate accidents occurred on state Highway 8 and U.S. Hwy95 due to slick roads
12/15/00	Hwy 95S from Moscow to Lewiston closed for several hrs; snow & wind gusting up to 60mph; schools closed & numerous accidents
11/27/00	Queen Road apartment fire; two apartments damaged
8/3/00	Bovill disaster declaration; water shortage due to undetectable water leaks, malfunctioning well & pump, & low water levels in storage facilities
7-10/00	Fire Season 2000; $36,875 est. for repairs & replacing equipment
07/18/00	UI Alumni Residence Center fire
6/00	Hanford fire
2/17/00	Juliaetta/Kendrick substation malfunction, 4 hrs & 50 min
1/11/00	High winds collapsed construction frame of Sears building in Moscow
1/11/00	1”-2” snow reported in Moscow
12/16/99	Heavy snow & rain; power outages and Whitepine School Dist closed
9/25/99	40 - 50mph with gusts nearing to 60mph; varied power outages from 2 - 7 hrs
8/22/99	Dry lightning storm in Bovill area
2/26/99	McGary Grade approx 1 mi east of Juliaetta
2/99	Minor small stream flooding in county
1/14/99	50+mph winds in Moscow
12/28/98	Bovill disaster declaration; vacant home leaking 1000 gallons of water per minute
12/28/98	Three small slides on Hwy 99
12/28/98	Bovill disaster declaration; water shortage due to vacant home leaking water at rate of 1000 gallons per minute, 4 other homes found to be leaking as well; city reservoir drained; reserves of water down from 95,000 gallons to 25,000 gallons
12/28/98	Bovill without water & declared state of emergency; sporadic power outages throughout the county
12/17/98	Moscow mobile home destroyed by fire
12/98	Winter storm, heavy rain, flooding in county
11/10/98	Deary - more then a foot fell in 3 hrs
7/10/98	Lightning sparks fires; 60mph winds down tree limbs and power lines
5/15/98	Slide wipes out home in Juliaetta; 2 injured
4/23/98	80mph winds, 2" size hail; struck power line; county-wide warning fanout issued
4/23/98	80mph, 2" hail; SO issued countywide fanout warning
2/12/98	Kitchen fire causes $2500 in damage to Moscow duplex; $2500
12/11/97	Moscow house fire; fire started in basement; basement gutted from smoke and water damage; one minor injury
11/24/97	Two floor Moscow home destroyed by fire after flammable materials ignite in basement
10/30/97	Power pole on fire near Moscow substation
10/17/97	Small grass fire in Moscow on Robinson Park Road
8/3/97	Spectacular lightning storm; run of small grass fires
7/29/97	Bovill, Deary, Helmer & Elk River transmission line down almost 8 hrs
7/21/97	Lightning & winds; SO initiated county-wide warning; Genesee really being dumped on (1 - 1.25" of rain in 15 min)

Table 3.27. Hazard Incidents in Latah County from 1984 – 2003.

Date	Incident
7/9/97	Crop duster clips power line; 150 Moscow Mountain-area residents without power for an hour
7/2/97	Wind, rain, hail storm in Moscow area; Power pole down north of U.S. Hwy95, 50-100 homes without power
6/28/97	U of I Science Lab fire; some chemicals in room
4/12/97	Fire damages Moscow home
3/28/97	Fire damages Moscow home on Lund Lane
2/21/97	Fire destroys Moscow area home on Idlers Rest Road
2/20/97	Eight block area of south Moscow without power; pole fire
1/22/97	Snowfall varied from 9 - 14" throughout the county; Moscow & Genesee schools closed with others starting 1 - 2 hrs late; numerous accidents & some power outages
12/96 & 1/97	Severe flooding; disaster declaration
12/24/96	Snow = 4 - 6"
12/20/96	Snow = 3 - 8"
12/5 /96	Heavy snowfall with 20 - 30mph winds; some schools closed or running late; Bovill had 15", Deary had 10" & the rest of the county averaged 3 - 6"
11/18/96	Snow = 1 - 14"; some power outages
9/16/96	Fecal bacteria found in mobile home park south of Moscow
9/13/96	10-year lightning/thunder event; small fires
9/7/96	Moscow apartment fire
9/4/96	UI Residence Halls and Palouse Empire Mall without power for several hours; Chip truck snagged wire, pulling down two power poles.
8/7/96	Moscow home heavily damaged by fire
6/27/96	150 Moscow homes lose power for 4 ½ hours; large tree branch fell on power line
5/17/96	Lightning bolt blasted cannonball size hole in roof of Moscow home; small fire
5/16/96	Funnel cloud, Eastman SE of Tomer
4/9/96	Fire burns roof off of Moscow area home
3/25/96	UI Sauna fire; $10,000 in damages
2/26/96	Moscow Hotel fire; no injuries or serious damages
1/29/96	Over the weekend had 8 - 12" throughout the county; schools closed or running late; power outages
1/21/96	Bovill (7:00pm - 11:05 am) and Deary (approx 5 hrs); main transformer
8/23/95	Six homes in Indian Hills area of Moscow without power for 8 hrs; underground cable and transformer failure
8/10/95	NW section of Moscow without power for 30 mins; utility truck pulled down power pole
7/31/95	Moscow power failure, courthouse/jail and surrounding 5-6 block area without power for one hour; tree trimming contractor felled a tree on power transmission line in Moscow
7/7/95	Wind, lightning storm with gusts up to 60 mph; power outages, main power line for Latah County courthouse and radio repeater for MPD knocked out; trees knocked over
12/23/94	Car hits gas pump, causes fire at Go Farther Gas station in Moscow
8/5/94	High fire danger with hot temps
5/17/94	Heavy rain; unexpected flooding & mudslide Hwy 6 east of Potlatch
5/17/94	Hwy 6 approx 2 mi east of Potlatch closed
7/3/93	Mudslide kills two on State Hwy 3 outside of Juliaetta
6/2/93	Killer mudslide (Juliaetta); 2 fatalities
6/2/93	Juliaetta mudslide

Table 3.27. Hazard Incidents in Latah County from 1984 – 2003.

Date	Incident
4/29/93	Erosion causes slide on Elk Creek Road
2/3/93	UI residence hall fire
1/4/93	Total snowfall near 30"; schools closed or running late; many roads closed
10/14/92	Drought disaster designation declared for Latah County
7/21/92	Flash rain storm
6/26/92	Lightning sparked first major forest fire of season in county; almost 30 acres
6/12/92	Lightning, hail & wind; Deary residents said it was the worst storm in their history
6/12/92	Wind and rain storm in Bovill, Deary; Deary, power outages and winds blew roofs off two buildings; Bovill, falling trees damaged two homes; Residents of Deary called it worst storm in town's history
10/91	Fire storm
9/13/91	Fire destroys Zephyr Apartments in Moscow; two dozen people homeless; one firefighter injured and sent to hospital
7/25/91	Lightning storm; minimal damage
7/10/91	Lightning storm killed 3 horses near Potlatch; caused several power failures in the county
5/2/91	Funnel cloud near Genesee
1/14/91	Melting snows; minor flooding
1/29/90	Winds of 40 - 50mph; minor damage
1/29/90	Maximum gusts 79mph; Bovill, Deary and Elk River without power 4:00am - 10:30am
1/8/90	Winds as high as 86mph with gusts up to 107mph; at least 1 family left homeless; $1 million est. damage; $100,000 est. damage at U of I
3/10/89	Ice jams; minor flooding
4/7/88	Fecal coliform found in City of Moscow water
7/13/87	Fire destroys century-old farmhouse two miles south of Moscow on U.S. Hwy95; family of 11 left homeless
6/16/87	Wind, lightning, rain storm in Moscow; Gusts up to 40 mph; some power outages, water backup on Jackson Street
5/22/86	Major windstorm with tornado hit Troy
5/14/86	60 - 70mph; some power outages and damage
2/24/86	Melting snow, heavy rain, minor flooding
2/18/86	Heavy wet snow SE of Moscow, 2:00am - 10:15am
2/7-11/85	Snow drifts as high as 8 - 10' spreading across sections of Hwy 95; most schools closed or running late; Moscow-Pullman Airport closed til late am; drivers advised to stay home; one of the worst winter storms to hit in 10 yrs
1/14/85	Moscow chimney fire
1/7/85	Dec snowfall heavier then usual, 29.9" at U of I in 1 month
12/14/84	2 apartment fires in Moscow
11/19/84	UI Poultry Barn fire; overheated hydraulic oil started fire

Chapter 4: Floods

4 Flood Characteristics

Floods have been a serious and costly natural hazard affecting Idaho. Floods damage roads, farmlands, and structures, often disrupting lives and businesses. Flooding occurs when water leaves the river channels, lakes, ponds, and other confinements where we expect it to stay. Flood related disasters occur when human property and lives are impacted by that flooding water. An understanding of the role of weather, runoff, landscape, and human development in the floodplain is therefore the key to understanding and controlling flood-related disasters.

Natural flood events are grouped into three general categories:

> **Riverine Flooding:** a rise in the volume of a stream until that stream exceeds its normal channel and spills onto adjacent lands.
>
> **Flash Flooding:** results from high water velocity in a small area but may recede relatively quickly.
>
> **Ice/Debris Jam Flooding:** floating debris or ice accumulates at a natural or man-made obstruction and restricts the flow of water.

The most commonly reported flood magnitude measure is the "base flood." This is the magnitude of a flood having a one-percent chance of being equaled or exceeded in any given year. Although unlikely, "base floods" can occur in any year, even successive ones. This magnitude is also referred to as the "100-year Flood" or "Regulatory Flood" by State government.

The areas adjacent to the channel that normally carries water is referred to as the floodplain. In practical terms, the floodplain is the area that is inundated by flood waters.

In regulatory terms, the floodplain is the area that is under the control of floodplain regulations and programs (such as the National Flood Insurance Program which publishes the FIRM maps). Idaho State Code defines the floodplain as:

> *"That land that has been or may be covered by floodwaters, or is surrounded by floodwater and inaccessible, during the occurrence of the regulatory flood."*

4.1 History

Latah County has experienced a long history of high magnitude floods since first recorded in 1897, typically by "50 and 100-year" levels. The diverse landscape and weather patterns within Latah County are the triggers for those high magnitude floods. Rain-on-snow events and above normal high spring temperatures are very typical throughout the county in the spring and late winter. The combination of the above two events are devastating and can cause extraordinary flooding events.

January thru February 1996 - The third week of January 1996 brought large amounts of low elevation snow, especially in the panhandle where weather stations measured an additional 10 inches of snow to the existing snowpack. By the end of January, sites in the north had as much as 2-1/2 feet of snow on the ground. During the last week of January temperatures dropped into the single digits for highs and below zero for lows. This caused ice to form on many of the rivers where low temperatures were in the 20 to 30 degree below zero range. On February 6, a warning was issued indicating that temperatures were warming up, that snow was becoming wet and dense, and that although the mainstream rivers were not showing a response, there

was still a good potential for flooding. By the 7th, the Boise National Weather Service began receiving reports of small stream flooding in the area east of Lewiston including small tributaries to the Clearwater River. Preliminary assessments indicated the most severe impacts were to infrastructure and housing, with approximately 708 family dwelling units affected. Damage to public property, not counting federal highways, was estimated at approximately $12.9 million. A Major Disaster declaration for Benewah, Bonner, Boundary, Clearwater, Kootenai, Latah, Lewis, Nez Perce, and Shoshone Counties was signed by Governor Batt on February 10, 1996, and by President Clinton the following day.

December 1996 thru February 1997 - During the middle to late December, 1996 and January and February of 1997, above normal snowfall occurred in Northern and Western Idaho. A warm, moist current of air from the subtropics (known locally as the "Pineapple Express") arrived in Idaho, dumping warm rain on melting snow. The result was widespread flooding, power outages, landslides, road closures, and structure damage from crushing snow loads. Riverbank erosion and landslides filled the rivers with thick silt and debris. Large sections of the highway system were damaged or destroyed, isolating several communities for days. Mountain snowpacks in the late winter were holding more than one and a half times the amount of water normally held in the mountain snow, at that time of year.

Snowfall was well above average in the Latah and other northern Idaho counties, sometimes exceeding twice the design snowloads of buildings. There was substantial damage to several schools and other public and private structures throughout the State. The aftermath resulted in over $7 million in damages and over $6 million in clean-up, recovery and restoration costs.

4.1.1 Chronology of 1996-1997 Flood Events in Latah and Surrounding Counties

December 25th – Unseasonably heavy snowfall begins throughout the north, central, and southwestern Idaho causing localized power failures and road closures, particularly in sparsely populated rural and mountain areas. Warming conditions and continued heavy rainfall create a rapid melting of the snow pack and heavy runoff. The weight of heavy snow causes structural damage to many structures.

December 26th – The National Weather Service issues a Winter Storm Watch for Central and Northern Idaho. Bonner and Nez Perce Counties are issued Disaster Declarations.

December 27th – The National Weather Service upgrades the Watch to a Winter Storm Warning for all of Northern Idaho, for 6-12 inches of snow.

December 29th – The National Weather Service issues a Winter Storm Warning for Northern Idaho for up to 10 inches of new snow.

December 30th – Boise and Shoshone Counties are issued Disaster Declarations as a result of snow. Flooding occurs in Greer, Clearwater County, isolating two families.

December 31st – Idaho State Police report a high possibility of flooding in Lewiston, Nez Perce County, with 20 inches of snow on the ground. **Latah County is issued a Disaster Declaration.** A Small Stream Flood Warning is issued by Emergency Management Systems for northern counties of Benewah, Bonner, Boundary, Kootenai, Shoshone, **Latah**, Lewis, and Nez Perce. The National Weather Service issues a Flood Warning for the South Fork of the Palouse River with impact in Benewah, **Latah**, and Lewis Counties.

January 2nd – Thirteen Idaho counties and four cities have issued Disaster Declarations and eighty families have been displaced. National Weather Service forecast indicates decreasing rain and lowering of freeze level to 3000 feet by 1/3.

January 4th – The president signs a Declaration for disaster assistance, DR-1154-ID, for Individual Assistance, and Categories A and B under the Public Assistance Program. Thirteen counties are designated: Adams, Boise, Bonner, Boundary, Clearwater, Elmore, Gem, Idaho, Latah, Payette, Shoshone, Valley, and Washington. All rivers are receding and recovery efforts are underway in flooded areas.

January 10th – Locations of five disaster Recovery Centers are determined, on fixed (Payette) and four mobile (Sandpoint/Kellogg, **Moscow**, Council, Cascade, and Lowman/Garden Valley).

January 22nd – The Presidential Declaration is amended to add Benewah and Kootenai Counties for Individual Assistance and Categories A and B under the Public Assistance Program. In addition, Adams, Bonner, Boundary, Clearwater, Elmore, **Latah**, Nez Perce, Payette, Shoshone, Valley, and Washington Counties have Categories C through G and Hazard Mitigation and Public Assistance (no Individual Assistance).

4.2 Weather

Winter weather conditions are the main driving force in determining where and when base floods will occur. The type of precipitation that a winter storm produces is dependent on the vertical temperature profile of the atmosphere over a given area. Idaho experiences riverine flooding from two distinct types of meteorological events:

- spring runoff and
- winter rain/snowmelt events

The major source of flood waters in Idaho is normal spring snow melt. As spring melt is a "natural" condition, the stream channel is defined by the features established during the average spring high flow (bank-full width). Small flow peaks exceeding this level and the stream's occupation of the floodplain are common events.

Unusually heavy snow packs or unusual spring temperature regimes (e.g., prolonged warmth) may result in the generation of runoff volumes significantly greater than can be conveyed by the confines of the stream and river channels. Such floods are often the ones that lead to widespread damage and disasters. Floods caused by spring snow melt tend to last for a period of several days to several weeks, longer than the floods caused by other meteorological sources.

Floods that result from rainfall on frozen ground in the winter, or rainfall associated with a warm, regional frontal system that rapidly melts snow at low and intermediate altitudes (rain-on-snow), can be the most severe. Both of these situations quickly introduce large quantities of water into the stream channel system, easily overloading its capacity.

On small drainages, the most severe floods are usually a result of rainfall on frozen ground but moderate quantities of warm rainfall on a snow pack, especially for one or more days, can also result in rapid runoff and flooding in streams and small rivers. Although meteorological conditions favorable for short-duration warm rainfall are common, conditions for long-duration warm rainfall are relatively rare. Occasionally, however, the polar front becomes situated along a line from Hawaii through Oregon, and warm, moist, unstable air moves into the region. Most winter floods develop under these conditions, as was the case with the northern Idaho floods of 1996 (IBHS 2004).

In general, the meteorological factors leading to flooding are well understood. They are also out of human control, so flood mitigation must address the other contributing factors.

4.3 Topography

The nature and extent of a flood event is the result of the hydrologic response of the landscape. Factors that affect this hydrologic response include soil texture and permeability, land cover and vegetation, land use and land management practices. Precipitation and snow melt, known collectively as runoff, follow one of three paths, or a combination of these paths, from the point of origin to a stream or depression: overland flow, shallow subsurface flow, or deep subsurface ("ground water") flow. Each of these paths delivers water in differing quantities and rates. The character of the landscape will influence the relative allocation of the runoff and will, accordingly, affect the hydrologic response.

Unlike precipitation and ice formation, steps can be taken to mitigate flooding through manipulation or maintenance of the floodplain. Insufficient natural water storage capacity and changes to the landscape can be offset through water storage and conveyance systems that run the gamut from highly engineered structures to constructed wetlands.

Careful planning of land use can build on the natural strengths of the hydrologic response. Re-vegetation of burned slopes diverts overland flow (fast and flood producing) to subsurface flow (slower and flood moderating). Details on rehabilitating burned areas to reduce flash floods, debris flows and landslides can be found in the Landslide section of this document.

4.4 Development

Floods generally come with warnings and flood waters rarely go where they are totally unexpected by experts. Those warnings are not always heeded, though, and despite the predictability, flood damage continues.

The failure to recognize or acknowledge the extent of the natural hydrologic forces in an area has led to development and occupation of areas that can clearly be expected to be flooded on a regular basis. Despite this, communities are often surprised when the stream leaves its channel to occupy its floodplain. A past reliance on structural means to control floodwaters and "reclaim" portions of the floodplain has also contributed to inappropriate development and continued flood-related damages.

Unlike the weather and the landscape, this flood-contributing factor can be controlled. Development and occupation of the floodplain places individuals and property at risk. Such use can also increase the probability and severity of flood events (and consequent damage) downstream by reducing the water storage capacity of the floodplain, or by pushing the water further from the channel or in larger quantities downstream.

4.5 Latah County Flood Profile

All three types of flood events occur in Latah County. Riverine flooding occurs along all tributaries to the Potlatch and Palouse Rivers. The mountainous terrain of the Palouse creates a flood-prone environment. Rain-on-snow events can and do occur at almost all elevations across the county. These events often contain enough moisture to cause flooding on the Potlatch and the Palouse Rivers and most of its major tributaries in the county. In general these flood events can be predicted 24 to 72 hours in advance of the rising waters. Emergency plans that are in place can be executed, before flood waters overtop the river channel, minimizing loss of life, and business disruption. Plans for reducing structural damage need to be put into place and executed long before the rain begins to fall and the snow begins to melt.

The Palouse is a diverse combination of moderate to steep sloped forests, rolling grain fields, river gorges and canyons. When rain-on-snow events occur in this area, the run off tends to

come off the entire watershed at the same time, quickly filling all channels that flows off the area.

On the Palouse summer thunderstorms can result in flash flooding of specific smaller drainages. Often there is little time to react to the quickly rising waters. Due to the nature of the terrain within the Palouse, localized flooding from thunderstorms tends to be more of a storm drainage problem for many communities. Short term blockage of roads is usually the biggest impact as drainage structures are overwhelmed by the amount of water.

Ice/debris flows occur as part of riverine and flash flooding, usually exacerbating the effects of those types of flood events. In a case of a fire or heavy logging activity, flash flooding can result do to the loss of vegetation that usually intercepts some of the waters velocity flowing downhill. Details on reducing the effects of these types of debris flows can be found in the landslide chapter.

Figure 4.1. FEMA Flood Zones and land ownership in Latah County.

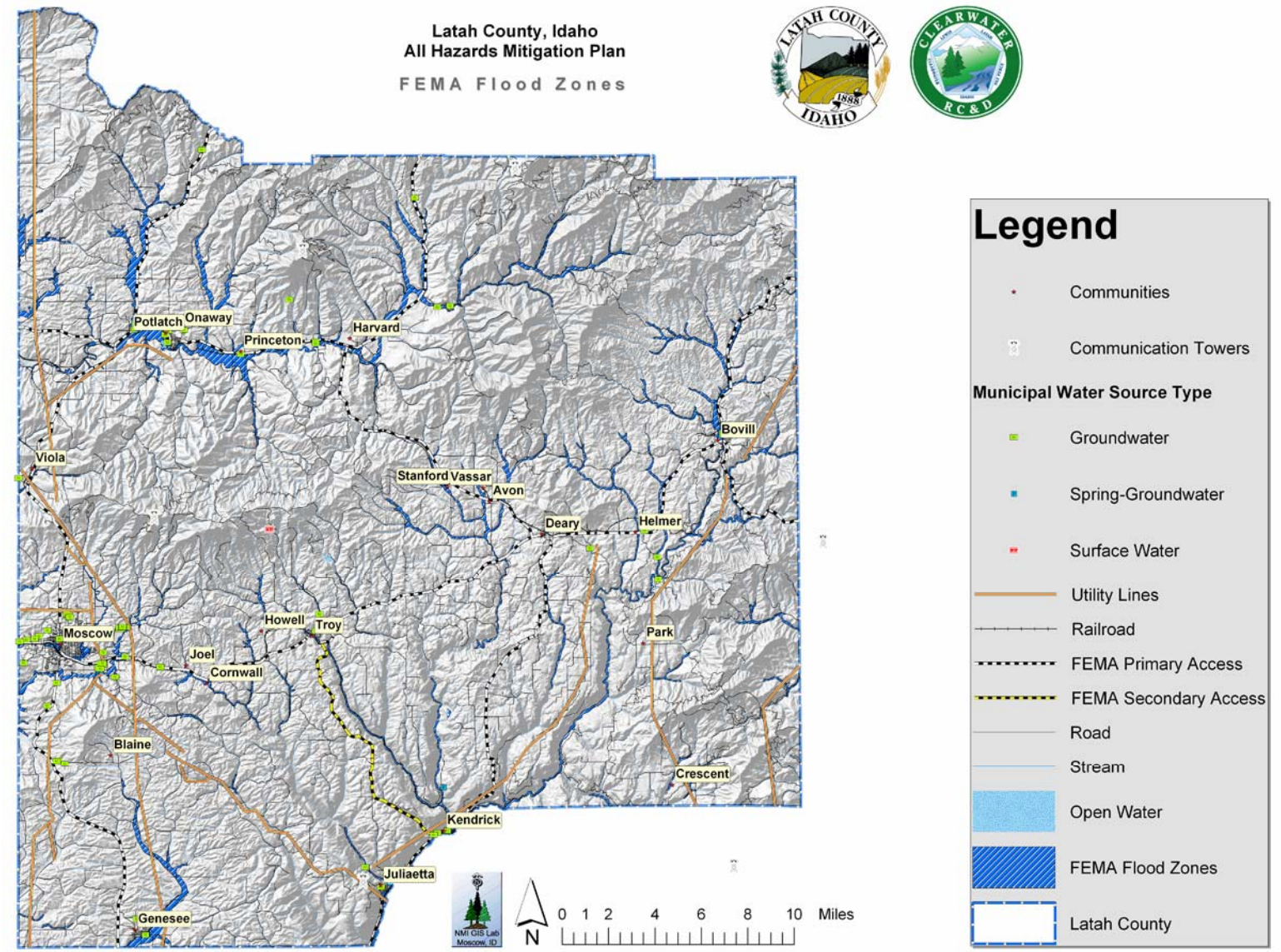


Figure 4.2. FEMA Flood Zones and land ownership surrounding Potlatch – Harvard.

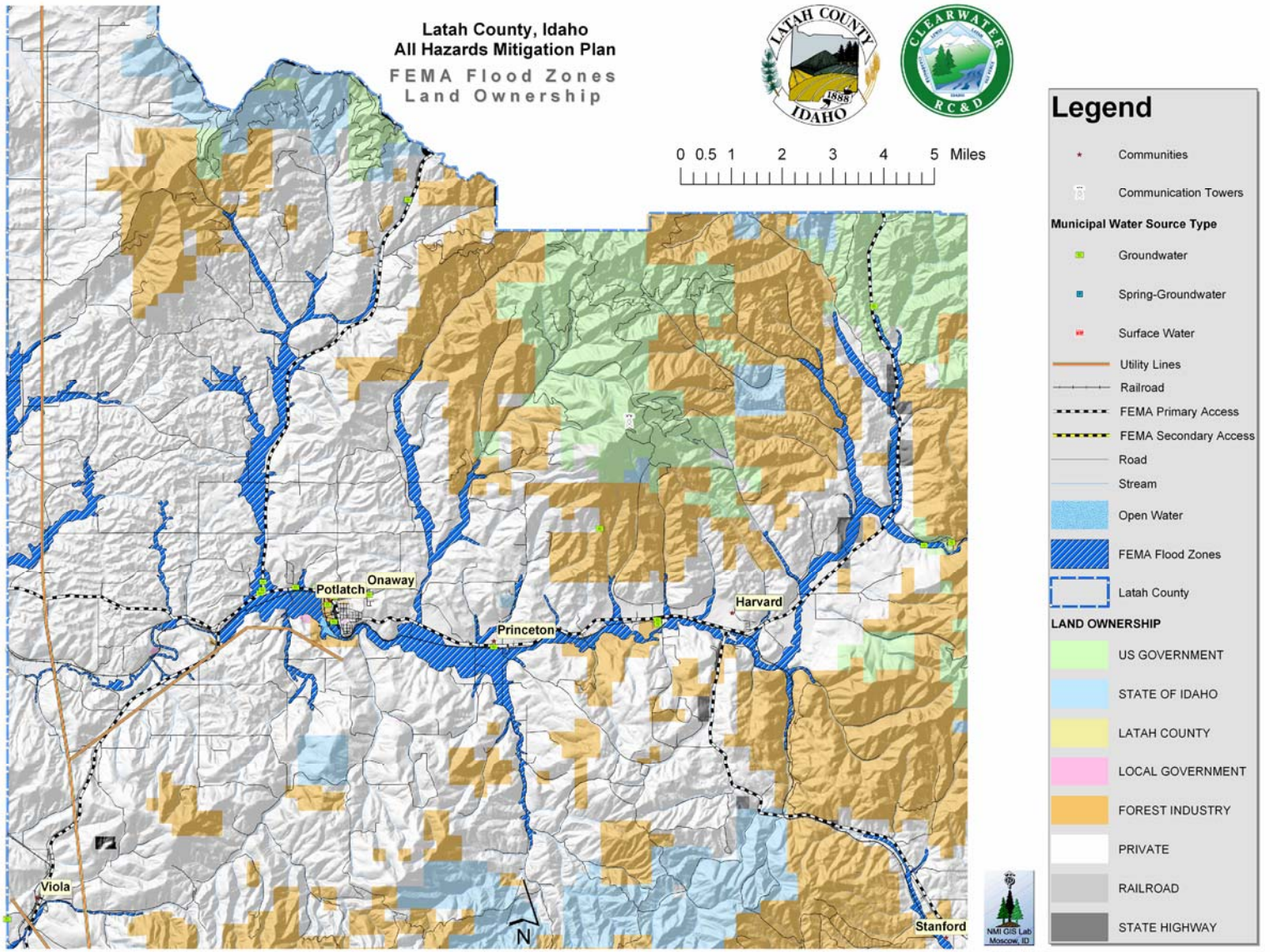


Figure 4.3. FEMA Flood Zones and land ownership surrounding Moscow – Troy – Kendrick.

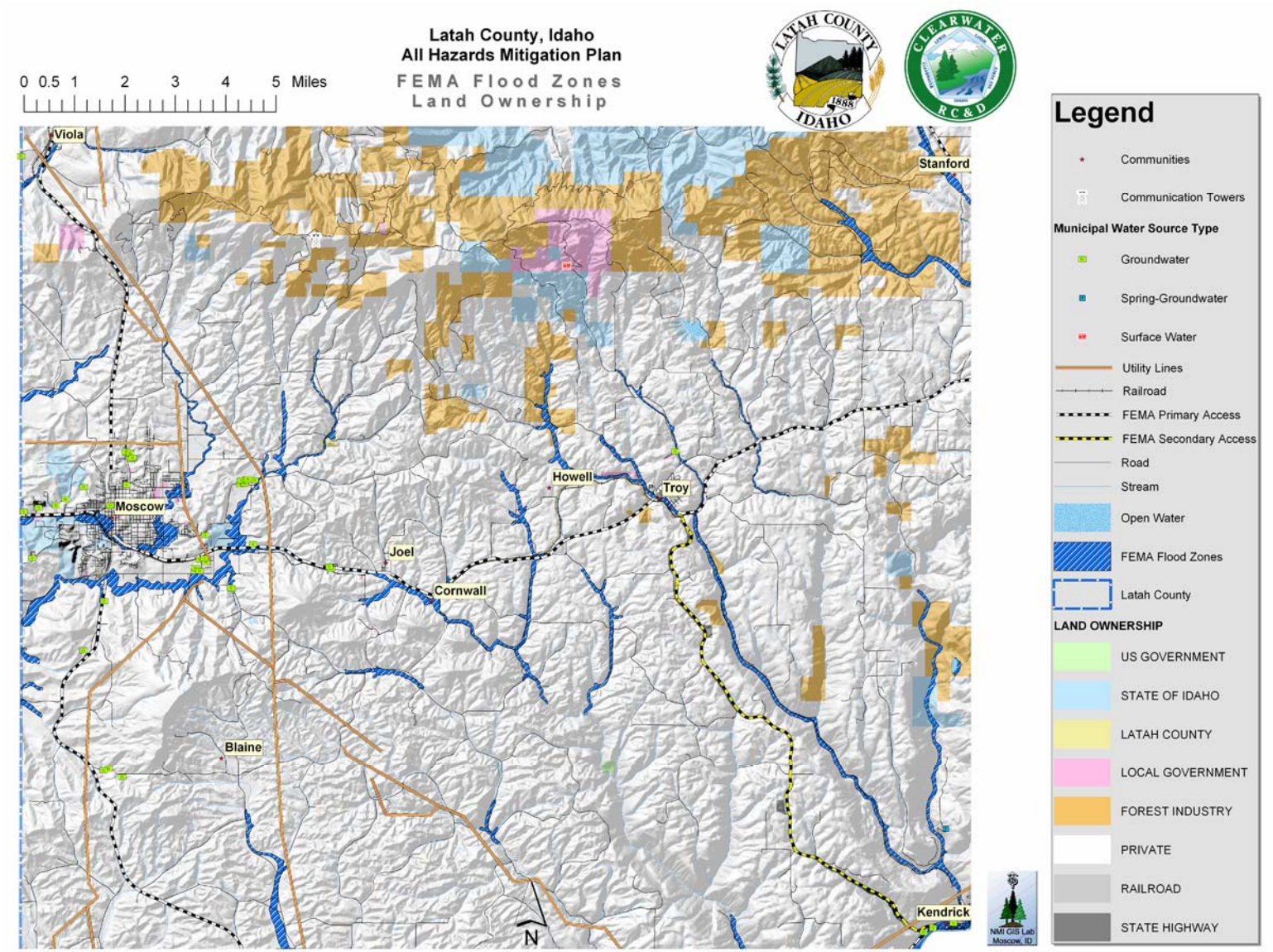
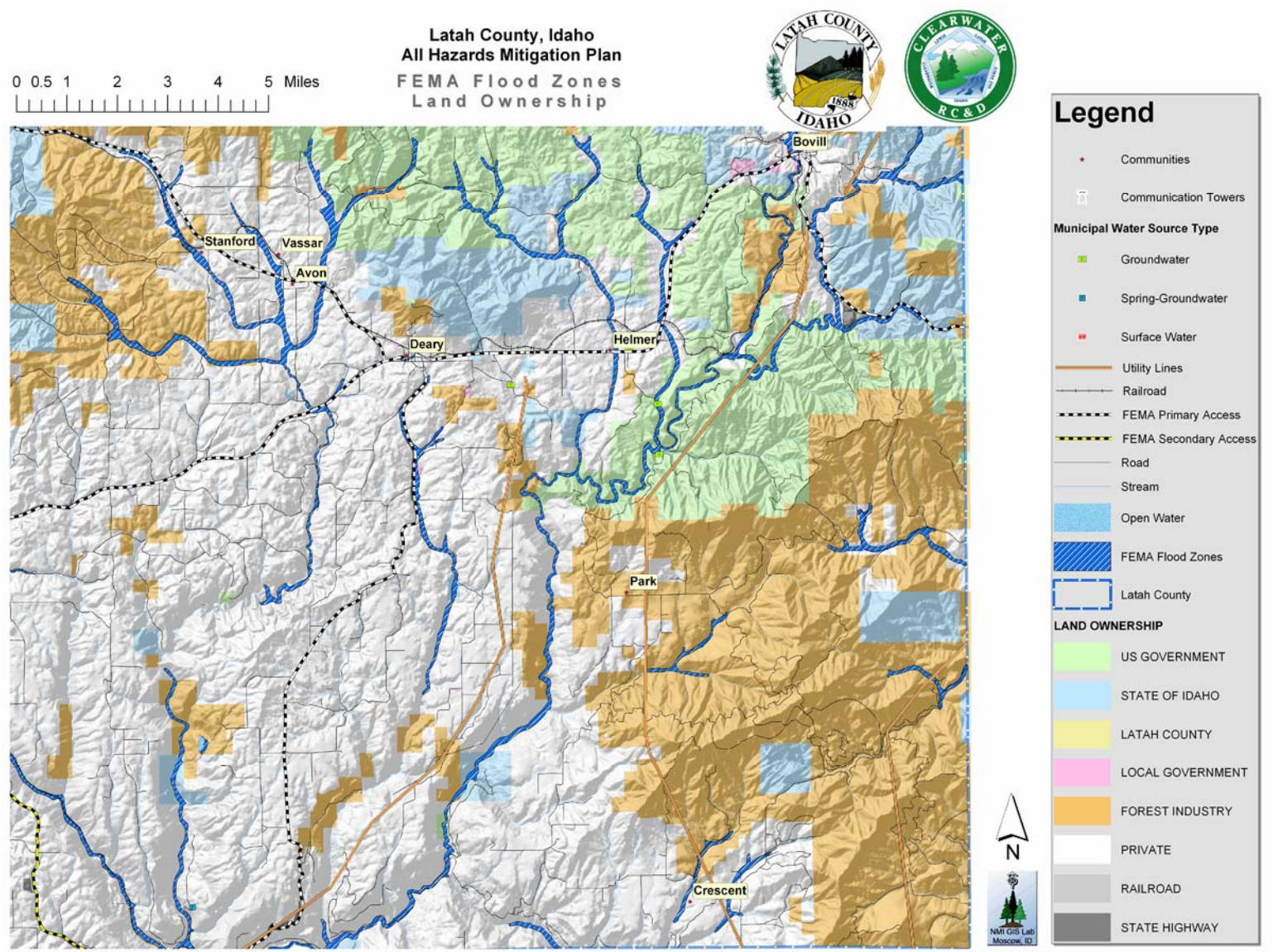


Figure 4.4. FEMA Flood Zones and land ownership surrounding Deary – Bovill.



The FEMA developed FIRM maps for Latah County were digitized for assessing how many acres in the County are within FEMA Flood Zones. FEMA has developed the Flood Zone A category of flood zones in Latah County. The FEMA Flood Zone A (also call the 100-year flood zone) encompasses approximately 22,058.4 acres in Latah County.

Many of these flood zones have received mitigation measures in the past such as dikes, water diversion projects, and levies to mitigation potential flooding damages. However, the natural areas remain in the flood zones. Within Latah County a number of structures and significant infrastructure components are found in the FEMA Flood Zones:

Table 4.1 Significant assets and infrastructure in Latah County Flood Zones.

Item	Flood Zone
Structures	341 addressed structures
Municipal Water Intakes	14 Intakes: 12 Wells 1 Spring (Cox Spring) 1 Surface Water (Potlatch River – Juliaetta)
High Tension Power Lines	32 segments (4.1 miles)
Railroads	202 segments (30.5 miles)
Primary Access Roads	185 segments (20.1 miles)
Secondary Access Roads	2 segments (0.2 miles)
Roads (general)	1,742 segments (141.4 miles)
Incorporated Cities	Bovill – 10.1 acres Deary – 10.2 acres Genesee – 8.5 acres Juliaetta – 69.0 acres Kendrick – 117.1 acres Moscow – 496.9 acres Potlatch – 1.9 acres Troy – 33.5 acres

4.5.1 County Wide Potential Mitigation Activities

There is no way to prevent floods. The weather forces and topography of Latah County will always dictate when and where floods occur.

There are three areas where action can be taken to reduce the loss of life, property, infrastructure and business disruption to floods.

- Mitigation
- Readiness/Education
- Building codes

4.5.1.1 Mitigation

In the past, mitigation efforts have concentrated on the construction of dams and dikes to control and corral flood waters. Over the decades these efforts have resulted in unexpected and undesirable consequences. Building dikes only moved the problem downstream. Often subdivisions were constructed in areas behind the dikes, resulting in high losses when dikes

were breached. Fish habitat, the natural functions of wetlands, and its associated wildlife habitat have all been found to be negatively effected by these mitigation measures.

Today mitigation of the topographical and hydrological aspects of a floodplain or watershed within Latah County seems to be meeting most of the socio-economical goals within the county. Some type of mitigation measures have been addressed in all communities within the county since the floods of 1996.

Thru the Latah County Flood Mitigation Plan, September 2001, the communities around Latah County have made a list of priority mitigation measures that pertain to specific jurisdictions and their immediate environments. This plan was developed by Development Planning Associates and adopted by the Latah County Board of County Commissioners, in response to the affects of past flooding activity to assist the community in protecting themselves against future flooding within Latah County.

4.5.1.2 Readiness/Education

Thru the Latah County Flood Mitigation Plan, the areas most vulnerable to floods in the county have increased their ability to prepare and respond to flood events. Additional ongoing work with this plan, has prepared the local citizenry and emergency response units to deal with flood emergencies.

Continued periodic public education measures should be undertaken. When extended period of times pass between major flood events, both emergency response units and the public tend to forget to review plans and take necessary precautions. Some media and public communication ideas are:

- Publish a special section in your local newspaper with emergency information on floods and flash floods. Localize the information by printing the phone numbers of local emergency services offices, the American Red Cross chapter, and the nearest hospitals.
- Ask the local paper to interview local officials about land use management and building codes in floodplains.
- Periodically inform your community of local public warning systems. Explain the difference between flood watches and warnings. Let them know where to turn for emergency broadcast information should they hear a warning on their radio or television.
- Assist hospitals and other operations that are critically affected by power failure by arranging for auxiliary power supplies, this would include city water and sewer systems, emergency services (including electric dependent phone systems), police and fire.
- Publish emergency evacuation routes for areas prone to flooding.
- Have a ready source of sand, bags and shovels available, stored outside the floodplain.

Requiring building permits and compliance with building codes is a good educational tool. Builders and future homeowners are made aware of the potential risk of building in the flood plain. Periodic publication of the highlights of these building codes can help to keep up public awareness.

4.5.1.3 Building Codes

Participation in the National Flood Insurance Program (NFIP) and subsequent adoption of the International Building Codes, or more stringent local building codes, provide basic guidelines to communities on how to regulate development. When a county participates in the NFIP it

enables property owners in the county to insure against flood losses. By employing wise floodplain management, a participating county can protect its citizens against much of the devastating financial loss resulting from flood disasters. Careful local management of development in the floodplains results in construction practices that can reduce flood losses and the high costs associated with flood disasters to all levels of government.

Table 4.2 provides a list of the communities within Latah County that currently participate in the NFIP.

Table 4.2. Communities Participating in NFIP as of 03/05/03

CID#	Community	Date of Entry	Current Effective Map Date
160086	Latah County*	08/15/80	04/15/02
160133	Deary	06/05/85	06/05/85
160087	Genesee	12/18/79	12/18/79
160088	Juliaetta	03/04/80	03/04/80
160089	Kendrick	02/01/80	02/01/80
160090	Moscow	05/15/80	05/15/80
160091	Troy	12/18/79	12/18/79
160202	Bovill	12/18/79	12/18/79

NSFHA – no special flood hazard area

* Unincorporated areas only (IDWR 2004)

Latah County has no communities with identified special flood hazard areas that are not participating in the NFIP. Latah County has no communities under suspension or revocation of participation in the NFIP (IDWR 2004).

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

Participation by individuals and business within each community for 2003 is shown in the Table 4.3.

Table 4.3. NFIP Policy Statistics As of 12/31/03 in Latah County.

Community Name	Policies In-Force in 2003 (& 1996)	Insurance In-Force whole $	Written Premium In-Force
Latah County*	25 (15)	2,445,900	9347
Deary, City of	3 (2)	139,600	1,121
Genesee, City of	11 (1)	1,082,600	3,162
Juliaetta, City of	N/A	N/A	N/A
Kendrick, City of	4 (NA)	576,000	1,117
Moscow, City of	137 (79)	16,287,900	63,534
Troy, City of	6 (2)	451,200	2,864
Bovill, City of	0 (1)	0	0

*does not include policies in incorporated areas (FEMA 2004).

Overall participation by individuals and business in the NFIP appears to be low; however, as seen in Table 4.4, the number of policies in most communities has risen substantially since the 1996-1997 flood events most likely due to the heightened awareness after the disaster. 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.

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 Community Rating System (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. Of the Latah County communities that participate in the NFIP, only Moscow has earned a 10% discount on their flood insurance rates through the Community Rating System (CRS).

Participation is relatively simple, and with the planning work all ready in place within the county little to no additional work would have to be done to start receiving discounted insurance rates. For additional information go to http://www.floodsmart.gov/floodsmart/pages/crs_ratings.jsp .

4.6 Community Assessments

The towns of Moscow, Troy, Deary, Bovill, Kendrick, and Genesee are communities within Latah County that have completed Flood Insurance Rate Maps (FIRM). Unincorporated areas around the cities of Potlatch/Onaway have FIRM maps. City services (sewer/water) exist within these unincorporated areas so these towns were also assessed. The Palouse River just south of Potlatch and other small communities east of Potlatch within Latah County are very prone to flooding. Several businesses like Bennett Lumber Company are located on the banks of the Palouse River. FIRM maps have been developed for all of the Palouse River.

4.6.1 Troy

Troy is located approximately 11 miles east of Moscow. The West Fork of Little Bear Creek and its tributaries are the main source of flooding in Troy. This creek bisects the town running east to west. This creek drains agricultural fields as well as several forested watersheds surrounding Troy. There are several homes and most of the business district located near the creek. State Highway 8 is the main method of transportation through town. State Highway 99 to Kendrick is also another means of transportation. Other secondary roads do exist that bi-pass the town in case a flood does occur.

4.6.1.1 Flood Potential

Floods in the area are the result of rain-on-snow events. Rain-on-snow events that affect Troy occur when significant snow pack exists within the hydrologic watershed surrounding Troy. The boundaries of the watersheds are fairly large, draining the nearby agricultural fields and forested watersheds. Warm rains falling on the snow pack result in a significantly increased rate of snowmelt. Often this melting occurs while the ground is frozen and the water cannot be absorbed into the soil, resulting in increased overland flows. Flood waters recede slowly as rain-on-snow weather events tend to last for several days.

Thunderstorms are localized summer events that can also have an impact on the flooding potential of Troy. Thunderstorms have not had a significant impact of the community of Troy, but

it would help if the community is aware of the risks and impacts of these intense localized events. Flooding can occur rapidly, overwhelming the water carry capacity of channels in a short time. The duration of subsequent flooding tends to be a matter of hours.

Major impacts from flooding in Troy are the restricted use of Highway 8 and Highway 99. At the east end where Highway 8 and Highway 99 intersect, the bridge potentially backs up water to grain elevators. This bridge would restrict both the flow of water and traffic. In the west part of town where Highway 8 crosses the West Fork of Little Bear Creek, traffic and the flow of water could also be restricted in the case of a flood. West Fork of Little Bear Creek is heavily loaded with silt, willows, trees, shrubs, grasses, debris and trash. All streams and tributaries tend to clog and impede storm and sewer drains and functions.

At the intersection of Big Meadow Creek and Mckeehan Road, the culvert seems to be under-sized and could result in restricted flow into the West Fork of Little Bear Creek. There are several homes above this culvert that could be impacted.

Several streets and road shoulders erode under flood conditions within Troy. Many streets are not paved, which results in gravel washing down-slope potentially clogging sewer and storm drains.

Several structures and businesses still operate within the floodplain. Furthermore, several residences lie on the banks of West Fork of Little Bear Creek and Big Meadow Creek.

4.6.1.2 Ingress-Egress

There are alternative access routes in and around Troy that provide for access when Highway 8 and 99 are compromised due to flood waters.

The primary access into the Troy community center is via U.S. Highway 8. This roadway is well-traveled not only by area commuters, but also by log trucks, chip trucks, and recreators. Most of U.S. 8 through Latah County is adjacent to relatively flat agriculture fields. Hwy 99 has been compromised in Troy by past flood events.

Other access routes include: Randal Flat Road, Big Meadow Creek Road, Driscol Ridge Cut-off Road to Highway 99, and Highway 8 from Deary. There are many higher elevation areas within the city of Troy to escape a flood, so the entire community would not have to be evacuated in case of a flood.

4.6.1.3 Infrastructure

Roads and bridges are the most affected infrastructure in Troy during flood events. Alternative routes to all parts of town are available during most floods. This can add additional time to reach a desired destination or emergency location. Usually it is only a matter of a few minutes to circumvent flooded areas. Historically there has been little long term damage to road systems in the Troy area. Paved road surfaces require some cleaning of flood carried debris, while local gravel roads need grading and some spot replacement of surface rock.

Most residents in Troy are connected to the municipal water system or have drilled personal wells. City wells and water storage tanks are located outside of the floodplain. The cities ability to provide clean drinking water during flood events should not be compromised. The storage capacity of Troy's water tanks are 190,000 gallons, so this could last the town 1 to 2 days if power was lost due to a flood. Each well is run off of different power supplies (Avista/Clearwater). This may help Troy's ability to retain power unless both power providers lose power simultaneously. Troy's city sewer treatment plant is located within the floodplain, but has been elevated enough to withstand a flood event.

Table 4.4 Water Use Table for Troy, Idaho.	
Troy	Population = 786 (2002)
Max plant daily production	250,000 gallons/day
Max daily usage	190,000 gallons/day
Avg. daily usage	150,000 gallons/day
Storage capacity	190,000 gallons
Per capita avg. daily usage	190.8 gallons/day
# days use w/o power (avg. daily use)	1.27 days

The average domestic use, per capita, nationwide is 184 gallons. The smallest state, population-wise, among the nation's top 10 water users is Idaho, due to irrigation.

City hall, Highway/roads department, school bus station, Post Office, Church, several businesses and other public facilities are located inside of the floodplain. Having these services compromised during a major flood event could significantly reduce Troy's ability to respond to the emergency.

4.6.1.4 Flood Protection

West Fork of Little Bear Creek that runs through town crosses under main city roads and near several homes and businesses. No dikes or levees have been built along the creek to contain flood waters. There appears to be no ongoing maintenance of the creek. Big Meadow Creek north of Troy has several culverts that seem to be undersized to handle major flood events. There also appears to be no ongoing maintenance along this creek other than what individual landowners had done where the creek crosses private property.

Troy operates under the International building code. Inspections within Troy are done primarily by the Latah County Inspector.

4.6.1.5 Community Risk Assessment

Residents in the Troy area have a moderate risk of experiencing major flood damage or long term disruption of business. Flood impacts are mainly limited to disruption of road travel, and limited localized flooding of structures, equipment, and businesses.

Maintenance and improvement of the banks and vegetation of the West Fork of Little Bear Creek will provide the best mitigation measure for the city of Troy.

4.6.1.6 Mitigation Activities

At the local level Troy should develop a plan for the maintenance of:

- Culvert inlets and outlets through out town, including storm drain inlet and outlets.
- Cleaning and repair of culverts on the West Fork of Little Bear Creek that carry water thru town.
- Clean the West Fork of Little Bear Creek stream channel periodically to maintain stream flow.
- Install and maintain barriers to keep gravel and silt from washing of Front Street and into the West Fork of Little Bear Creek.
- Replace old, wooden bridge at the crossing of the West Fork of Little Bear Creek and Sixth Street to avoid ice jams and to increase the weight limit to accommodate fire suppression equipment and other large vehicles.

- Replacement of the under-sized culvert at the intersection of McKeehan Road and Big Meadow Creek.
- Replacement of culverts along Randall Flat Road to handle an adequate flow of runoff.
- Raising level of trailer court, café, and mini-mart above bank level.

Continued participation in NFIP and enforcement of building codes in the flood plain will help keep Troy at a lower risk of experiencing costly flood damage.

Major weather events that cause floods can interrupt electrical service. Back up power systems for emergency services, City water systems and communication systems would help in emergency response situations.

4.6.2 Deary

Deary is located east of Troy approximately 12 miles along Highway 8. The major flood plain affecting Deary is the drainage system that runs from the north under Highway 8 and exiting on the west end of Deary near the sewer ponds. This drainage system drains the areas agricultural fields and nearby timberland. Several businesses and infrastructure associated with the community can be affected during flooding events.

4.6.2.1 Flood Potential

Deary's drainage system that crosses through town from the northeast has inadequate culverts. At 5th Avenue and the railroad tracks, the culvert is under-sized and has a city sewer pipe running through this culvert, further reducing its capacity. This drainage system starts north of town traveling south through a culvert under the railroad grade. Then the system spills into a ditch on the east side of the city park running into a culvert system near White Horse Restaurant under Highway 8 across Line Street, then spilling back into the drainage system again. When debris, sediment or ice jams these culverts, water spills out onto adjacent properties, streets, and consequently causing erosion and building damage from water.

The construction of new homes and other structures has seized within the narrow floodplain. The homes within the flood plain are mainly manufactured homes or single level homes without basements. Several older businesses still exist within the floodplain, but seem to be at a lower risk from floods.

4.6.2.2 Ingress-Egress

The primary access routes into Deary are State Highway 8, 9 and 3. These are all two lane, paved routes. Highway 8 is the fastest route to Deary, while 3 heads south to Kendrick. State Route 9 just west of Deary runs north and then west to Potlatch. There are several other good access routes that extend from the community in all directions. These are typically one lane gravel roads; however, they are wide and stable enough to support some large truck travel. All of these potential access routes dip in and out of small drainages and cross small streams that may prove impassable in major flood events. There is enough elevational relief around Deary to provide place for people to go until flood waters recede. There would be no need to evacuate the entire community during a flood event.

4.6.2.3 Infrastructure

Roads are the most affected infrastructure in Deary during flood events. Access through town separated by Deary's drainage system could be problematic if the underground culvert system was compromised. This restricted access may cause temporary delays or further commuting

miles to get to and from your destination. Historically there has been little long term damage to road systems in the Deary area. Paved road surfaces require some cleaning of flood carried debris, while local gravel roads need grading and some spot replacement of surface rock.

Most residents in Deary are connected to the municipal water system or have drilled personal wells. City wells and the water system are located outside of the floodplain. Deary's water storage capacity consists of 400,000 galloons, which will last the town 5 to 6 days if power was lost due to a flood event. The cities ability to provide clean drinking water during flood events should not be compromised.

Table 4.5 Water Use Table for Deary, Idaho.

Deary	Population = 543 (2002)
Max plant daily production	300,000 gallons/day
Max daily usage	160,000 gallons/day
Avg. daily usage	75,000 gallons/day
Storage capacity	400,000 gallons
Per capita avg. daily usage	138.1 gallons/day
# days use w/o power (avg. daily use)	5.33 days

The average domestic use, per capita, nationwide is 184 gallons. The smallest state, population-wise, among the nation's top 10 water users is Idaho, due to irrigation.

Power lines, city water/sewer, emergency services (fire/ambulance), City Hall, schools and other public facilities are located outside of the floodplain. These services feel no direct impact of flooding, and are able to fully function during flood emergencies.

4.6.2.4 Flood Protection

Due to the construction of the railroad, storm water flow often backs up into the streets and may have some minor impact on several residences and streets. Many culverts appear to be undersized to handle major flood events. The drainage system under the White Horse Café seems to be inadequate also. There appears to be some ongoing maintenance and cleaning out of sewer lines and storm drains.

The sewage treatment plant seems to be elevated enough to withstand flooding events.

Deary operates under the International Building Code and inspected by the Clearwater Inspector.

4.6.2.5 Community Assessment

Most of the residents in the Deary area have a low risk of experiencing major flood damage or long term disruption of business. Due to the inadequate sized culvert under the railroad, the residences of the 5th street trailer park and surrounding areas have a much higher risk due to the nature of the under-sized culvert. Flood impacts are mainly limited to disruption of road travel, and limited localized flooding of structures.

Maintenance of this drainage system and replacing under-sized culverts will provide the best, most socio-economically acceptable protection for Deary.

4.6.2.6 Mitigation Activities

Overall the city of Deary is not very vulnerable to a catastrophic flood. The city should keep concentrating its efforts on annual maintenance of their drainage system. Additional supplies of sand and bags should be kept on hand for reinforcement during flood events.

At the local level Deary should develop a plan for the maintenance of culvert inlets and outlets through out town, including storm drain inlet and outlets. Additional studies to assess the cost benefits of improving the city's storm sewer drainage should be done.

Continued participation in NFIP and enforcement of building codes in the flood plain will help keep Deary eligible for low cost flood insurance.

Major weather events that cause floods can interrupt electrical service. Back up power systems for emergency services, City water systems and communication systems would help in emergency response situations.

4.6.3 Bovill

Bovill is located approximately 8 miles northeast of Deary at the intersection Highway 8 and 3. The major flood plain affecting Bovill is from the Potlatch River.

Most of the businesses and infrastructure associated with the community is on the eastern bank of the Potlatch River.

4.6.3.1 Flood Potential

Geographically Bovill lies in a full flood plain. This flood plain or basin collects water and slows the river flow southward toward Kendrick, causing huge backwaters flowing onto the surrounding riparian area and western edge of town. Potlatch River drains approximately 41.6 square miles.

The United States Department of Geological Services (USGS) established a surfacing monitoring station along the Potlatch River near Bovill from 1960 to 1971. Peak stream flows from 1960 to 1971 exceeded 1740 ft3/sec and had a maximum gage height of 8.19 feet. Gage height is the height of the water surface above the gage datum (zero point). Gage height is often used interchangeably with the more general term, stage, although gage height is more appropriate when used with a gage reading.

Figure 4.5 Streamflow data for Potlatch River near Bovill, Idaho.

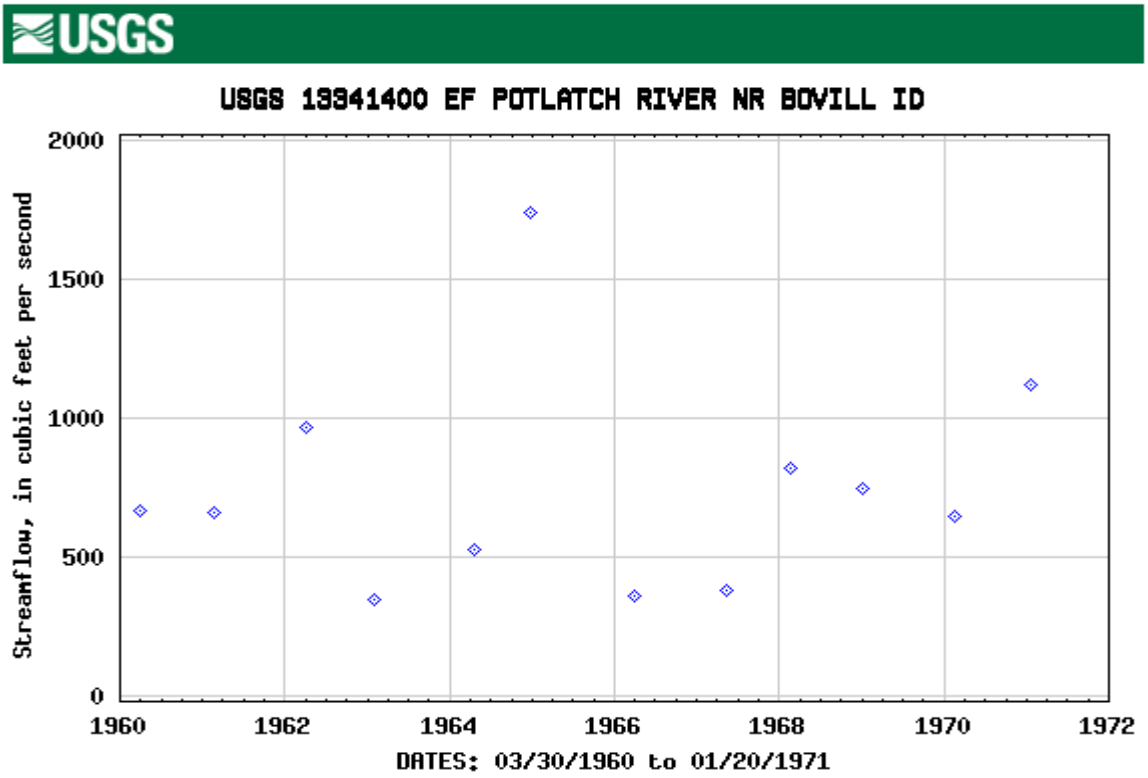


Table 4.6 Peak stream flow data for Potlatch River near Bovill, Idaho

Water Year	Date	Gage Height (FT)	Stream-flow (cfs)
1960	03/30/1960	4.73	666
1961	02/22/1961	4.73	659
1962	04/07/1962	5.45	964
1963	02/04/1963		350
1964	04/15/1964	4.28	530
1965	12/23/1964	8.19	1,740
1966	04/01/1966	3.81	362
1967	05/11/1967	3.79	379
1968	02/20/1968	5.19	817
1969	01/06/1969		750
1970	02/17/1970	4.59	645
1971	01/20/1971	6.16	1,120

- *Gage datum 2,800 FT above sea level.*

The topography of Bovill is moderate to steep sloped mountainous terrain. Steep canyons and ravines exist within this portion of the County. The west end of town has very little lavational change until you cross First Street. East of First Street, there is a gentle slope eastward. Most of commercial zone of the town is located within the floodplain. The Fire Station, City Hall, CFN gas station, sewer ponds, and several residential homes are all located within the floodplain.

4.6.3.2 Ingress-Egress

The primary access into Bovill is by U.S. Highway 8 and 3. Highway 8 enters the town from the west from Deary and then south from Elk River. Highway 3 enters Bovill from the north from Clarkia. Both highways are two lane highways. Sections of these roadways are within the floodplain of the Potlatch River and could become impassable during a flood event. If the bridge across the Potlatch River is compromised, then the only access routes would be from Clarkia and Elk River. Clarkia and Elk River are under-developed communities which do not have a lot of emergency services, so the quickest emergency services would be via helicopter.

All of the potential access routes to and from Bovill dip in and out of small drainages and cross small streams that may also prove impassable in major flood events. There is enough elevational relief east of Second Street to provide a place for people to go until flood waters recede. There would be no need to evacuate the entire community during a flood event.

4.6.3.3 Infrastructure

Bridges, roads, commercial district, cities water well, and the city's water treatment plant is the most affected infrastructure in Bovill during flood events. If the Potlatch River Bridge is compromised restricted travel corridors will be affected for the major industries of the town and transporters through the community. There are a number of log trucks and chip trucks that travel through Bovill of a daily basis to deliver products to mills, so alternative routes will need to be taken, resulting in added travel time. Historically there has been little long term damage to road systems in the Bovill area. Paved road surfaces require some cleaning of flood debris, while local gravel roads need grading and some spot replacement of surface rock.

Bovill is completely surrounded by unincorporated areas of Latah County, which means emergency services are not quickly available. Bovill itself does not have any medical facilities and lacks the equipment and the personnel, has no formal Emergency Operations Plan (EOP), or a community and rural warning plan. The closest ambulance is located in Deary, but there are EMTs that live in town. Some equipment could be available from the surrounding communities.

Table 4.7 Water Use Table for Bovill, Idaho.

Bovill	Population = 302 (2002)
Max plant daily production	115,000 gallons/day
Max daily usage	34,000 gallons/day
Avg. daily usage	27,000 gallons/day
Storage capacity	90,000 gallons
Per capita avg. daily usage	89 gallons/day
# days use w/o power (avg. daily use)	3.33 days

The average domestic use, per capita, nationwide is 184 gallons. The smallest state, population-wise, among the nation's top 10 water users is Idaho, due to irrigation.

Most residences in Bovill are connected to the municipal water system or have drilled personal wells. City wells are located within the flood plain, while storage tanks are located east of town outside of the floodplain. The cities ability to provide clean drinking water during flood events may be compromised.

4.6.3.4 Flood Protection

No engineered flood control devices exist on the Potlatch River, although the railroad grade does act as a levee during some flooding events. During high water flows, this levee is not high enough to protect the entire community from a major flooding event.

Bovill operates under the International Building Code.

4.6.3.5 Community Risk Assessment

The location of the town site in the “saucer-like” floodplain guarantees periodic flood impacts. The residents of Bovill have long recognized their vulnerability to flood. These residences in the Bovill area have a high risk of experiencing smaller periodic floods, as well as catastrophic flooding during base flood events.

Maintenance and improvement of the railroad levee on the east side of the Potlatch River will provide more protection for the local residences. Elevating the sewer treatment ponds will lower the risk of spillage downstream.

A Water System Improvement Project granted by CEDA and USDA helped update water storage tanks, water lines, and meters.

4.6.3.6 Mitigation Activities

At the local level Bovill should develop a plan for the maintenance of culvert inlets and outlets throughout town.

Continued participation in NFIP and enforcement of building codes in the flood plain will help keep Bovill eligible for low cost flood insurance.

Major weather events that cause floods can interrupt electrical service. Back up power systems for emergency services, City water systems and communication systems would help in emergency response situations.

Are there other mitigation actions that have not been done/studied that the committee would like to see discussed?

4.6.4 Genesee

Genesee is located approximately 14 miles south of Moscow, lying just east of Highway 95. The major flood plain affecting Genesee is Cow Creek. Some businesses and infrastructure associated with the community are located within the flood plain of Cow Creek. Furthermore, many residential homes are located within this flood plain. This creek drains agricultural fields in the area surrounding the city.

4.6.4.1 Flood Potential

Floods in the area are the result of two different types of weather events, rain-on-snow and thunderstorms. Rain-on-snow events that affect Genesee occur when significant snow pack exists within the Cow Creek Area. Warm rains falling on the snow pack result in a significantly increased rate of snowmelt. Often this melting occurs while the ground is frozen and the water cannot be absorbed into the soil, resulting in increased overland flows. Flood waters recede slowly as rain-on-snow weather events tend to last for several days.

Thunderstorms are localized summer events that are typified by intense rain fall in a localized area. Flooding occurs rapidly, overwhelming the water carry capacity of channels in a short time. The duration of subsequent flooding tends to be a matter of hours.

The major impacts from both types of flooding in Genesee are the restricted use of several streets in the eastern portion of town. The bridges on Chestnut Street and Laurel Street restrict water flows, consequently backing the flow of water into the adjacent riparian area, streets and residential area.

Cow Creek enters the northeast corner of town flowing under Chestnut Street and Laurel Street before exiting the southwest portion of town near the city's sewer ponds.

Cow Creek drains approximately 34.3 square miles.

The United States Department of Geological Services (USGS) established a surfacing monitoring station in Cow Creek from 1980 to 1986. The monitoring station was located near the city of Genesee. Peak stream flows from 1980 to 1986 exceeded 1,330 ft3 /sec and had a maximum gage height of 16.62 feet. Gage height is the height of the water surface above the gage datum (zero point). Gage height is often used interchangeably with the more general term, stage, although gage height is more appropriate when used with a gage reading.

Figure 4.6 Stream flow data for Cow Creek at Genesee, Idaho.

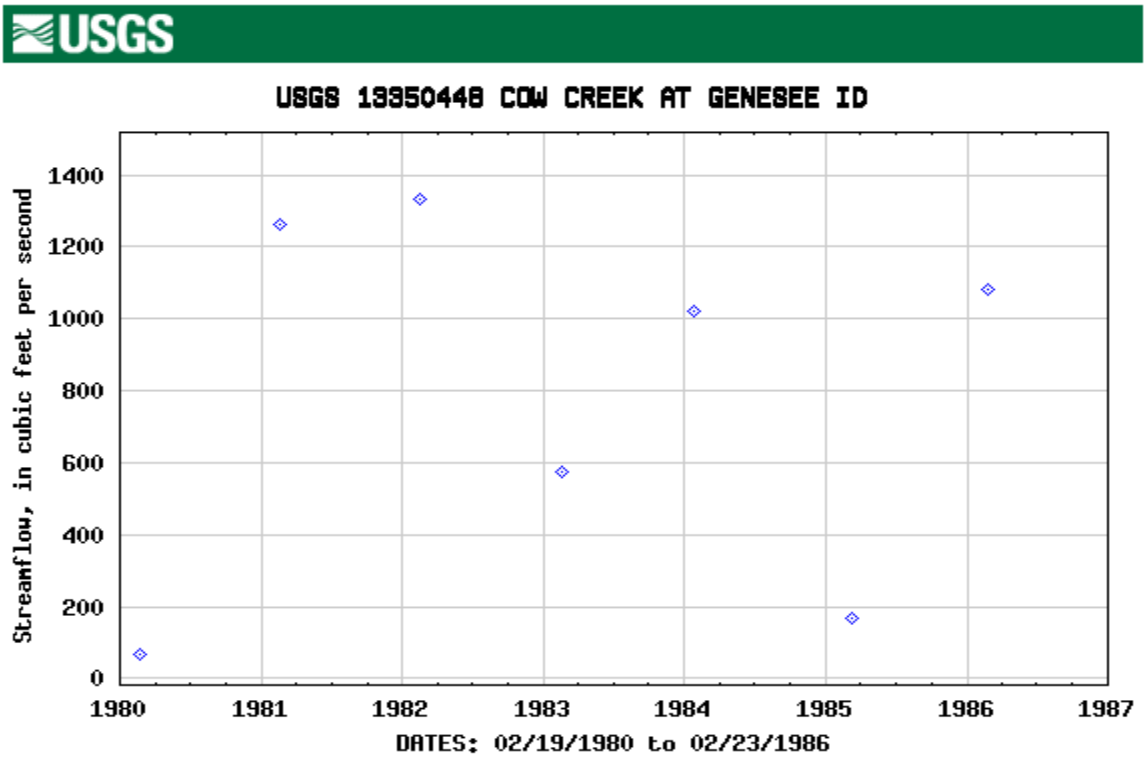


Table 4.8 Peak streamflow data for Cow Creek at Genesee, Idaho.

WATER YEAR	DATE	GAGE HEIGHT (FT)	STREAMFLOW (CFS)
1980	02/19/1980	12.90	66.0
1981	02/16/1981	12.45	1,260

Table 4.8 Peak streamflow data for Cow Creek at Genesee, Idaho.			
1982	02/16/1982	16.62	1,330
1983	02/18/1983	13.12	572
1984	01/25/1984	13.98	1,020
1985	03/11/1985	11.84	169
1986	02/28/1986	14.06	1,080

The topography of Genesee is typical of the Palouse agricultural community. The town is located in a rolling, open prairie which provides for some elevation change across the town. The FIRM maps show a very wide, but general shallow flood plain. Some businesses still operate within this area though. Several grain elevators, fuel stations, manufacturing plant, and various other businesses still operate within the flood plain. Most of the emergency services, schools, City Hall, and community centers are all located well outside of the flood plain.

The construction of homes and other structures continue in the flood plain. Several newer manufactured homes and stick built homes have been constructed or placed well inside the floodplain. Newer homes in the area appear to have elevated first floors, raising the living area above the flood level and do not appear to have basements. Several new streets have also been built within the flood plain since the FIRM maps were constructed.

4.6.4.2 Ingress-Egress

The primary access into Genesee is via U.S. Highway 95, the main route connecting north and south Idaho. This highway is well-traveled by not only area commuters, but also intra- and interstate travelers. Most of U.S. 95 through Latah County is adjacent to relatively sloped agricultural fields; however, several steeper pitches dip in and out of streams and draws throughout the county. Highway 95 has been compromised in the past by flooding waters.

There are various other access routes in and out of Genesee that will provide adequate access to almost all types of traffic. Most of these roads are gravel roads with an adequate number of turn outs for passing vehicles. These roads are designed for agricultural purposes and may be inadequate for some traffic. Over-sized loads and extra-wide transporters would be confined to Highway 95 though.

4.6.4.3 Infrastructure

Roads, bridges, one water well, sewer ponds, and housing developments are the most affected infrastructure in Genesee during flood events. Alternative routes to all parts of town are available during most flood events. This can add additional time to reach a desired destination or emergency location. Usually it is only a matter of a few minutes and traveling side streets to bypass the flooded areas. Historically, there has been little long term damage to the road systems in the community. Paved roads require some cleaning of flooded debris, while gravel roads need grading and some spot repair work.

Most residences in Genesee are either connected to the municipal water system or have personal wells drilled. One city well is located within the flood plain, while the other well and the water storage tanks are located outside of the flood plain. Genesee's water storage tanks (2 tanks) contain 550,000 gallons of water resulting in 2 to 3 days of normal use if the city lost power due to a flooding event. The cities ability to provide clean drinking water during flood events may be compromised.

Power-lines, emergency services (fire/ambulance), City Hall, schools and other public facilities are located outside of the flood plain. These services feel no direct impact of flooding, and are able to fully function in emergency situations.

4.6.4.4 Flood Protection

Cow Creek that runs through town cross under several city streets and near several homes and businesses. Both bridges seem to be able to withstand periodic flooding, but may back water up during the catastrophic flooding event. No dikes or levees have been built along the creek to contain flood waters. There appears to be some ongoing maintenance of the creek to clear excess debris from the banks, but further maintenance of the creek banks and silt removal will be required in the future. Several new homes constructed near the flood plain seem to be elevated enough to meet Genesee's building codes, but may experience some inconvenience during a flooding event. Residential roadways, driveways, and yards may not be as affected as storage sheds and out-buildings that have personal property stored inside them. Homeowners within these areas should be aware of the potential risks of having valuable personal property damaged.

Genesee operates under the International Building Code and inspected by the Clearwater Inspector.

4.6.4.5 Community Risk Assessment

Residences in the Genesee area have moderate risk of experiencing major flood damage or long term disruption of business. Flood impacts are mainly limited to disruption of road travel, and limited localized flooding of structures.

Maintenance and improvement of the Cow Creek riparian area will further protect the community from future flooding events.

4.6.4.6 Mitigation Activities

At the local level Genesee should develop a plan for the maintenance of:

- Culvert inlets and outlets through out town, including storm drain inlet and outlets
- Cleaning of Cow Creek that carries water through town
- Monitoring overall condition of various bridges around the community.

Continued participation in NFIP and enforcement of building codes in the flood plain will help keep Genesee at a low risk of experiencing costly flood damage.

Major weather events that cause floods can interrupt electrical service. Back up power generators for emergency services, city water systems and communication systems would help in emergency situations.

4.6.5 Juliaetta

Juliaetta is located in a deep gorge along the northern banks of the Potlatch River whose watershed drains large timbered areas, now heavily harvested, and farmlands, whose soils are subject to heavy erosion. Most of the businesses and infrastructure associated with the community lie near the Potlatch River streambed. State Route 3 is the main travel route into Juliaetta.

4.6.5.1 Flood Potential

Juliaetta is located at the base of Fix Ridge on the northern banks of the Potlatch River and between the Middle Potlatch Creek and the Little Potlatch Creek drainages. These water bodies drain several hundred square miles of various watersheds. Floods in the area are the result of warm weather or rain after a heavy snowfall called rain-on-snow events. Warm rains falling on the snow pack results in a significantly increased rate of snowmelt. Often the melting occurs when the ground is frozen and the water cannot be absorbed fast enough, resulting in increased overland flows. Flood waters recede slowly as the weather events tend to last for several days.

Thunderstorms are also likely events to affect the community. These events usually are localized, but still can have a significant impact. They are usually typified by intense rain with flooding occurring rapidly, overwhelming the carrying capacity of the nearby streams and rivers. The duration is usually only a matter of hours, but the affects can be widespread throughout the impact areas of the town. The Potlatch River drains approximately 425 square miles.

Portions of Juliaetta on the south side of State Route 3 are within the floodplain including several homes and a few industrial facilities and other businesses. Of particular note are the grain elevator, pole yard, and gas station located within the floodplain on the west side of town. The official FIRM map shows the floodplain crossing State Route 3 in this area. The waste water treatment facility is also located within the floodplain. Juliaetta is not protected by a levee system that meets the requirements of the Army Corps of Engineers. The old Burlington Northern railroad bed, which parallels the river, may offer a minimal amount of flood protection; however, nothing has been done to stabilize or reinforce this to function as an emergency levee. Under intense flooding conditions, the old railroad bed would likely be either overtopped or washed out.

The United States Department of Geological Services (USGS) established a surfacing monitoring station in the Potlatch River from 1945 to 1970. Peak stream flows from 1945 to 1970 exceeded 16,000 ft3 / sec and had a maximum gage height of 13.7 feet. Gage height is the height of the water surface above the gage datum (zero point). Gage height is often used interchangeably with the more general term, stage, although gage height is more appropriate when used with a gage reading.

4.6.5.2 Ingress-Egress

The primary access routes into Juliaetta are State Highway 3 along the river, McGary Grade Road from the south, the Genesee-Juliaetta Road off Fix Ridge to the north, and American Ridge Road, which connects with State Route 99 also to the north. State Highway 3 is a well maintained, two-lane, paved route. McGary Grade and the steeper sections of the Genesee-Juliaetta Road and American Ridge Road are also paved; however, these access routes are only periodically maintained. All of these roads are associated with steep grades and potentially limiting road surfaces. Several of the prospective routes around the community dip in and out of small drainages and cross small streams that may prove impassible in major flood events. There is enough elevation relief around Juliaetta to provide places for people to go temporarily until flood waters recede. If the railroad bed was breached or completely washed out, many of the businesses from Main Street south, particularly on the west side of town would likely need evacuated.

4.6.5.3 Infrastructure

Some of Juliaetta's critical infrastructure may be affected during flooding events. Access into and out of the community could pose a serious problem. Many roads, bridges, and culverts would restrict traffic in the area. Several homes, industrial facilities, and businesses are located within the floodplain. The waste water treatment facility, which is located within the floodplain, would have a high risk of damage due to flood waters that could lead to contamination of the river. The domestic water treatment facility would also be at risk of a flood event due to its location adjacent to Potlatch River. In the event that power was cut off to the water treatment facility, the community's water storage tanks hold enough water to provide drinking water for the community for approximately five to six days.

Most residents of Juliaetta are connected to the municipal water system or have drilled personal wells. Most of the well heads and the water storage tanks are located well outside of the flood plain; however, if the stabilized stream bank on the east side of the community were washed out or otherwise damaged, one well head and the domestic water treatment facility would be at risk. The city's ability to provide clean drinking water during flood events may be compromised.

Table 4.9 Water Use Table for Juliaetta, Idaho.

Juliaetta	Population = 609
Max plant daily production	500,000 gallons/day
Max daily usage	160,000 gallons/day
Avg. daily usage	98,000 gallons/day
Storage capacity	220,000 gallons

4.6.5.4 Flood Protection

There is very little developed flood protection for the community of Juliaetta. The old Burlington Northern railroad may offer some protection during small flood events; however, the slightly elevated railroad bed was not designed for and has not been tested for this service. The south aspect slope, where most of the town resides, rises relatively sharply from the Potlatch River corridor. Most residential structures and business were built high enough on the hillside to mitigate most flood events. Nevertheless, industrial facilities, businesses, and homes located on the south side of State Route 3, particularly those within the designated floodplain, have significantly higher risk of loss due to floods.

Juliaetta operates under the International Building Code and is inspected by the State of Idaho.

4.6.5.5 Community Assessment

The majority of residents in the Juliaetta area have a moderate to low risk of damage caused by smaller periodic floods. Higher magnitude base flood events would likely affect a greater number of the population and could potentially cause extensive damage to critical components of the community's infrastructure. Flash flooding of the smaller tributaries, especially Little Potlatch Creek and Middle Potlatch Creek, may cause damage or loss of life or property as was seen by the two fatalities in 1993.

Maintenance and upgrade of the railroad bed to a recognized levee system along the Potlatch River will provide the best, most socio-economically acceptable protection for Juliaetta.

4.6.5.6 Mitigation Activities

Effective mitigation strategies begin with public and municipal awareness of the risks associated with living and working in a flood plain. Residents of Juliaetta and Latah County should be aware of the availability of flood insurance thru the NFIP. Continued participation in NFIP and enforcement of building codes in the flood plain will help keep Juliaetta eligible for low cost flood insurance.

At the local level Juliaetta should develop a plan for the maintenance of culvert inlets and outlets through town, including storm drain inlets and outlets.

Major weather events that cause floods can interrupt electrical service. Back up power systems for emergency services, City water systems, and communication systems would help in emergency response situations.

4.6.6 Kendrick

Kendrick is located in a deep gorge along the northern banks of the Potlatch River whose watershed drains large timbered areas, now heavily harvested, and farmlands, whose soils are subject to heavy erosion. Most of the businesses and infrastructure associated with the community lie on the banks of the Potlatch River. Highway 3 and Highway 99 are the main travel routes into Kendrick.

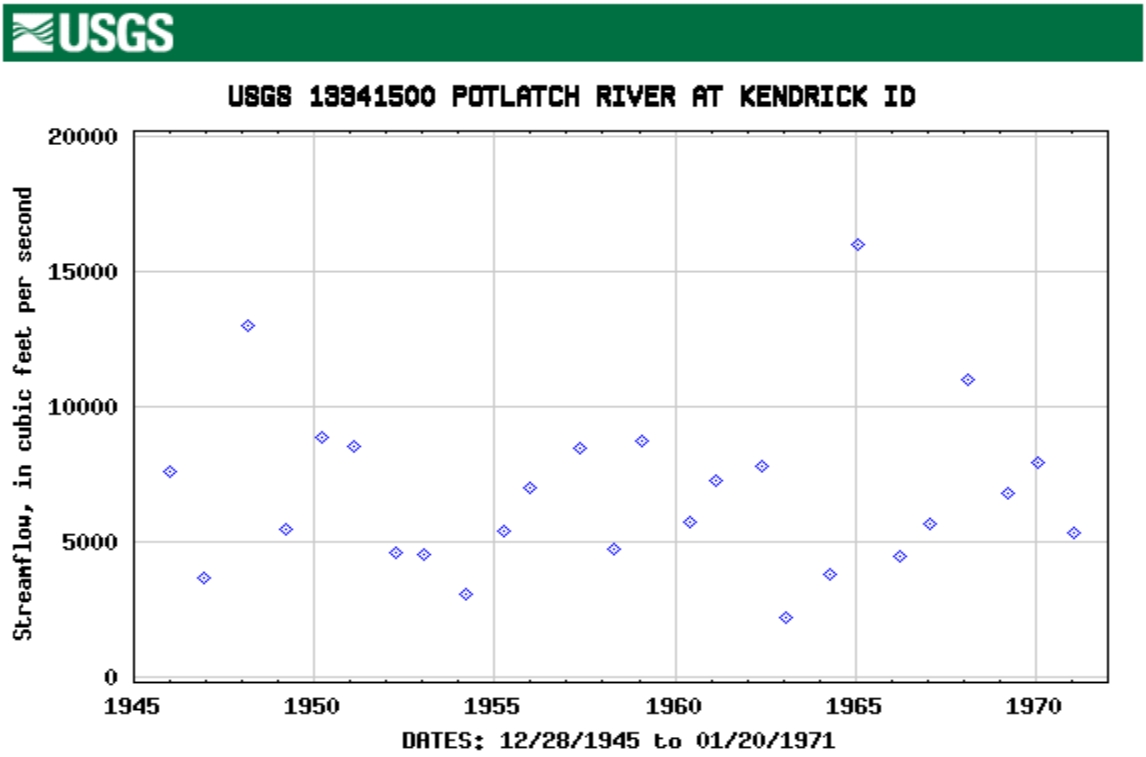
4.6.6.1 Flood Potential

Kendrick is located on the northern banks of the Potlatch River and the western banks of Big Bear Creek. These two water bodies drain several hundred square miles of various watersheds. Floods in the area are the result of warm weather or rain after a heavy snowfall called rain-on-snow events. Warm rains falling on the snow pack result in a significantly increased rate of snowmelt. Often the melting occurs when the ground is frozen and the water cannot be absorbed fast enough, resulting in increased overland flows. Flood waters recede slowly as the weather events tend to last for several days and it takes a long time to drain this huge watershed.

Thunderstorms are also likely events to affect the community. These events usually are localized, but still can have a significant impact on the community. They are usually typified by intense rain fall in an area and flooding occurs rapidly, overwhelming the carrying capacity of the nearby streams and rivers. This duration usually only lasts a matter of hours, but the affects can be spread throughout the impact areas of the town. Potlatch River drains approximately 425 square miles.

The United States Department of Geological Services (USGS) established a surfacing monitoring station in the Potlatch River from 1945 to 1970. Peak stream flows from 1945 to 1970 exceeded 16,000 ft3 / sec and had a maximum gage height of 13.7 feet. Gage height is the height of the water surface above the gage datum (zero point). Gage height is often used interchangeably with the more general term, stage, although gage height is more appropriate when used with a gage reading.

Figure 4.7 Stream flow data for Potlatch River at Kendrick, Idaho.



The town was basically constructed inside the flood plain of the Potlatch River. Many of the local businesses and residential areas are located within this flood plain. The following structures are located within the flood plain: City Hall, US Post Office, City Shop, Fire Department, and various additional structures including homes and businesses.

Because of flood mitigation work conducted by the Army Corps of Engineers in the 1930's, a 1,100 foot levee was built on the northern banks of the Potlatch River. This levee was built to help the area's businesses and residential area escape the flooding problems of the Potlatch River. Many efforts from the Corp have taken place and still an on going project today.

During the floods of 1996, some of the flooding problems occurred due to hydrologic pressure. The water was filtering through the soil under the levee and spilling up through the ground in several places within the community. There are no significant measures to reduce this type of flooding.

4.6.6.2 Ingress-Egress

The primary access routes into Kendrick are State Highways 3, 99, and Cavendish Road from the south. These are all two lane paved roads. All of these roads have several steep grades associated with them into Kendrick. All of the potential routes into the community dip in and out of small drainages, and cross small streams that may prove impassible in major flood events. There is enough elevation relief around Kendrick to provide place for people to go temporarily until flood waters recede. If the levee was breached, the residences of the town may have to evacuate.

4.6.6.3 Infrastructure

The whole town of Kendrick's infrastructure may be affected during flooding events. Access into and out could pose a serious problem. Many roads, bridges, and culverts would restrict traffic in the area. The whole business district is located within the flood plain, along with the communities' schools and emergency services. The sewer treatment facility would also be at risk of a flood event due to its location within the flood plain. All of the above are at risk during any flood event, especially if the levee was breached.

Most residents of Kendrick are connected to the municipal water system or have drilled personal wells. Two of the three wells in town are located within the flood plain. The third well, as well as the water storage tank are located outside of the flood plain. Kendrick has the ability to store 225,000 gallons of water, which could support approximately 3 days of water to the town if power was lost due to a flood event. The cities ability to provide clean drinking water during flood events may be compromised.

As noted above most of the emergency services infrastructures of Kendrick are located in the flood plain. Having these services compromised during a major flood event will significantly reduce Kendrick's ability to respond to the emergency.

4.6.6.4 Flood Protection

Flood protection is provided by the levee that the Army Corps of Engineers constructed in the 1930s. The levee runs along the northern banks of the Potlatch River to the bridge near the high school stretching 1,200 feet. The construction of this levee significantly reduced the periodic flood events, but has not completely reduced the risk of the catastrophic flood events. The levee was breached in 1974 resulting in the Corp reconstructing 1,100 feet of the levee. The toe of existing sewage lagoon dike was lowered and the entire 650 feet of dike was rip rapped.

Due to the construction of the levee, storm water flow often backs up into streets and residences. No structures have been built to deal with this type of flood event. Some pump systems are placed in these areas to pump the excess water out of the area.

Kendrick operates under the International Building Code and inspected by the State of Idaho.

4.6.6.5 Community Assessment

Residents in the Kendrick area have a moderate risk of experiencing smaller periodic floods, and a high risk of catastrophic flooding during base flood events if the levees along Potlatch River are breached.

Maintenance and improvement of the levee along Potlatch River will provide the best, most socio-economically acceptable protection for Kendrick.

4.6.6.6 Mitigation Activities

Effective mitigation strategies begin with public and municipal awareness of the risks associated with living and working in a flood plain. Residents of Kendrick and Latah County should be aware of the availability of flood insurance thru the NFIP. As noted in the all county assessment only a few individual structures are currently covered by NFIP flood insurance in Kendrick.

At the local level Kendrick should develop a plan for the maintenance of culvert inlets and outlets through town, including storm drain inlets and outlets.

Continued participation in NFIP and enforcement of building codes in the flood plain will help keep Kendrick eligible for low cost flood insurance.

Major weather events that cause floods can interrupt electrical service. Back up power systems for emergency services, City water systems and communication systems would help in emergency response situations.

4.6.7 Potlatch/Onaway Community

The Potlatch/Onaway community extends from the bridge crossing the Palouse River on Highway 95 eastward past Bennett Lumber Companies Mill. The Palouse River poses the main flooding problem to this community. This river drains many agricultural fields, as well as many forested watersheds. U.S. Highway 95 and Highway 6 are the main travel routes into this community.

4.6.7.1 Flood Potential

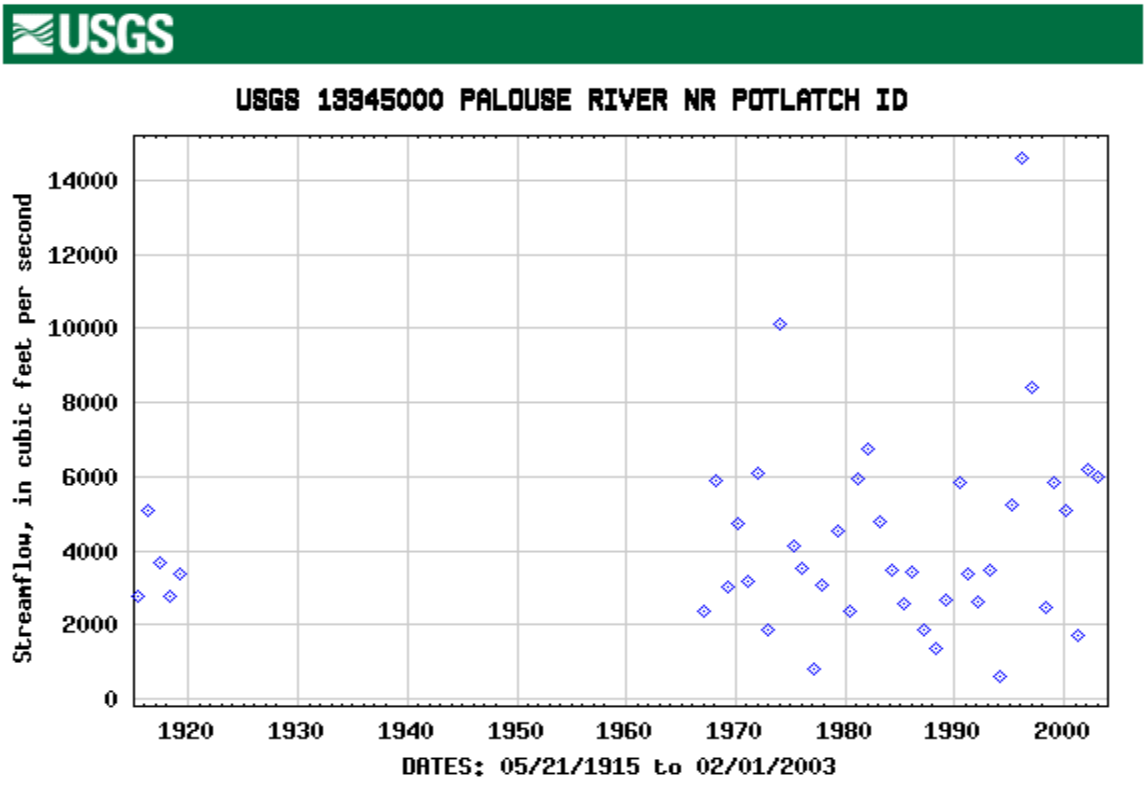
The Palouse River enters the community on the east side of Bennett Lumber Company's mill. The river flows on the southern edge of the community and leaving the community at the Highway 95 Bridge. The Palouse River drains approximately 317 square miles.

The United States Department of Geological Services (USGS) established a surfacing monitoring station in the Palouse River from 1915 to 1919 and 1967 to 2003. The monitoring station was located near Potlatch. Peak stream flows from 1915 to 1919 and 1967 to 2003 exceeded 14,600 ft3 / sec and had a maximum gage height of 22.15 feet. Gage height is the height of the water surface above the gage datum (zero point). Gage height is often used interchangeably with the more general term, stage, although gage height is more appropriate when used with a gage reading.

The topography of the Potlatch community is typical of the Palouse by rolling agricultural slopes and moderately steep mountainous hillsides. There is a fair amount of elevation change throughout the community.

Floods result in the area from rain-on-snow weather events. The main problems associated with this type of flooding event are the restricted flow of traffic. Several bridges cross main travel routes into and out of the community. These bridges tend to restrict the flow of water and consequently back up the water until it flows onto the banks of the adjoining area. Several of these bridges were closed in past flooding events, restricting traffic flow for up to several days.

Figure 4.8 Stream flow data for Palouse River near Potlatch, Idaho.



4.6.7.2 Ingress-Egress

There are alternative access routes in and around the Potlatch area that could provide access when flooding events occur in the area.

The primary access into the Potlatch community is via U.S. Highway 95, the main route connecting north and south Idaho. This roadway is well-traveled and has been compromised in the past by flood events.

Other access routes, including Highway 6 and 9, are very similar to Highway 95. They all have been compromised in the past by floods. Other gravel roads into and out of the community exist, but caution should be taken when traveling these roads.

4.6.7.3 Infrastructure

Roads and bridges are the most affected infrastructure in the Potlatch community during flood events. Alternative routes to all parts of the community are available during most floods. This can add additional time to reach a desired destination or emergency location. Historically, there has been significant damage caused in the area to road ways and bridges, but they have been updated recently. Paved road surfaces require some cleaning of flood debris, while gravel roads need grading and some spot replacement of surface rock.

Most residents of the community are connected to the municipal water system or have drilled personal wells. City wells and the water system are located outside of the flood plain. The cities ability to provide clean drinking water during flood events should not be compromised.

Table 4.10. Water Use Table for Potlatch, Idaho.

Potlatch	Population = 773 (2002)
Max plant daily production	.33 million gallons/day
Max daily usage	NA
Avg. daily usage	90,000 gallons/day
Storage capacity	1.2 million gallons
Per capita avg. daily usage	116.4 gallons/day
# days use w/o power (avg. daily use)	13.33 days

The average domestic use, per capita, nationwide is 184 gallons. The smallest state, population-wise, among the nation's top 10 water users is Idaho, due to irrigation.

City sewer ponds and several residents reside in the flood plain. The sewer ponds seem to be elevated enough to be outside of the flood plain. All emergency services should be able to fully function during flood emergencies.

4.6.7.4 Flood Protection

The Palouse River has no protective structures throughout the reach within the community. No dikes or levees have been built along the river to contain flood waters, making the community vulnerable to flooding events. The community seems to be elevated enough that only roads and bridges would be compromised during flooding events. Potlatch operates under the International Building Code.

4.6.7.5 Community Risk Assessment

Residents in the Potlatch area have a low risk of experiencing smaller periodic floods. However, the community has a high risk of catastrophic flooding during base flood events. Flood impacts are mainly limited to disruption of road travel, and limited localized flooding of structures. There is enough elevation change within the community that the entire community would not have to be evacuated during a flood event.

4.6.7.6 Mitigation Activities

At the local level the Potlatch community should develop a plan for the maintenance of:

- Culvert inlets and outlets throughout the community, including storm drain inlets and outlets
- Cleaning and repair of any ditches that carry water through the community
- Performing annual updates and periodic checks before and following any major storm event.

Major weather events that cause floods can interrupt electrical services. Back up power systems for emergency services, City water systems and communication systems would help in emergency response situations.

4.6.8 Moscow

Moscow is located in the heart of the Palouse at the intersection of Highway 8 and 95. The major flood plain affecting Moscow is from Paradise Creek, Hog Creek, and the South Fork of the Palouse River. City streets, highways and railroad lines cross the flood plains. There are commercial, industrial and residential areas with public utilities in and around the flood plains. Due to the increase of development within the area, more residential structures are being built around and near flood plains to the north and east of town.

4.6.8.1 Flood Potential

Floods in the area are the result of two different types of weather events, rain-on-snow and thunderstorms. Rain-on-snow events that affect Moscow occur when significant snow pack exists within the Moscow Mountain and Paradise Ridge area. Warm rains falling on the snow pack result in a significantly increased rate of snowmelt. Often this melting occurs while the ground is frozen and the water cannot be absorbed into the soil, resulting in increased overland flows. Flood waters recede slowly as rain-on-snow weather events tend to last for several days.

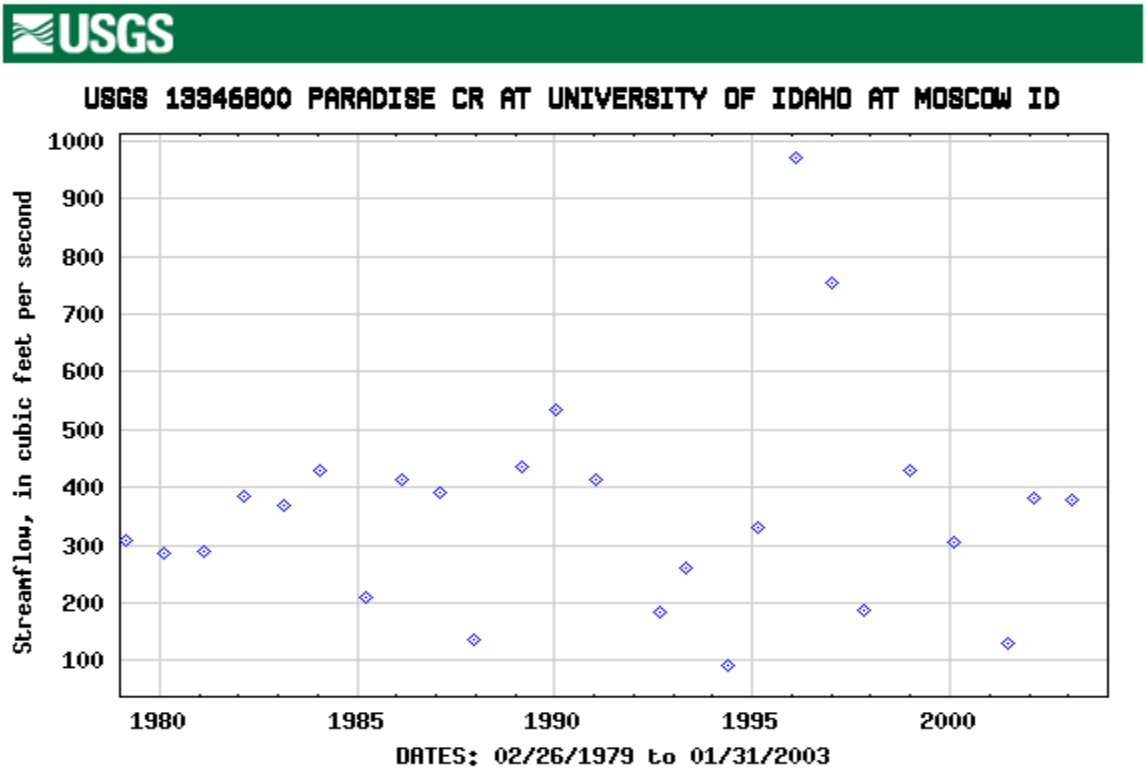
Thunderstorms are localized summer events that are typified by intense rain fall in a localized area. Flooding occurs rapidly, overwhelming the water carry capacity of channels in a short time. The duration of subsequent flooding tends to be a matter of hours.

The major impacts from both types of flooding in Moscow are the restricted use of several streets, highways, railroad lines, commercial, industrial, and residential areas. Within the City of Moscow, there are 31 crossings over Paradise Creek. A covered section of Paradise Creek, 1,070 feet long, extends from Line Street on the University of Idaho campus, west to an exit from the U of I Physical Plant.

Warm weather or rain after a heavy snowfall is responsible for high flows in these streams. A high level of sediment is prevalent during periods of high runoff. This sediment tends to cause a deteriorating condition in streambeds and channels through deposition. Natural obstructions to flood waters include trees, brush, and other vegetation along the stream banks in the flood plain area. Historically, considerable debris has been allowed to accumulate in these channels, plugging culverts and bridges at several locations throughout town. Recent efforts have lessend this hazard. Paradise Creek drains approximately 17.7 square miles of watershed.

The United States Department of Geological Services (USGS) established a surfacing monitoring station in Paradise Creek from 1979 to 2003. The monitoring station was located on the western side of Moscow. Peak stream flows from 1979 to 2003 exceeded 970 ft3 /sec and had a maximum gage height of 11.26 feet. Gage height is the height of the water surface above the gage datum (zero point). Gage height is often used interchangeably with the more general term, stage, although gage height is more appropriate when used with a gage reading.

Figure 4.9 Stream flow data for Paradise Creek at the University of Idaho in Moscow, Idaho.



The topography of Moscow in the vicinity of Moscow ranges from steep mountains in the headwaters to broad, rounded and rolling high prairies in the lower parts of the Paradise Creek Basin. Grasses, weeds and brush are the predominant native types of vegetation in the lower areas of the Paradise Creek basin, while deciduous trees and brush are found in the mountainous areas. There is an elevational difference throughout the city limits of Moscow. Several grain elevators, fuel stations, and several other businesses still operate within the flood plain. A good portion of the emergency services, schools, and community centers are located outside of the flood plain.

The construction of homes and other structures continue in the flood plain. Several newer homes have been constructed well inside the flood plain, but seem to have elevated first floors, raising the living area above the flood level and do not appear to have basements. Several new streets have also been built within the flood plain since the FIRM maps were constructed.

4.6.8.2 Ingress-Egress

The primary access into Moscow is Highway 95 and 8. Highway 95 is the main route connecting north and south Idaho. These highways are well traveled by not only area commuters, but also intra and inter state travelers. Most of Highway 95 through Latah County is adjacent to moderately sloped agricultural fields; however, several steeper pitches dip in and out of streams and draws throughout the county. Highway 95 has been compromised in the past by flood waters.

There are various other access routes in and out of Moscow that will provide adequate access to almost all types of traffic. Most of these roads are paved two-lane roads, while others are gravel. Traffic in and out of Moscow could be re-routed through Washington, to the west, to bi-pass the town.

4.6.8.3 Infrastructure

Roads and bridges are the most affected infrastructure in Moscow during flood events. Alternative routes to all parts of the community are available during most floods. This can add additional time to reach a desired destination or emergency location. Historically, there has been significant damage caused in the area to road ways and bridges, but they have been updated recently. Paved road surfaces require some cleaning of flood debris, while gravel roads need grading and some spot replacement of surface rock.

Table 4.11 Water Use Table for Moscow, Idaho.

Moscow	Population = 21,674 (2002)
Max plant daily production	10.8 million gallons/day
Max daily usage	4.5 million gallons/day
Avg. daily usage	2.0 million gallons/day
Storage capacity	4.8 million gallons
Per capita avg. daily usage	92 gallons/day
# days use w/o power (avg. daily use)	2.4 days

The average domestic use, per capita, nationwide is 184 gallons. The smallest state, population-wise, among the nation's top 10 water users is Idaho, due to irrigation.

Most residents of the community are connected to the municipal water system or have drilled personal wells. City wells and the water systems are located outside of the flood plain. The cities ability to provide clean drinking water during flood events should not be compromised.

Power-lines, emergency services (fire/ambulance), City Hall, schools, and other public facilities are located outside of the flood plain. These services feel no direct impact of flooding, and are able to fully function in emergency situations.

4.6.8.4 Flood Protection

Paradise Creek has no protective structures throughout the reach within the community. No dikes or levees have been built along the stream to contain flood waters, making the community vulnerable to flooding events. The community seems to be aware of the risks involved with Paradise Creek and other creeks within the area to be able to respond appropriately during a flooding event.

Further maintenance and improvements of the Paradise Creek riparian area will further protect the community from future flooding events.

Moscow operates under the International Building Codes, and has adopted a new Flood Ordinance since the floods in 1996.

4.6.8.5 Mitigation Activities

At the local level Moscow has done a significant number of mitigation efforts to lower the areas vulnerability to floods. These current mitigation measures should be available from the City of Moscow's Planning and Development Department.

Continued participation in NFIP and enforcement of building codes in the flood plain will help keep Moscow at a low risk of experiencing costly flood damage.

Major weather events that cause floods can interrupt electrical service. Back up power generators for emergency services, city water systems and communication systems would help in emergency situations.

Chapter 5: Landslides

5 Latah County Conditions

Latah County is characterized by rolling basalt plateaus dissected by deep canyons. The plateaus are mantled with deposits of loess that are tens of feet thick in places. The deep canyons draining toward the Potlatch River cut through the basalt flows that underlie Latah County. These flows are interbedded with loose, unstable sedimentary layers that are exposed in the deeply incised canyons. The expose of this unconsolidated sedimentary layer increases landslide potential wherever these deposits are present on steep slopes. Weathering and climatic events lead to landslide activity, with the scale of the event largely dependent on the environmental conditions leading up to the event. Highway 3, 99, and structures along Potlatch River are most likely to be affected by landslide activity due to the steep walls of the Potlatch Canyon. Roads and structures in any area within the county where logging roads or other roads have cut through steep basalt fields are also at increased risk.

5.1 Landslide Hazard Profile

Landslide is a general term for a wide variety of down slope movements of earth materials that result in the perceptible downward and outward movement of soil, rock, and vegetation under the influence of gravity. The materials may move by falling, toppling, sliding, spreading, or flowing. Some landslides are rapid, occurring in seconds, whereas others may take hours, weeks, or even longer to develop. Although landslides usually occur on steep slopes, they also can occur in areas of low relief. Landslides can occur as ground failure of river bluffs, cut and-fill failures that may accompany highway and building excavations, collapse of mine-waste piles, and slope failures associated with quarries and open-pit mines.

The primary factors that increase landslide risk are slope and certain soil characteristics. In general, the potential for landslide occurrence intensifies as slope increases on all soil types and across a wide range of geological formations.

Soil factors that increase the potential for landslide are soils developed from parent materials high in schist and granite, and soils that are less permeable containing a resistive or hardpan layer. These soils tend to exhibit higher landslide potential under saturated conditions than do well drained soils. To identify the high-risk soils in Latah County, the NRCS State Soils Geographic Database (STATSGO) layer was used to identify the location and characteristics of all soils in the County. The specific characteristics of each major soil type within the County was reviewed. Soils with very low permeability that characteristically have developed a hardpan layer or have developed from schist and granite parent material were selected as soils with potentially high landslide risk potential. High-risk soils magnify the effect slope has on landslide potential. Soils identified as having high potential landslide risk are further identified only in areas with slopes between 14° and 30° (25-60%). It is these areas that traditionally exhibit the highest landslide risk due to soil characteristics within a given landscape.

To portray areas of probable landslide risk due to slope related factors, slope models were used to identify areas of low, moderate and high risk. This analysis identified the low risk areas as slopes in the range of 20°-25° (36-46%), moderate as 26°-30° (48-60%) and high risk as slopes in the range of 31°-60° (60-173%). Slopes that exceeded 60° (173%) were considered low risk due to the fact that sliding most likely had already occurred relieving the area of the potential energy needed for a landslide. From the coverage created by these two methods it is possible to depict areas of risk and their proximity to development and human activity. With additional

field reconnaissance the areas of high risk were further defined by overlaying additional data points identifying actual slide locations, thus improving the resolution by specifically identifying the highest risk areas. This method of analysis is similar to a method developed by the Clearwater National Forest in north central Idaho (McClelland *et al.* 1997).

Landslide may occur on slopes steepened by man during construction, or on natural ground never disturbed. However, most slides occur in areas that have had sliding in the past. All landslides are initiated by factors such as weaknesses in the rock and soil, earthquake activity, the occurrence of heavy snow or rainfall, or construction activity that changes a critical factor involved with maintaining stability of the soil or geology of the area. A prime example of this includes previously stable slopes where home construction utilizing independent septic systems are added. The increased moisture in the ground, when coupled with an impermeable layer below the septic systems has led to surface soil movements and mass wasting.

Landslides can be triggered by natural changes in the environment or by human activities. Inherent weaknesses in the rock or soil often combine with one or more triggering events, such as heavy rain, snowmelt, or changes in ground water level. Late spring-early summer is slide season, particularly after days and weeks of greater than normal precipitation. Long-term climate change may result in an increase in precipitation and ground saturation and a rise in ground-water level, reducing the shear strength and increasing the weight of the soil.

Stream and riverbank erosion, road building or other excavation can remove the toe or lateral slope and exacerbate landslides. Seismic or volcanic activity often triggers landslides as well. Urban and rural living with excavations, roads, drainage ways, landscape watering, logging, and agricultural irrigation may also disturb the solidity of landforms, triggering landslides. In general, any land use changes that affects drainage patterns or that increase erosion or change ground-water levels can augment the potential for landslide activity.

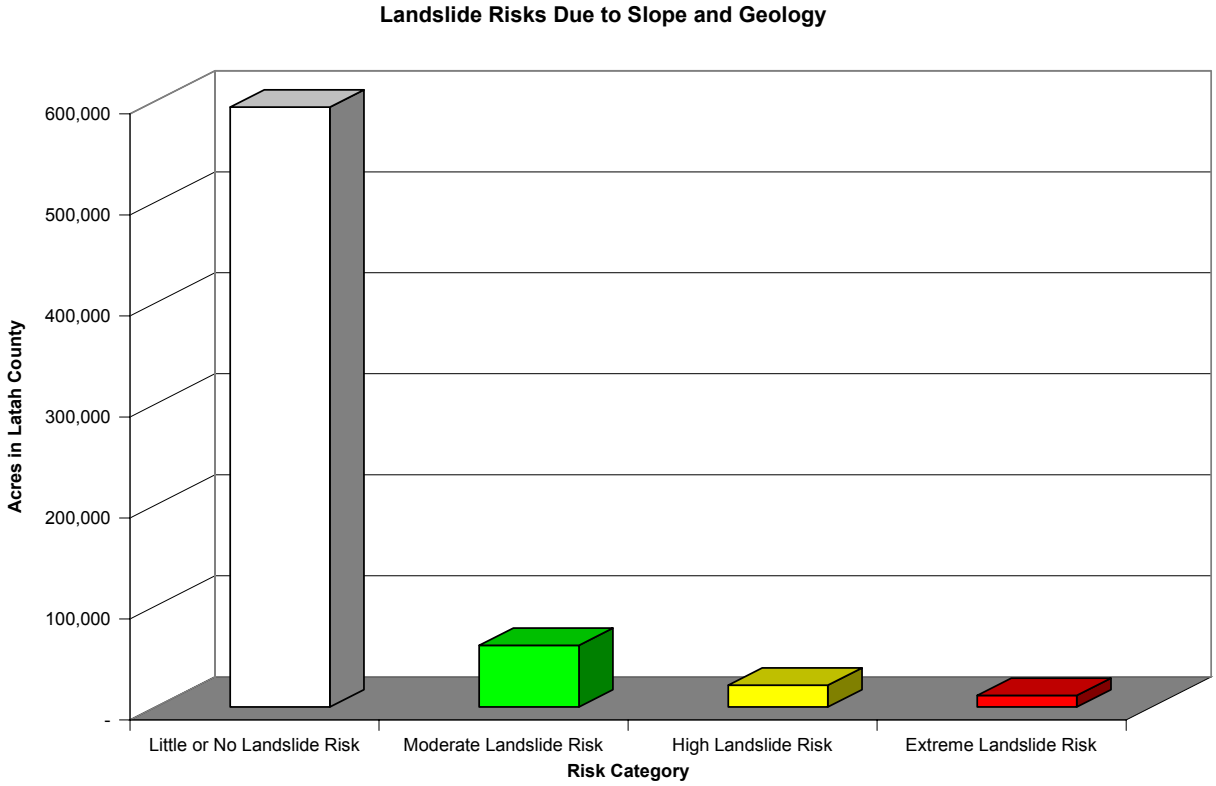
Landslides are a recurrent menace to waterways and highways and a threat to homes, schools, businesses, and other facilities. The unimpeded movement over roads—whether for commerce, public utilities, school, emergencies, police, recreation, or tourism—is essential to a normally functioning of Latah County. The steep walls of the Potlatch River drainage pose special problems to Highway 3, and 99 the major intercommunity travel route to Kendrick and Juliaetta. The disruption and dislocation of this or any other routes in the breaklands caused by landslides can quickly jeopardize travel and vital services.

Landslide risks in and around Latah County were evaluated and are presented in a number of Figures in this chapter. An analysis of this data reveals that approximately 2% of the area in Latah County is in the Extreme risk category, 3% is in the High risk category, 9% is in the Moderate risk category, with the remaining 86% at little to no risk to landslides from slope and geology factors (Table 5.1).

Table 5.1. Landslide Risk Due to Slopes and Geology in Latah County.

Risk Due to Slopes and Geology	Acres	Percent
Little or No Landslide Risk	593,859.37	86%
Moderate Landslide Risk	61,057.67	9%
High Landslide Risk	21,716.87	3%
Extreme Landslide Risk	11,627.55	2%

Figure 5.1. Landslide Risks in Latah County: Geology and Slope Factors.



Soil factors, as described above account for additional risks, literally on-top-of the slope and geological factors detailed in Table 5.1 and Figure 5.1. There are approximately 46,701 acres of soils in this high risk soils category. In order to evaluate the juxtaposition of these soils to the areas at risk from slopes and geology, those areas underlying the areas determined to be at risk due to soil conditions were evaluated, separate from the rest of the County. This analysis reveals that in those areas with high soil risk factors, approximately 62% of that area is at little to no risk due to slope and geological factors, 30% is at Moderate landslide risk, 8% is at High landslide risk, and no area is at Extreme landslide risk (Table 5.2). While all areas specified at risk from either assessment should be given consideration for planning, zoning, and determining risks to human development and use, it is the lands that show risk through both assessment strategies that should receive additional attention and mitigation measures, especially where developments already exist.

Table 5.2. Landslide Risk Due to Slopes and Geology that are also at risk due to soil factors in Latah County.

Risk Due to Slopes and Geology	Acres	Percent
Little or No Landslide Risk	28,955	62%
Moderate Landslide Risk	14,068	30%
High Landslide Risk	3,679	8%
Extreme Landslide Risk	-	0%

Figure 5.2. Landslide Risks in Latah County: Geology, Slope, and Soil Factors.

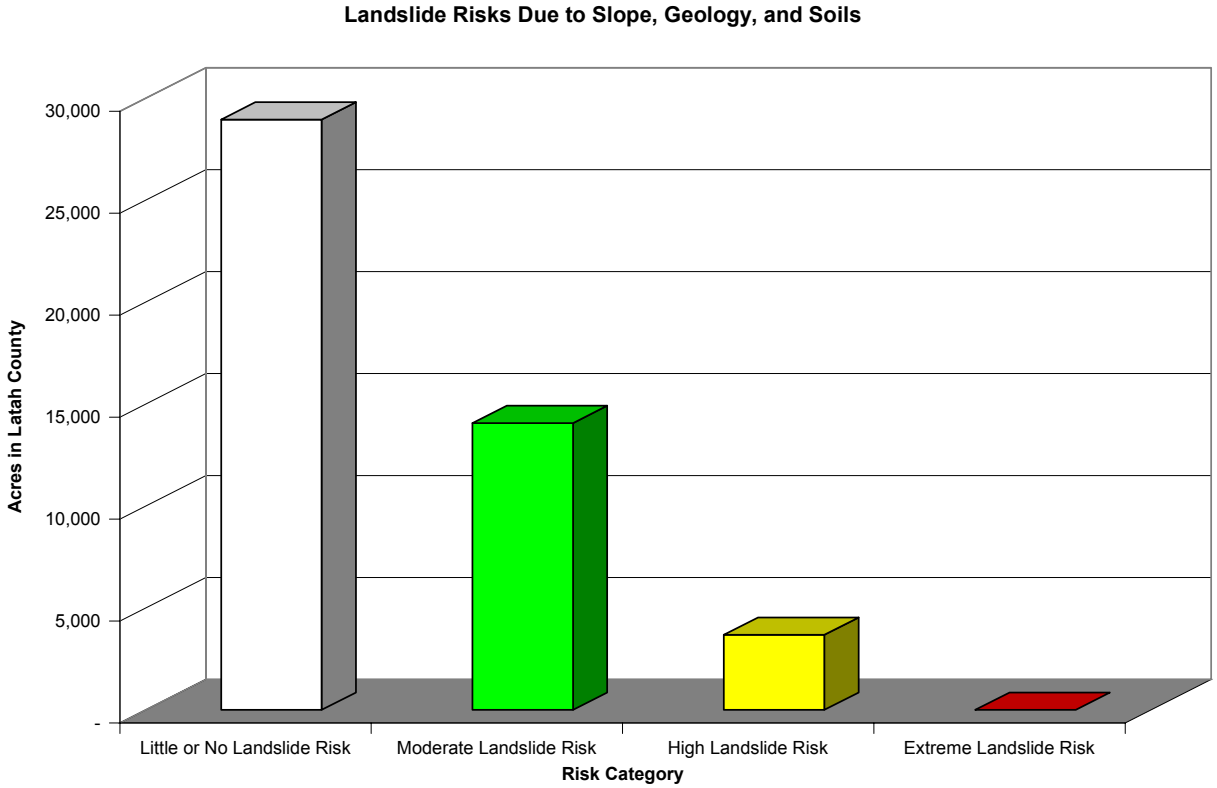


Figure 5.3. Landslide Prone Landscapes of Latah County; Slope and Geologic Factors.

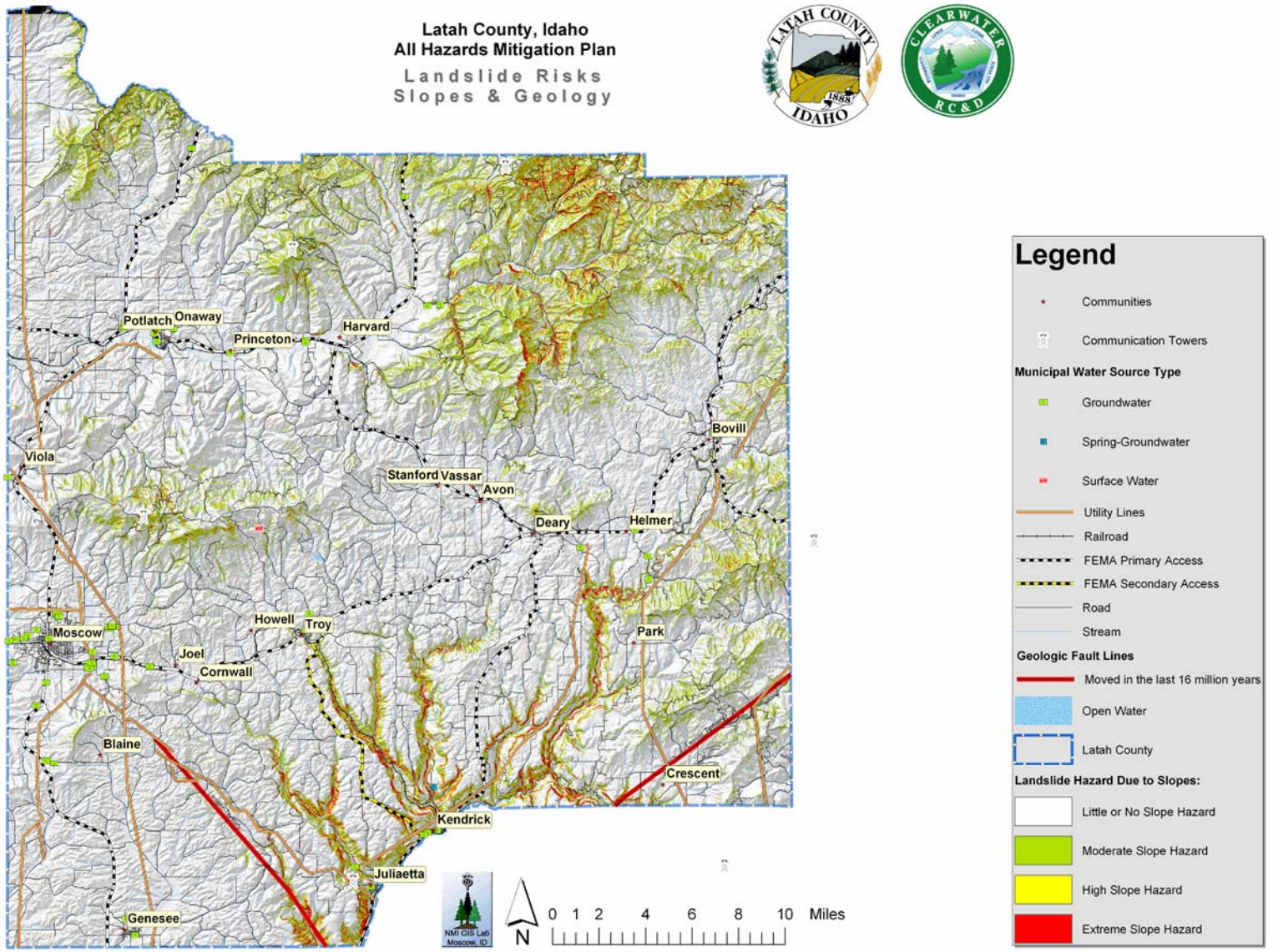
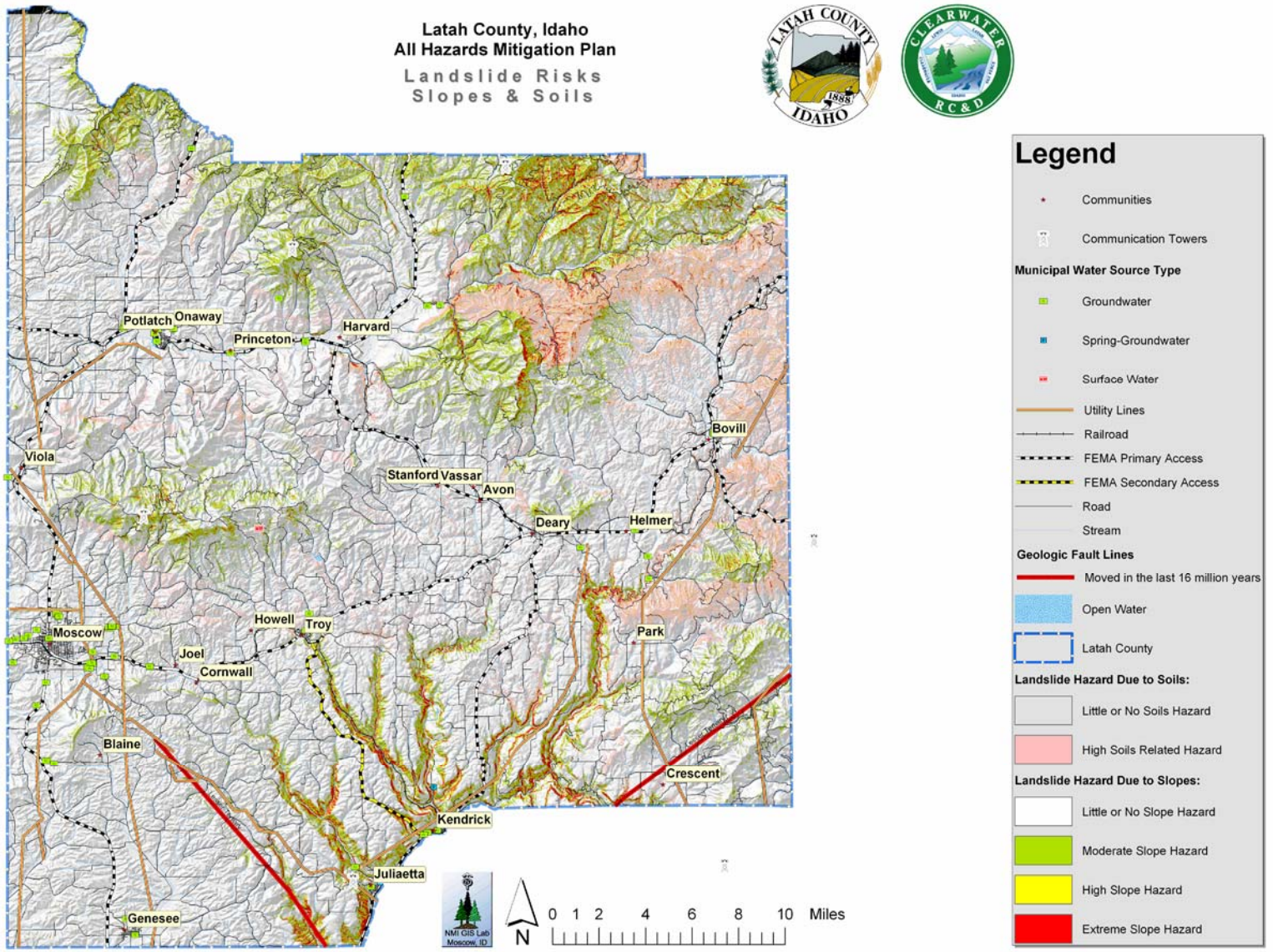


Figure 5.4. Landslide Prone Landscapes of Latah County; Slope, Geologic, and Soil Factors.



5.2 Landslide Prone Landscapes

Many areas have specific landslide concerns. Areas that are generally prone to landslides are:

- On existing landslides, old or recent
- On or at the base or top of slopes
- In or at the base of minor drainage hollows
- At the base or top of an old fill slope
- At the base or top of a steep cut slope

There are many homes, roads and other resources at risk in Latah County because of their juxtaposition to one or more of these characteristics. Individual assessments of landslide-prone areas that would cause disruption in Latah County are detailed in subsequent sections of this plan.

5.3 General Landslide Hazards Mitigation Strategies

A number of techniques and practices are available to reduce and cope with losses from landslide hazards. Careful land development can reduce losses by avoiding the hazards or by reducing the damage potential. Following a number of approaches used individually or in combination to reduce or eliminate losses can reduce landslide risk.

5.3.1 Establish a Countywide landslide hazard identification program

Document all landslides, bank failures, “washouts”, and manmade embankment failures. Each failure should be located on a map with notations about time of failure, repair (if made), and descriptions of the damaged area. This could become a County directive to the road and bridge crews.

5.3.2 Restricting development in Landslide Prone Landscapes

Land-use planning is one of the most effective and economical ways to reduce landslide losses by avoiding the hazard and minimizing the risk. This is accomplished by removing or converting existing development or discouraging or regulating new development in unstable areas. Buildings should be located away from known landslides, debris flows, steep slopes, streams and rivers, intermittent-stream channels, and the mouths of mountain channels. In the State of Idaho, restrictions on land use generally are imposed and enforced by local governments by land-use zoning districts and regulations.

5.3.3 Standardizing codes for excavation, construction, and grading

Excavation, construction, and grading codes have been developed for construction in landslide-prone areas; however, there is no nationwide standardization. Instead, State and local government agencies apply design and construction criteria that fit their specific needs. The Federal Government has developed codes for use on Federal projects. Federal standards for excavation and grading often are used by other organizations in both the public and private sectors.

5.3.4 Protecting existing development

Control of surface-water and ground water drainage is the most widely used and generally the most successful slope-stabilization method. Stability of a slope can be increased by removing all

or part of a landslide mass or by adding earth buttresses placed at the toes of potential slope failures. Restraining walls, piles, caissons, or rock anchors are commonly used to prevent or control slope movement. In most cases, combinations of these measures are used.

5.3.5 Post warnings of potentially hazardous areas and educate the public about areas to avoid

Such areas may include (a) existing / old landslides, (b) on or at the base of a slope, (c) in or at the base of a minor drainage hollow, (d) at the base or top of an old fill or steep cut slope, and (e) on developed hillsides where leach field septic systems are used. In addition to identifying these at-risk landscapes, it will also serve to begin an educational dialog with landowners in Latah County, enlightening residents and visitors to the risks associated with landslides.

5.3.6 Utilizing monitoring and warning systems

Monitoring and warning systems are utilized to protect lives and property, not to prevent landslides. However, these systems often provide warning of slope movement in time to allow the construction of physical measures that will reduce the immediate or long-term hazard. Site-specific monitoring techniques include field observation and the use of various ground motion instruments, trip wires, radar, laser beams, and vibration meters. Data from these devices can be sent via telemetry for real-time warning. Development of regional real-time landslide warning systems is one of the more significant areas of landslide research (Fragaszy 2002, USGS 2004).

5.3.7 Public Education

Residents can increase their personal awareness by becoming familiar with the land around the home and community. People can learn whether landslides or debris flows have occurred in the area by contacting local officials, state geological surveys or departments of natural resources, USGS maps, and university departments of geology. Slopes where landslides or debris flows have occurred in the past are likely to experience them in the future.

Educate the public about telltale signs that a landslide is imminent so that personal safety measures may be taken. Some of these signs include:

- Springs, seeps, or saturated ground in areas that have not typically been wet before.
- New cracks or unusual bulges in the ground, street pavements or sidewalks.
- Soil moving away from foundations, and ancillary structures such as deck-sand patios tilting and/or moving relative to the house.
- Sticking doors and windows, and visible open spaces indicating jambs and frames out of plumb.
- Broken water lines and other underground utilities.
- Leaning telephone poles, trees, retaining walls or fences.
- Sunken or dropped-down roadbeds.
- Rapid increase in a stream or creek water levels, possibly accompanied by increased turbidity (soil content).
- Sudden decrease in creek water levels even though rain is still falling or just recently stopped.

Residents or county representatives who live and work in landslide prone areas should follow these recommendations prior to a storm event:

- Watch the patterns of storm-water drainage on slopes and note places were runoff water converges, increasing flow over soil-covered slopes. Watch the hillsides around your home and community for any signs of land movement, such as small landslides or debris flows or progressively tilting trees.
- Develop emergency response and evacuation plans for individual communities and for travel routes. Individual homeowners and business owners should be encouraged to develop their own evacuation plan.

(USGS 2004)

5.4 Individual Community Assessments

5.4.1 Kendrick/Juliaetta

Kendrick and Juliaetta are located in the canyon of the Potlatch River. The Potlatch River has cut deep canyons into the Palouse Prairie and the basalt flows that underlie much of the area. Large areas of landslide deposits dominate the geology around Kendrick and Juliaetta, the result of the movement of sedimentary materials interbedded with the basalt flows. Landslide deposits occur where major sedimentary interbeds are exposed along the steep valley sides.

5.4.1.1 Landslide Potential

The Kendrick and Juliaetta area has been an area of active landslide activity in the geologic past as well as in the present. The factors that lead to slope instability have been present in the area since ancient times. Although recent years have not seen the same level of activity that was typical in ancient times, these characteristics remain. Many of the slopes and hillsides along the Potlatch River and in the vicinity of Kendrick and Juliaetta are comprised by material deposited by past landslides. Location of landslide deposits in canyons is controlled by the presence of sedimentary interbeds, the hydrologic regime, and the occurrence of basalt overlying clay-rich weathered basement rocks. The largest landslides occur where canyon cutting has exposed landslide-prone sediments to steep topography. Today, initiation and reactivation of landslides is closely tied to unusual climatic events and land-use changes. Even small landslide activity on the upper parts of canyon slopes can transform into high-energy debris glows that endanger roads, buildings, and people below. Landslide debris is highly unstable when modified through natural variations in precipitation, artificial cuts, fills, and changes to surface drainage and ground water (Weisz et al 2003).

Past landslide activities include one that occurred two years ago on the McGary Road and one just east of Juliaetta north of Highway 3. The McGary Road Slide was due to the configuration of the road cut along the mountain. The landslide that occurred east of Juliaetta was the result of a gully washer that ended up taking out a mobile home in the area.

The Idaho Geological Survey has aggressively been mapping surficial geologic features along the Potlatch River. These maps provide valuable information for planning of private and public land planning by identifying areas of unstable geologic formations. This work indicates that there are numerous visible landslides blocks on many of the steep slopes above the community of Kendrick and Juliaetta and in the Potlatch River Drainage. The presence of these landslide blocks is a strong indicator of possible landslide activity in the future.

Poorly sorted material deposited during debris flow events is also present in alluvial fans in the Kendrick and Juliaetta area. These deposits are at the mouths of steep chutes and small canyons along the breaks of the Potlatch River drainage. The presence of this material indicates the historic occurrence of high-energy, short duration floods and debris flows in these chutes in response to severe climatic conditions, such as thunderstorms and rain-on-snow events. During these events, material present in the sedimentary layers was washed down the steep drainages and deposited at the mouth of the chutes, forming alluvial fans of varying sizes. These events are historically infrequent, with recurrence cycles on the order of years to decades. However, these events can result in significant damage to buildings and infrastructure, disrupt travel, reduce water quality and jeopardize safety.

5.4.1.2 Community Risk Assessment

The communities of Kendrick and Juliaetta are at moderate risk to landslide activity. Homes and travel routes that have been constructed at the mouths of steep chutes and through alluvial deposits that are at an increased risk of being affected by landslide activity. These historic deposits are a strong indicator of debris flows in the future. Furthermore, these deposits tend to be unstable and somewhat prone to movement. The following is a list of areas that are built in alluvial fans:

- The homes and infrastructure north and south of Highway 3.
- Homes and infrastructure along Highway 99.
- Homes located up Cedar Ridge Road.
- Homes located along McGary Grade (Nez Perce County).

Debris flow activity and the resulting alluvial sediment deposition is associated with soil saturation and precipitation events. As mentioned, landslide events are generally associated with large precipitation events. The areas noted above are in areas with landslide characteristics. The probability of these events occurring during normal weather conditions is quite low. However during large precipitation events residents and county representatives should monitor these areas for landslide activity.

The potential for debris flows and landslides would dramatically escalate in the event of a large wildland fire event that denudes the steep canyon slopes of vegetative cover. The loss of the vegetative cover reduces slope stability by removing much of the organic matter that helps absorb and intercept precipitation and anchor the fragile soil to the canyon walls. For a more complete discussion of fire-induced debris flows, refer to Wildland Urban Interface Fire Mitigation Plan.

5.4.1.3 Mitigation Activities

See County-wide Mitigation Activities above.

5.5 All Other Latah County Communities

Includes Moscow, Potlatch, Troy, Deary, and Bovill.

5.5.1 Landslide Potential

The Communities of Moscow, Potlatch, Troy, Deary, and Bovill are located on the Palouse Prairie in areas of low relief. The Palouse Prairie region is known for its deep, fertile loess soils

and crop production capacity. Soils throughout this are many feet deep. Due to the gentle topography of the area, landslide potential is quite low. However, landslide activity is possible wherever roads or other excavations have been constructed across the toe of steep hill slopes. Landslide events under these soils and topographic conditions would be associated with soil saturation and the loss of cohesion between soil particles. Soils with an underlying hardpan are elevated risk due to the presence of a consistent bed surface for slope failure. Once soils become saturated, soil water accumulates at the hardpan, lubricating and reducing friction between particles. This surface can then act as a sliding surface, potentially leading to slope failures.

5.5.2 Community Risk Assessment

All the communities on the Palouse Prairie are at low risk to landslide activity. The gentle topography of the Palouse Prairie reduces the probability of landslide occurrence. Although slope failures are possible, these would likely be isolated areas where excavation or road building has weakened slope stability.

5.6 Fire Related Debris Flows

Wildland fires are inevitable in the western United States where burnable vegetation exists. Expansion of human development into forested areas has created a situation where wildfires can adversely affect lives and property, as can the flooding and landslides that potentially occur in the aftermath of the fires. Post-fire landslide hazards include fast-moving, highly destructive debris flows that can occur in the years immediately after wildfires in response to high intensity rainfall events, and those flows that are generated over longer time periods accompanied by root decay and loss of soil strength. Post-fire debris flows are particularly hazardous because they can occur with little warning, can exert great impulsive loads on objects in their paths, can strip vegetation, block drainage ways, damage structures, and endanger human life. Wildfires could potentially result in the destabilization of pre-existing deep-seated landslides over long time periods.

5.6.1 Conditions for fire-related debris-flow occurrence

In a recent study of the erosion response of recently burned basins in the intermountain west, the USGS found that not all basins produce debris flows; most burned watersheds respond to even heavy rainfall events by flooding. However, those watersheds that do produce destructive debris flows can be readily identified by a combination of geologic, topographic, and rainfall characteristics. The factors that best determine the probability of debris-flow occurrence are:

- The percent of area burned in each basin at both high and moderate severities,
- The average storm rainfall intensity,
- The measure of sorting of the grain-size distribution of the burned soil,
- The percent of soil organic matter (by weight),
- The soil permeability,
- The soil drainage, and
- The percent of the basin with slopes great than or equal to 30%.

The results from post-fire erosion rates show that the majority of post-fire erosion results from summer thunderstorms rather than frontal storms or snowmelt (MacDonald *et al.* 2004).

Thunderstorm events producing 0.25 inches of precipitation an hour have been used as a threshold for flash flooding in severely burned areas of Western Montana.

5.6.2 General Mitigation Activities

There are a number of mitigation activities that can be implemented following large wildland fires in order to help rehabilitate the site. Rehabilitation efforts help speed the ecological recovery of the burned area while reducing the potential for rapid runoff, rilling, gullying, and development of destructive debris flows. These efforts also help reduce the loss of soil productivity and water quality, while reducing the threat to human life and property. In the event of large-scale fire events, a complete Burned Area Emergency Recovery (BAER) plan should be completed in order to address the unique features of the burn. The following is a partial list of components that would likely be included in a BAER plan.

- Directional tree felling, and contour log terracing along drainages and slopes with high burn severity in order to reduce overland and in stream channel flow. This can help reduce the amount of runoff and potential to initiate rilling and downstream mud and debris flows.
- Aerially seed moderate to high burn areas to provide short-and long-term vegetative cover to reduce water yield and sedimentation.
- Apply straw mulch to high severity burn areas where soils are well drained, occurring on gentle slopes and are protected from the wind. Mulch will slow runoff and help to prevent erosion. Topsoil will be protected and soil moisture will be maintained to promote biological activity in the soil.
- Install straw bale check dams in steep drainages in order to trap sediment.
- Place flood hazard warning signs in areas prone to flash-flooding.
- Install straw wattles in a checkerboard fashion along the contour of hillsides. The wattles serve as soil erosion and runoff control measure on steep slopes with a high degree of water repellency. Waddles can help stabilize the slope, minimize soil erosion and capture sediment.
- Clear, reinforce, and if needed, replace undersized culverts and stream crossings within the burn area to prevent washout along roads. Since water yield will be dramatically higher in the post-burn condition, drainage systems need to be restructured in order to accommodate the increase in flow.

Chapter 6: Severe Weather

6 Severe Weather Characteristics

Severe storms are a serious hazard that could affect Idaho. Severe storms can affect the entire state with varying degrees, due to the complex landscape and the influence from the Pacific Ocean. Although, Idaho's climate sees relatively few severe storms in comparison with the rest of the nation, it still poses a significant hazard to the state and local communities. Only two storm-related Presidential Disaster declarations were made in Idaho: one in 1976 and one in 2000.

Damaging storms do occur, however, and casualties and extensive property damage result throughout the entire state. Two types of severe storms are of concern in Idaho:

- Winter storms with accumulations of snow and ice, extreme cold and reduced visibility.
- Thunderstorms with hail, lightning, and high winds.

6.1 Winter Storms

Winter storms are a part of life in Idaho. They vary in degree and intensity and can occur at anytime but are especially probable between September and May. These storms could be localized or could affect the entire state. They can last a matter of minutes or over many days. Typically, winter storms are measured by the amounts of snow which accumulated during any given storm. Additionally, these storms could be measured by the accompanied wind or temperatures associated with each storm.

In any discussion about winter storms, terminology and the general characteristics of the causes and impacts of winter storms need to be defined. Natural winter storm events are grouped into the following categories:

Flurries – Light snow falling for short durations. No accumulation or light dusting is all that is expected.

Showers – Snow falling at varying intensities for brief periods of time. Some accumulation is possible.

Squalls – Brief, intense snow showers accompanied by strong, gusty winds. Accumulation may be significant. Snow squalls are best known in the Great Lakes Region.

Blowing Snow – Wind-driven snow that reduces visibility and causes significant drifting. Blowing snow may be snow that is falling and/or loose snow on the ground picked up by the wind.

Blizzard – A winter storm with winds over 35 mph and temperatures of 20 degrees F., Accompanied by blowing snow that reduces visibility to near zero.

Sleet – Rain drops that freeze into ice pellets before reaching the ground. Sleet usually bounces when hitting a surface and does not stick to objects. However, it can accumulate like snow and cause a hazard to motorists.

Freezing Rain – Rain that falls onto a surface with a temperature below freezing. This causes it to freeze to surfaces, such as trees, cars, and roads, forming a coat or glaze of ice. Even small accumulations of ice can cause a significant hazard.

Severe Winter Storm - defined as one that drops four or more inches of snow during a twelve hour period, or six or more inches during a twenty-four hour period.

Ice storm - occurs when cold rain freezes immediately on contact with the ground, structures, and vegetation.

6.2 Thunderstorms

Thunderstorms do occur within Idaho affecting almost all counties, but usually are localized events. Their impacts are fairly limited and do not significantly affect the communities enough to declare a disaster. Thunderstorms are emphasized within the flood chapter of this All Hazard Mitigation Plan.

6.3 Severe Weather Event Profile

Idaho has not had a significant number of severe storm-related Presidential Disaster Declarations during the past 30 years. The majority of the storms that affect Idaho are on a lower scale that is not recognized as a "Disaster", due to the number of less intense storms that occur every year. Idaho, due to its complex landscape, will always have to deal with winter conditions that occur every year. People and communities have learned to adapt to the winter storms and deal with them as they come. Table 6.1 lists the State Disaster declarations from 1976-2000 in Idaho.

Table 6.1. Severe weather profile of Idaho.

DATE	COUNTIES AFFECTED
January 1989	Bonner, Clark
January 1993	Jerome
January 1994	Elmore
February 1996	Benewah, Bonner, Boundary, Clearwater, Idaho, Kootenai, **Latah**, Lewis, Nez Perce, Shoshone
November 1996 to January 1997	Adams, Benewah, Boise, Bonner, Boundary, Clearwater, Elmore, Gem, Idaho, Kootenai, **Latah**, Nez Perce, Owyhee, Payette, Shoshone, Valley, Washington

(State Hazard Mitigation Plan 2004)

6.4 Drought

Drought conditions are currently affecting several counties within the state of Idaho. Current warming trends and below normal precipitation levels in the past ten years is causing severe drought conditions. These droughts are causing severe water losses to the area aquifers as well as municipal water supplies. Furthermore, reduced growth to the areas vegetation due to the lack of moisture is increasing the risk of wildfires. The counties within Idaho that are currently declared Drought Emergency Declarations are summarized in Table 6.2.

Table 6.2. Drought hazard profile of Idaho.

County/Area	Date Declared
Latah County	January 9, 2004
Bear Lake	August 24, 2004
Cassia County	July 27, 2004
Jerome County	July 27, 2004

Table 6.2. Drought hazard profile of Idaho.

County/Area	Date Declared
Franklin County	July 20, 2004
Elmore County	July 9, 2004
Twin Falls County	July 2, 2004
Teton County	June 17, 2004
Bingham County	May 26, 2004
Jefferson County	May 25, 2004
Oneida County	May 25, 2004
Bannock County	May 20, 2004
Bonneville County	May 20, 2004
Madison County	May 20, 2004
Blaine County	May 13, 2004
Gooding County	May 13, 2004
Custer County	May 5, 2004
Lemhi County	May 5, 2004
Fremont County	May 4, 2004
Caribou County	April 27, 2004
Lincoln County	April 19, 2004
Butte County	April 14, 2004
Clark County	April 14, 2004
Power County	May 20, 2004

(IDWR 2004)

Federal officials declared Latah County a primary disaster area because of drought conditions experienced on the Palouse the previous summer. The declaration, made January 9, 2004 by U.S. Department of Agriculture Secretary Ann Veneman, allows area farmers to receive eligibility for low-interest emergency loans. A drought-induced disaster declaration was also made in 2001.

6.5 Regional Climate Profile

The nature and extent of severe weather conditions is a result of the topography of the state or local community and the location of the state within the Pacific Northwest. Information for this section (6.5) has been summarized from the Western Regional Climate Center (WRCC 2004).

6.5.1 Topographic Features

Idaho lies entirely west of the Continental Divide, which forms its boundary for some distance westward from Yellowstone National Park. With a maximum north-south extent of 7° of latitude, its east-west extent of 6° of longitude at latitude 42° N., but only 1° of longitude at 49° N. The northern part of the State averages lower in elevation than the much larger central and southern portions, where numerous mountain ranges form barriers to the free flow of air from all points of the compass.

In the north the main barrier is the rugged chain of Bitterroot Mountains forming much of the boundary between Idaho and Montana. The extreme range of elevation in the State is from 738 feet of the confluence of the Clearwater and Snake Rivers to 12,655 feet at Mt. Borah in Custer County. Comprising rugged mountain ranges, canyons, high grassy valleys, arid plains, and

fertile lowlands, the State reflects in its topography and vegetation a wide range of climates. Located some 300 miles from the Pacific Ocean, Idaho is, nevertheless, influenced by maritime air borne eastward on the prevailing westerly winds. Particularly in winter, the maritime influences are noticeable in the greater average cloudiness, greater frequency of precipitation, and mean temperatures, which are above those at the same latitude and altitude in mid-continent. This maritime influence is most marked in the northern part of the State, where the air arrives via the Columbia River Gorge with a greater burden of moisture than at lower latitudes.

Eastern Idaho's climate has a more continental character than the west and north, a fact quite evident not only in the somewhat greater range between winter and summer temperatures, but also in the reversal of the wet winter-dry summer pattern.

6.5.2 Temperature

The pattern of average annual temperatures for the State indicates the effect both of latitude and altitude. The highest annual averages are found in the lower elevations of the Clearwater and Little Salmon River Basins, and in the stretch of the Snake River Valley from the vicinity of Bliss downstream to Lewiston, including the open valleys of the Boise, Payette, and Weiser Rivers. At Swan Falls the annual mean is 55° F, highest in the State. Obsidian, at an elevation of 6,780 feet in Custer County, has the lowest annual average, 35.4° F, of any reporting station, with such places as Sun Valley, Chilly Barton Flat, Grouse, Island Park Dam, and Big Creek not far behind.

The range between the mean temperature of the coldest and warmest months of the year varies from less than 40° F at a number of northern stations, to well over 50° F at stations in the higher elevation of the central and eastern parts of the State. In the basin of the Snake River and its tributaries, between Twin Falls and Idaho Falls, monthly mean temperatures of 32° F or lower persist from December through February, while downstream from Twin Falls, at the lower elevations, monthly mean temperatures are freezing or below only in December and January. Low-level stations like Riggins and Lewiston show no month in the year with mean temperature 32° F or lower. In general, it can be said that monthly means are 32° F or lower at stations above 5,000 feet from November through March; between 4,000 and 5,000 feet, November through February; 3,000 to 4,000 feet, December through February; and 2,000 to 3,000 feet, only one or two months.

The diurnal range of temperature is, of course, most extreme in high valleys and in the semiarid plains of the Snake River Valley. The magnitude of diurnal range varies with the season, being lowest in winter when cloudiness is much more prevalent and greatest in the warmer part of the year. At Boise, for example, the average diurnal range is only 14° F in January, but exceeds 30° F in July through September. Temperatures can range from -60° to 118° F. The coldest monthly mean minimum temperature has been -20° F, and the warmest monthly mean maximum 104° F. The highest long-term annual average has been 55°F at Swan Falls Power House, and the lowest long-term average 35° F at Obsidian. In summer, periods of extreme heat extending beyond a week are quite rare, and the same can be said of periods of extremely low temperatures in winter. In both cases the normal progress of weather systems across the State usually results in a change at rather frequent intervals. In the realm of extremely low temperatures, two winters stand out in the records for the State: 1937-38 and 1948-49. The lowest monthly mean temperatures on record occurred throughout the State in January 1949, and many stations registered the absolute lowest temperature on record during that month.

6.5.3 Precipitation

To a large extent the source of moisture for precipitation in Idaho is the Pacific Ocean. In summer there are some exceptions to this when moisture-laden air is brought in from the south at high levels to produce thunderstorm activity, particularly in the eastern part of Idaho. The source of this moisture from the south is apparently the Gulf of Mexico and Caribbean region. The average precipitation map for Idaho is as complex as the physiographic of the State. Partly because of the greater moisture supply in the west winds over the northern part of the State, (less formidable barriers to the west) and partly because of the greater frequency of cyclonic activity in the north, the average valley precipitation is considerably greater than in southern sections.

Peaks on the average annual precipitation map are found, however, in nearly all parts of the State at higher elevations. Sizeable areas in the Clearwater, Payette, and Boise River Basins receive an average of 40 to 50 inches per year, with a few points or small areas receiving in excess of 60 inches. Large areas including the northeastern valleys, much of the Upper Snake River Plains, Central Plains, and the lower elevations of the Southwestern Valleys receive less than 10 inches annually. Seasonal distribution of precipitation shows a very marked pattern of winter maximum and midsummer minimum in the northern and western portions of the State. In the eastern part of the State, however, many reporting stations show maximum monthly amounts in summer and minimum amounts in winter. In the Northeastern Valleys and Eastern Highlands, more than 50 percent of the annual rainfall occurs during the period April through September. Over nearly all of the northern part of the State, however, less than 40 percent of the annual rainfall occurs in this same period, and in portions of the Boise, Payette, and Weiser River drainages less than 30 percent of the annual amount comes in that six-month period.

6.5.4 Snowfall

Snowfall distribution is affected both by availability of moisture and by elevation. Annual snowfall totals in Shoshone County have reached nearly 500 inches. The greatest long-term (1942-56) seasonal average was 182 inches at Mullan Pass, while the greatest snow depth (also 182 inches) was recorded at that station on February 20, 1954. The major mountain ranges of the State accumulate a deep snow cover during the winter months, and the release of water from the melting snow-pack in late spring furnishes irrigation water for more than two million acres, mainly within the Snake River Basin above Weiser. Irrigation water supplies are nearly always plentiful, except on some of the smaller projects where storage facilities are inadequate. Electric power in increasing amounts is generated by the waters of the many rivers of the State.

6.5.5 Windstorms and Tornadoes

Windstorms are not uncommon in Idaho, but the State has no destructive storms such as hurricanes, and an extremely small incidence of tornadoes. Windstorms associated with cyclonic systems, and their cold fronts, do some damage to trees each year, often causing temporary disruption of power and communication facilities, but only minor damage to structures in most instances. Storms of this type may occur at any time from October into July, while during the summer months strong winds almost invariably come with thunderstorms. Hail damage in Idaho is very small in comparison with damage in areas of the central part of the United States. Often the hail that occurs does not grow to a size larger than one-half inch in diameter, and the areas affected are usually small. Quite often hail comes during early spring storms, when it is mostly of the small, soft variety with a limited damaging effect. Later when crops are more mature and more susceptible to serious damage, hail occurs in widely scattered

spots in connection with summer thunderstorms. The incidence of summer thunderstorms is greatest in mountainous areas, where lightning often causes serious forest and range fires.

6.6 Latah County Conditions

Past weather patterns show that severe weather conditions are likely to happen in any part of the county in any given year. The topographical features of the county contribute greatly to the various weather conditions that occur. The following table lists the average weather/climate within Latah County:

Table 6.3. Weather and Climate for Latah County, Idaho.

Temperature		Degrees	Month
Lowest Average Daily Minimum Temperature		22	January
Highest Average Daily Maximum Temperature		84.3	July
Hottest Month	July	Driest Month	July
Coldest Month	January	Wettest Month	January
Precipitation	Average Annual Total Precipitation	24 inches	
	Average Annual Snowfall	43 inches	
Humidity	Average July Afternoon Humidity	20 %	
	Average January Afternoon Humidity	69%	
Elevation	1,583Feet (Moscow)		
	1,230Feet (Kendrick)		(IDOCL 2004)

6.6.1 Community Climate Records

6.6.1.1 Moscow, Idaho

Table 6.4 Average weather in Moscow, Idaho.

	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Average temp. (°F)	29.5	34.2	40.2	46.6	53.4	59.3	65.7	66.5	58.8	48.4	36.6	29.7
High temperature (°F)	35.6	41.3	49.0	57.5	65.9	73.1	82.6	84.0	74.4	60.5	43.2	35.6
Low temperature (°F)	23.3	26.9	31.3	35.5	40.8	45.4	48.7	49.0	43.1	36.1	30.0	23.7
Precipitation (in)	2.9	2.5	2.5	2.4	2.5	1.8	1.1	1.2	1.2	2.0	3.5	3.1

6.6.1.2 Bovill, Idaho

Table 6.5 Average weather in Bovill, Idaho.

	Jan	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Average temp. (°F)	28.0	32.5	38.7	45.7	53.1	59.6	65.7	65.9	57.2	46.6	35.4	28.3
High temperature (°F)	35.3	41.3	49.0	57.3	66.0	73.4	82.2	83.4	73.5	59.8	42.7	34.9

Table 6.5 Average weather in Bovill, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Low temperature (°F)	20.8	23.5	28.4	33.9	40.1	45.6	49.2	48.3	40.9	33.3	28.2	21.5
Precipitation (in)	4.1	3.5	2.9	2.5	2.8	2.1	1.4	1.1	1.6	2.1	4.1	4.2

6.6.1.3 Troy, Idaho

Table 6.6 Average weather in Troy, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	30.0	34.6	40.6	47.0	53.9	60.0	66.6	67.3	59.3	48.7	37.0	30.2
High temperature (°F)	36.0	41.8	49.5	57.9	66.2	73.5	83.1	84.3	74.6	60.7	43.6	36.0
Low temperature (°F)	23.9	27.4	31.8	36.1	41.5	46.4	50.0	50.3	44.0	36.7	30.5	24.3
Precipitation (in)	2.7	2.3	2.3	2.3	2.4	1.7	1.0	1.1	1.2	1.8	3.1	2.8

6.6.1.4 Genesee, Idaho

Table 6.7 Average weather in Genesee, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	31.0	35.6	41.7	48.1	55.2	61.6	68.4	69.0	60.5	49.5	37.9	31.2
High temperature (°F)	36.9	42.8	50.6	58.8	67.2	74.7	84.3	85.2	75.1	61.0	44.5	36.8
Low temperature (°F)	25.0	28.4	32.8	37.3	43.0	48.4	52.6	52.7	45.9	37.9	31.5	25.4
Precipitation (in)	2.3	1.9	2.0	2.0	2.1	1.5	0.9	1.0	1.1	1.6	2.6	2.3

6.6.1.5 Kendrick, Idaho

Table 6.8 Average weather in Kendrick, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	29.9	34.4	40.2	46.8	53.7	60.0	66.5	67.1	58.9	48.3	36.8	30.1
High temperature (°F)	36.5	42.3	49.8	58.1	66.2	73.5	82.8	84.1	74.5	60.7	43.9	36.4
Low temperature (°F)	23.2	26.3	30.6	35.4	41.1	46.4	50.2	50.0	43.3	35.9	29.7	23.7
Precipitation (in)	2.7	2.3	2.5	2.5	2.7	1.9	1.2	1.1	1.3	1.9	3.2	2.8

6.6.1.6 Potlatch, Idaho

Table 6.9 Average weather in Potlatch, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	29.4	34.0	40.0	46.4	53.3	59.2	65.7	66.5	58.6	48.2	36.5	29.6
High temperature (°F)	35.5	41.2	48.8	57.3	65.6	72.8	82.4	83.8	74.1	60.5	43.2	35.5
Low temperature (°F)	23.2	26.8	31.2	35.5	40.9	45.6	48.9	49.2	43.0	35.9	29.8	23.6
Precipitation (in)	2.8	2.3	2.3	2.2	2.3	1.7	1.0	1.1	1.1	1.8	3.2	3.0
Cloudy days	24	20	19	17	15	12	6	7	9	15	22	24
Snowfall (in)	15.0	7.5	3.9	0.6	0.1	0.0	0.0	0.0	0.0	0.4	6.1	14.0

6.6.1.7 Juliaetta, Idaho

Table 6.10 Average weather in Juliaetta, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	30.0	34.4	40.0	46.4	53.3	59.8	66.4	67.0	58.7	48.2	36.8	30.1
High temperature (°F)	36.5	42.0	49.1	57.1	65.3	72.8	82.2	83.3	73.4	59.9	43.6	36.3
Low temperature (°F)	23.5	26.8	31.0	35.6	41.3	46.6	50.7	50.7	44.0	36.4	29.9	23.8
Precipitation (in)	2.2	1.9	2.1	2.3	2.5	1.8	1.1	1.1	1.2	1.7	2.6	2.3

6.6.1.8 Deary, Idaho

Table 6.11 Average weather in Deary, Idaho.

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average temp. (°F)	29.3	33.9	40.2	47.0	54.3	60.6	67.0	67.3	58.9	48.0	36.6	29.6
High temperature (°F)	36.1	42.2	50.2	58.7	67.2	74.5	83.5	84.8	74.9	60.9	43.7	35.8
Low temperature (°F)	22.5	25.4	30.2	35.3	41.3	46.7	50.4	49.8	42.8	35.1	29.5	23.2
Precipitation (in)	3.6	3.0	2.7	2.5	2.7	2.0	1.3	1.1	1.4	2.0	3.8	3.7

6.6.2 County Wide Potential Mitigation Activities

There is no way to prevent severe storms. The weather forces and topography of Latah County will always dictate when and where severe storms will occur. There are three areas where action can be taken to reduce the loss of life, property, and infrastructure and business disruption to severe weather.

- Mitigation
- Readiness/Education
- Building Codes

6.6.2.1 Mitigation

Some mitigation measures have been addressed in all communities within the county since the major state disasters in 1996 and 1997.

Further mitigation efforts should include the following:

- Readiness of snow removal equipment and schedule within the community.
- The availability of traction sand.
- School bus schedule or delays.
- Communication centers.
- Back-up power supplies.
- Water availability.
- Abundance of emergency equipment or shelters to the public.

At the individual home level:

- Insulate walls and attic.
- Caulk and weather-strip doors and windows.
- Install storm windows or cover windows with plastic from the inside.
- Have emergency heating equipment available.
- Fireplace with ample supply of wood.

- Small, well-vented, wood, coal, or camp stove with fuel.
- Portable space heaters or kerosene heaters.
- Install smoke detectors.
- Keep pipes from freezing.
- Have disaster supplies on hand in case power goes out.
- Develop an emergency communication plan.
- Make sure that all family members know how to respond after or during a severe winter storm.
- Stay indoors and dress warmly.
- Conserve fuel.

6.6.2.2 Readiness/Education

Continued periodic public education measures should be undertaken. When extended periods of time pass between major weather events, both emergency response units and the public tend to forget to review plans and take necessary precautions. Some media and public communication ideas are:

- Publish a special section in your local newspaper with emergency information on severe weather patterns. Localize the information by printing the phone numbers of local emergency services offices, the American Red Cross chapter, and the nearest hospitals.
- Ask the local paper to interview local officials about land use management and building codes in the area.
- Periodically inform your community of local public warning systems. Explain differences between winter weather warnings and watches. Let them know where to turn for emergency broadcast information should they hear a warning on their radio or television.
- Assist hospitals and other operations that are critically affected by power failure by arranging for auxiliary power supplies, this would include city water and sewer systems, emergency services (including electric dependant phone systems), police and fire departments.
- Publish emergency evacuation routes for areas prone to severe weather.
- Have a ready source of shovels, candles, or other emergency equipment.
- Provide information at the local level on the weather patterns within the area to people new to the area.
- Provide information on traction devices for winter time travel.

Requiring building permits and compliance with building codes is a good educational tool. Builders and future homeowners are made aware of the potential risk of building in a severe weather area. Periodic publication of the highlights of these building codes can help to keep up public awareness.

6.6.2.3 Building Codes

The subsequent adoption of the International Building Codes, or more stringent local building codes, provides basic guidelines to communities on how to regulate development. Careful localized management of development in severe weather areas or rural areas results in construction practices that can reduce losses and the high costs associated with disasters to all levels of government.

Building codes should address the following:

- Snow load requirements for roofing materials.

- Localized wind storms or prevailing winds.
- Parking lot construction to handle snow removal or piling of snow.
- Width of driveways for snow removal equipment or piling of snow.
- Manufactured home tie downs and placement of blocking.
- Sign Codes for billboards in high wing prone areas.

Chapter 7: Potential Mitigation Activities

7 Administration & Implementation Strategy

Critical to the implementation of this All Hazard Mitigation Plan will be the identification of, and implementation of, an integrated schedule of treatments targeted at achieving an elimination of the lives lost, and reduction in structures destroyed, infrastructure compromised, and unique ecosystems damaged that serve to sustain the way-of-life and economy of Latah County and the region. Since there are many management agencies and thousands of private landowners in Latah County, it is reasonable to expect that differing schedules of adoption will be made and varying degrees of compliance will be observed across all ownerships.

Latah County and the incorporated cities of Latah County, encourage the philosophy of instilling disaster resistance in normal day-to-day operations. By implementing plan activities through existing programs and resources, the cost of mitigation is often a small portion of the overall cost of a project's design or program.

The federal land management agencies in Latah County, specifically the USDA Forest Service, and Bureau of Land Management, are participants in this planning process and have contributed to its development. Where available, their schedule of land treatments have been considered in this planning process to better facilitate a correlation between their identified planning efforts and the efforts of government organizations (County and City).

All risk assessments were made based on the conditions existing during 2004-05, thus, the recommendations in this section have been made in light of those conditions. However, the components of risk and the preparedness of the county's resources are not static. It will be necessary to fine-tune this plan's recommendations annually to adjust for changes in the components of risk, population density changes, infrastructure modifications, and other factors.

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

7.1 Prioritization of Mitigation Activities

Prioritization of projects will occur at the County, City, agency, and private levels. Differing prioritization processes will occur, however, the county and cities will adopt the following prioritization process, as indicated through the adoption of this plan by each municipality.

The prioritization process will include a special emphasis on cost-benefit analysis review. 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 Disaster Services Coordinator.

County Commissioners and the elected officials of all jurisdictions will 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, there are usually requirements that establish a rigorous benefit-cost analysis as a guiding criterion in establishing project priorities. 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. FEMA's three grant programs (the post-disaster Hazard Mitigation Grant Program, the pre-disaster Flood Mitigation Assistance and Pre-Disaster Mitigation grant programs) that offer federal mitigation funding to state and local governments all include the benefit-cost and repetitive loss selection criteria.

The prioritization of projects will occur annually and be facilitated by the County Disaster Services Coordinator to include the County Commissioner's Office, City Mayors and Councils, Fire District Chiefs and Commissioners, agency representatives (USFS, State Lands, etc.). The prioritization of projects will be based on the selection of projects which create a balanced approach to pre-disaster mitigation which recognizes the hierarchy of treating in order (highest first):

- People and Structures
- Infrastructure
- Local and Regional Economy
- Traditional Way of Life
- Ecosystems

7.1.1 Prioritization Scheme

A numerical scoring system is used to prioritize projects. This prioritization serves as a guide for the county when developing mitigation activities. This project prioritization scheme has been designed to rank projects on a case by case basis. In many cases, a very good project in a lower priority category could outrank a mediocre project in a higher priority. 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 developed. Any type of project, whether county or site 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.

Since planning projects are somewhat different than non-planning projects when it comes to reviewing them, different criteria will be considered, depending on the type of project.

The factors for the non-planning projects include:

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

The factors for the planning projects include:

- Cost/Benefit
- Vulnerability of the community or communities
- Potential for repetitive loss reduction
- 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 cost, population benefit, property benefit, economic benefit, and vulnerability of the community. Project feasibility, hazard magnitude/frequency, potential for repetitive loss reduction, 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 score for a non-planning project is 65 and for a planning project is 30.

The guidelines for each category are as follows:

7.1.1.1 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.

7.1.1.2 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 over 3,000 people. A ranking of 5 has the potential to impact 100 people, and a ranking of 1 will not impact the population. 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.

7.1.1.3 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 over $1,000,000 in losses, a ranking of 5 has the potential to save roughly $100,000 in losses, and a ranking of 1 only has the potential to save

less than $100 in losses. 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.

7.1.1.4 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 10 would prevent a total economic collapse, a ranking of 5 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.

7.1.1.5 Vulnerability of the Community

For planning projects, the vulnerability of the community is considered. 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 planning participation by the smaller or less vulnerable communities in the state, the score will be based on the other communities being considered for planning grants. A community that is the most vulnerable will receive a score of 10, and one that is the least, a score of 1.

7.1.1.6 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.

7.1.1.7 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 5, 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.

7.1.1.8 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 5. Those that do not address repetitive losses receive a rating 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.

7.1.1.9 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.

7.1.1.10 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 9-25

7.2 Recommended Hazard Mitigation Activities

As part of the implementation of hazard mitigation activities in Latah County, a variety of management tools may be used.

7.2.1 Safety & Policy

Hazard mitigation efforts must be supported by a set of policies and regulations at the county level that maintain a solid foundation for safety and consistency. The recommendations enumerated here serve that purpose. Because these items are regulatory in nature, they will not necessarily be accompanied by cost estimates. These recommendations are policy related in nature and therefore are recommendations to the appropriate elected officials; debate and formulation of alternatives will serve to make these recommendations suitable and appropriate.

7.2.1.1 Proposed Activities

Table 7.1. Action Items in Safety and Policy.

Action Item	Mitigated Hazard	Responsible Organization	Action Items & Planning Horizon
7.1.a. Public education programs.	All Hazards	Cooperative effort including Latah County, University of Idaho Cooperative Extension, Clearwater RC&D, Idaho Bureau of Homeland Security, federal and state agencies.	• 2005 Identify teaching partners in public education program • 2005 Locate and adopt training materials appropriate for local conditions • 2005 Develop budgets and acquire funding for desired programs • 2006 Begin implementation in schools and through adult education programs.
7.1.b. Adoption and enforcement of International Building Codes and/or more stringent hazard--related building code provisions.	All Hazards	Latah County Commissioners, Latah County Building Department, and Disaster Services Coordinator, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta.	• 2005 Annual review of IBC updates and relevance to hazards in county.
7.1.c. Implement land-use and development policy to reduce exposure to hazards.	All Hazards	Latah County Commissioners, Building Department, Disaster Services Coordinator, Planning and Zoning committee, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	• 2005 Review of hazard mapping in updating County comprehensive plan.
7.1.d. Develop a landslide hazard identification program.	Landslide, Flood, Wildfire, and Earthquake	Latah County Commissioners, County Highway Districts, Planning and Zoning	• 2005 Review of Landslide hazard mapping in updating County comprehensive and Transportation plans. • 2005 Draft recommendations for housing site plans in Landslide prone areas.
7.1.e. Standardize practices for excavation, construction, and grading of roads.	Wildfire, Flood, Earthquake, and Landslides	Latah County Commissioners, Latah County Highway Districts, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	• 2005 Draft recommendations for road location and standards in Landslide prone areas.

Table 7.1. Action Items in Safety and Policy.

Action Item	Mitigated Hazard	Responsible Organization	Action Items & Planning Horizon
7.1.f. Participation in National Flood Insurance Program.	Flood	Latah County Commissioners, Latah County Building Department, Disaster Services Coordinator, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	• On going: Continued participation in NFIP. • 2005 Participation in the Community Rating System to lower the costs of NFIP premiums.
7.1.g. Adopt a county-wide policy to allow law enforcement to effectively control crowds during emergency situations.	All Hazards	Latah County Commissioners, Sheriffs Office, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	• 2005 Draft ordinances to give Law Enforcement the ability to better control traffic at Hazard event sites.
7.1.h. Establish Hazard Advisory Commission.	Flood and Landslide	Latah County Commissioners in cooperation with mayors and councils of the cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	• 2005 Form and appoint members to the commission. Initial tasks: • Actively deal with Levee Maintenance requirements, and upgrading . • Deal with flood and storm water drainage issues in existing subdivisions.
7.1.i: Provide funding for a full-time Geographic Information System position at the Latah County Courthouse.	All Hazards	County Commissioners Office and Planning and Zoning, office of Assessor.	• Year 1 (2005) activity: Seek funding for full-time GIS staff position. Post job listing for potential candidates.
7.1.j: Rural Addressing Update	All Hazards	Planning and Zoning in cooperation with the County Commissioners Office	• To be implemented during first year (2005), pending funding and adoption by elected officials. May take most of a year to complete. • Estimate cost at around $85,000 to complete entire county.
7.1.k: Rural Signage (Road Signs & Rural Fire District Boundary Signs) Improvements across the county	All Hazards	Highway Districts in cooperation with County Commissioners and Rural Fire Departments, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	Can be completed during year 1 (2005) pending funding to implement the project. Estimate $15,000 for signs and posting.

Table 7.1. Action Items in Safety and Policy.

Action Item	Mitigated Hazard	Responsible Organization	Action Items & Planning Horizon
7.1.l. Complete All Hazards Mitigation Plan for additional Hazards	All Hazards	Latah County Commissioners, Disaster Services, Bureau of Homeland Security, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta.	Seek out funding during 2005-06 for additional funding to complete other hazards included in the Phase I Hazard Profile, but not completed here.

7.2.2 People and Structures

The protection of people and structures will be tied together closely as the loss of life in the event of a hazard is generally linked to a person who could not, or did not, flee a structure threatened by a hazard. Many of the recommendations in this section will define a set of criteria for implementation while others will be rather specific in extent and application.

7.2.2.1 Proposed Activities

Table 7.2. Action Items for People and Structures.

Action Item	Mitigated Hazard	Responsible Organization	Action Items & Planning Horizon
7.2.a. Assess and hardwire emergency facilities and shelters for use with a portable generator.	All Hazards	Latah County Commissioners, Sheriffs Office, Disaster Services Coordinator, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	• 2005 Assess which buildings in the county require alternative power during emergencies. • 2005 Cost benefit assessment of providing portable power. • 2005 Secure grant funding through PDM grants or others for the wiring of buildings and purchase of 2 portable generators with capacity to power needed buildings. • 2006 Implement wiring changes to allow quick connection for off-grid power.
7.2.b. Inspect buildings, particularly un-reinforced masonry, for hazard stability.	All Hazards	Latah County Building Department	• 2005 Bi-annual review of older Masonry buildings. • 2005 Education campaign, information dissemination
7.2.c. Inspect schools and other public buildings for snow-load resistance and retrofit as necessary.	Winter Storm	Latah County Building Department, school districts	• 2005 Inspect all public facilities to insure compliance with updated building codes.

Table 7.2. Action Items for People and Structures.

Action Item	Mitigated Hazard	Responsible Organization	Action Items & Planning Horizon
7.2.d: Access Improvements of bridges, cattle guards, culverts, and limiting road surfaces (e.g. Sperry Bridge, McGary Bridge, Little Bear Creek crossing at Troy, Flat Creek crossing on State Highway 9)	All Hazards	Highway Districts in cooperation with the BLM, State of Idaho (Lands and Transportation), and industrial forestland owners (e.g., Boise Corp.).	• **Year 1 (2005):** Update existing assessment of travel surfaces, bridges, and cattle guards in Latah County as to location. Secure funding for implementation of this project (grants) • **Year 2 (2006):** Conduct engineering assessment of limiting weight restrictions for all surfaces (e.g., bridge weight load maximums). Estimate cost of $100,000 which might be shared between County, USFS, State, and private based on landownership associated with road locations. • **Year 2 (2006):** Post weight restriction signs on all limiting crossings, copy information to rural fire districts and wildland fire protection agencies in affected areas. Estimate cost at roughly $15-$25,000 for signs and posting. • **Year 3 (2007):** Identify limiting road surfaces in need of improvements to support wildland fire fighting vehicles and other emergency equipment. Develop plan for improving limiting surfaces including budgets, timing, and resources to be protected for prioritization of projects (benefit/cost ratio analysis). Create budget based on full assessment.
7.2.e: Development of "Community Emergency Response Team" program in communities.	All Hazards	Latah County Disaster Services and community governments, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta.	- **2005** develop team and objectives, implement program including emergency services personnel

7.2.3 Infrastructure

Significant infrastructure refers to the communications, transportation (road and rail networks), energy transport supply systems (gas and power lines), and water supply that service a region or a surrounding area. All of these components are important to the Clearwater Region, and to Latah County specifically. These networks are by definition a part of the Wildland-Urban Interface in the protection of people, structures, **infrastructure**, and unique ecosystems. Without supporting infrastructure a community's structures may be protected, but the economy and way of life lost. As such, a variety of components will be considered here in terms of management philosophy, potential policy recommendations, and on-the-ground activities.

7.2.3.1 Proposed Activities

Table 7.3. Action Items for Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
7.3.a. Develop county-wide levee safety program and levee task force.	Flood and Severe Weather	County Commissioners, Disaster Services Coordinator, Flood Hazard Advisory commission, US ACOE, cities of Moscow, Potlatch, Deary, Troy, Bovil, Kendrick, and Juliaetta	• 2005 Create a levee task force • 2006 Locate and map all levees in the county • 2005 Conduct and document annual safety review of all levees.
7.3.b. Review bridge and culverts along all Primary Access Routes identified in this plan which cross through flood zones (20.1 miles).	Flood and Landslides	County Commissioners, County Highway Districts, State Highway system	• 2005 review the bridge crossings and culverts along primary access routes in the county to determine restrictions in cases of flooding. • 2005 Development replacement needs list to make crossings suitable to allow flood water passage or road relocations where needed. • 2006 Create implementation plan for making changes.
7.3.c. Review bridge and culverts along all public roads identified in this plan which cross through flood zones (141 miles).	Flood and Landslides (To be completed after 8.3.b)	County Commissioners, County Highway Districts, State Highway system	• 2005 review the bridge crossings and culverts along public roads in the county to determine restrictions in cases of flooding. • 2005 Development replacement needs list to make crossings suitable to allow flood water passage or road relocations where needed. • 2006 Create implementation plan for making changes.
7.3.d. Review all road profiles which are within flood zones to determine degree of road profile rise needed to elevate it above the flood zone.	Flood	County Commissioners, County Highway Districts, State Highway system	• Review road surfaces and complete engineering study. • Create a priority list of modifications to road surfaces • Work with roads departments to schedule changes are surfaces are treated and maintained where feasible.

Table 7.3. Action Items for Infrastructure Enhancements.

Action Item	Goals and Objectives	Responsible Organization	Action Items & Planning Horizon
7.3.e: Post FEMA "Emergency Evacuation Route" signs along the identified primary and secondary access routes in the county.	All Hazards	**County Commissioners** in cooperation with Rural Fire Districts and County Highway Districts, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta.	• Purchase of signs (2004). • Posting roads and make information available to residents of the importance of Emergency Routes
7.3.f: Reinforcement of the FEMA "Emergency Evacuation Routes" in the county to insure these routes can be maintained in the case of an emergency.	All Hazards	**County Commissioners** in cooperation with Rural Fire Districts and County Highway Districts.	• Full assessment of road defensibility and ownership participation (2005). • Implementation of projects (linked to item 5.2.g, 5.2.h, and 5.2.i.
7.3.g. Watershed Management Plan Completion for the Big Creek Watershed serving Troy. Include hazard mitigation components.	All Hazards	**Troy Water Department** and Troy City Government.	• Identify landowners and seek funding to implement the planning process (2005). • Implementation of projects based on results of watershed management plans.

7.2.4 Resource and Capability Enhancements

There are a number of resource and capability enhancements identified by the rural and wildland fire fighting districts in Latah County. Additionally many communities have identified additional resources and infrastructure need to protect and people during natural and man made hazards.

7.2.4.1 Proposed Activities

Table 7.4. Action Items for Resource and Capability Enhancements.

Action Item	Mitigated Hazard	Responsible Organization	Action Items & Planning Horizon
7.4.a. Obtain portable generators for use during power outages and other emergency situations.	Flood, Landslide, Winter Storm, Thunderstorm, and Wind Storm/Tornado.	Latah County Commissioners, Sheriffs Office, Disaster Services Coordinator, cities of Moscow, Potlatch, Deary, Troy, Bovil, Genesee, Kendrick, and Juliaetta	• 2005 Coordinate with Item 8.2.a • 2006 Secure funding for generator purchase • 2005 Determine where generators will be stored and who will maintain
7.4.b. Maintain snow removal equipment and schedule for communities and primary transportation routes.	Winter Storm	County Highway Districts	• Annual review of equipment and community snow removal needs to determine if operable equipment is adequate.

Table 7.4. Action Items for Resource and Capability Enhancements.

Action Item	Mitigated Hazard	Responsible Organization	Action Items & Planning Horizon
7.4.c. Develop a centralized county-wide GIS data system.	Flood, Landslide, Winter Storm, Thunderstorm, and Wind Storm/Tornado.	Latah County commissioners, Planning and Zoning	• 2005 Assess the necessary hardware and software need for a county wide program. • Secure both purchasing and operating funds. • Implement County GIS program to serve all departments, especially county wide-emergency services.
7.4.d. Provide funding for debris retention and collection systems.	Flood, Landslide, Winter Storm, Thunderstorm, and Wind Storm/Tornado.	County Highway Districts	• 2005 Establish and implement a plan for the periodic removal of debris in and around city and county culverts, bridges, and storm water drains.
7.4.e. Implement the modifications and creation of fire districts in Latah County: Form the Kendrick and Juliaetta Rural Fire District.	All Hazards	County Commissioners, Clearwater RC&D, Fire District Commissioners, Cities of Kendrick and Juliaetta, and local citizens.	• 2005: Consider and debate the recommended changes to the rural fire protection districts in Latah County to expand certain districts and create new ones. • Once proposals are finalized, conduct public education program of recommendations. • Put proposal to vote and implement the will of the people.
7.4.f: Enhance radio availability in each district, link in to existing dispatch, and improve range within the region, conversion to consistent standard of radio types	All Hazards	Clearwater RC&D in cooperation with rural and wildland fire districts, and Latah County Commissioners.	• **Year 1 (2005):** Summarize existing two-way radio capabilities and limitations. Identify costs to upgrade existing equipment and locate funding opportunities. • **Year 2 (2006):** Acquire and install upgrades as needed.
7.4.g: Obtain mobile repeater stations with back up power source.	All Hazards	County Commissioners, Clearwater RC&D, IDL, USDA Forest Service, and local fire departments.	• Seek funding 2005, purchase unit. • 2006 provide training to emergency services personnel in Latah County and use the equipment.

Chapter 8: Supporting Information

8

8.1 List of Tables

8.2 List of Figures

8.3 List of Preparers

The following personnel participated in the formulation, compilation, editing, and analysis of alternatives for this assessment.

Table 8.1. List of Preparers

Name	Affiliation	Role
William E. Schlosser, Ph.D.	Northwest Management, Inc.	**Lead Author,** Project Co-Manager, GIS Analyst, Natural Resource Economist, Hazard Mitigation Specialist, Regional Planner
Tera Duman, B.S.	Northwest Management, Inc.	Natural Resource Manager, Fire Control Technician
Vincent P. Corrao, B.S.	Northwest Management, Inc.	Resource Management Specialist, Deputy Project Manager
Toby R. Brown, B.S.	Northwest Management, Inc.	Natural Resource Manager, Project Co-Manager, Hazard Mitigation Specialist
John A. Erixson, M.S.	Northwest Management, Inc.	Range Management, Fire Specialist
Dennis S. Thomas	Northwest Management, Inc.	Fire & Fuels Specialist, Prescribed Burning Manager
Ken Homik, M.S.	Northwest Management, Inc.	Fire Use & Air Quality Specialist
Vaiden E. Bloch, M.S.	Northwest Management, Inc.	GIS Analyst
Greg Bassler, M.S.	Northwest Management, Inc.	Roads Engineer, Timber Sale Layout & Harvest Manager
Chris Terwilliger, B.S.	Northwest Management, Inc.	Resource Manager
Sandy Rollins	Latah County Disaster Services	Coordinator, Project Leadership

8.4 Signature Pages

This **Latah County All Hazards Mitigation Plan** has been developed in cooperation and collaboration with the representatives of the following organizations, agencies, and individuals.

8.4.1 Representatives of Latah County Government

This All Hazards Mitigation Plan and all of its components identified herein were adopted formally through a resolution of the Board of County Commissioners as of 22 June 2005, **resolution number 2005-16**, recorded in the official record of the Latah County Commissioners.

By: John A. "Jack" Nelson, Chairperson
Latah Board of County Commissioners

Adopted by Resolution
on June 22, 2005

By: Paul J. Kimmell
Latah Board of County Commissioners

By: Tom S. Stroschein
Latah Board of County Commissioners

By: Sandy Rollins
Latah County Disaster Services
June 28, 2005
Date

By: Pat Vaughan
Latah County Assessor
June 28, 2005
Date

By: Wayne Rausch
Latah County Sheriff
06/28/2005
Date

By: Dan Carscallen
North Latah County Highway District
6/28/2005
Date

By: Bob Leonard
South Latah County Highway District
7/8/05
Date

8.4.2 Representatives of City Government in Latah County

This All Hazards Mitigation Plan and all of its components identified herein were adopted formally through individual resolutions passed by each city government in Latah County. Individual resolutions of adoption have been included in the next sub-section of this report.

8.4.3 Representatives of City and Rural Fire Districts in Latah County

This All Hazards Mitigation Plan and all of its components identified herein were developed in close cooperation with the participating fire districts listed herein. Fire protection districts which are independent of a city or the county have indicated their formal adoption of the All Hazards Mitigation Plan below:

Bob Shook — 6-29-05

By: Bob Shook, Chief — Date
Bovill Rural Fire Protection District

Tim Jones — 6/29/05

By: Tim Jones, Chief — Date
Deary Rural Fire District

Darrell Kilgore — 7/8/05

By: Darrell Kilgore, Chief — Date
Genesee City Fire Department

Mike McGee — 06-28-05

By: Mike McGee, Chief — Date
Juliaetta City Fire Department

[signature] — 6/28/05

By: Val Norris, Chief — Date
Kendrick City Fire Department

Don Strong — 6-27-05

By: Don Strong, Chief — Date
Moscow City & Moscow Rural Fire Departments

Ronald Stearns — 6/28/05

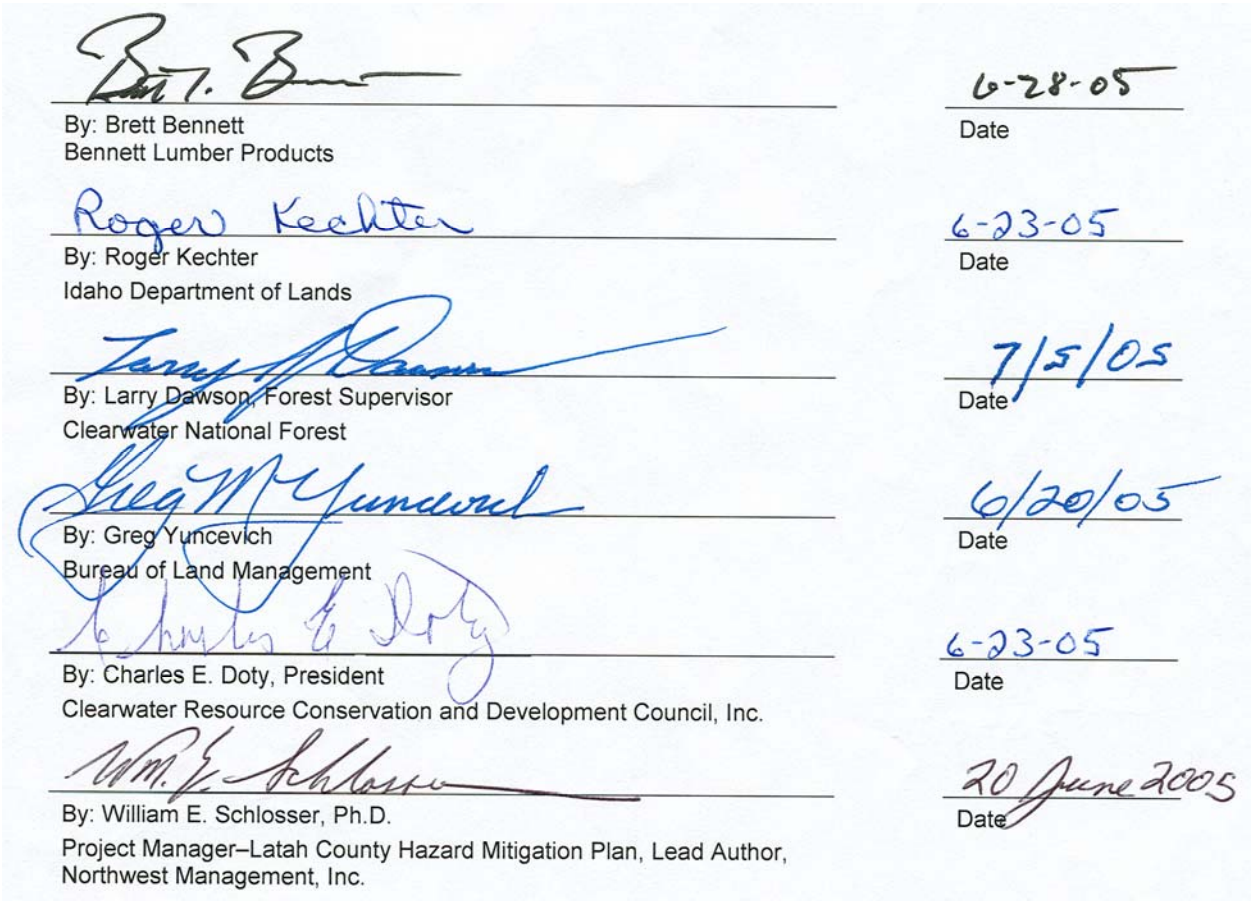
By: Ron Stearns, Chief — Date
Troy Rural Fire District

Gary Nagle — 6-30-05

By: Gary Nagle, Chief — Date
Potlatch Rural Fire District

8.4.4 Representatives of Federal and State Agencies, and Companies

This All Hazards Mitigation Plan was developed in cooperation and collaboration with the additionally listed agencies and organizations. These entities listed below are not elligable to "formally adopt" this plan, but will strive to implement its recommendations.



6-28-05
Date

By: Brett Bennett
Bennett Lumber Products

6-23-05
Date

By: Roger Kechter
Idaho Department of Lands

7/5/05
Date

By: Larry Dawson, Forest Supervisor
Clearwater National Forest

6/20/05
Date

By: Greg Yuncevich
Bureau of Land Management

6-23-05
Date

By: Charles E. Doty, President
Clearwater Resource Conservation and Development Council, Inc.

20 June 2005
Date

By: William E. Schlosser, Ph.D.
Project Manager–Latah County Hazard Mitigation Plan, Lead Author,
Northwest Management, Inc.

8.5 Resolutions of Adoption

The following resolutions have been adopted by the listed municipalities in Latah County.

8.5.1 Resolution of the Commissioners of Latah County, Idaho

Resolution of the Commissioners of Latah County, Idaho

2005-160

A resolution of the Commissioners of Latah County declaring County support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The Board of Latah County Commissioners supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the Latah County Commissioners,

Therefore be it resolved, that the Latah County Commissioners do hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 22 Day of June 2005

Board of County Commissioners
Latah County, Idaho

By: John A. "Jack" Nelson, Chairperson
Latah Board of County Commissioners

By: Paul J. Kimmell
Latah Board of County Commissioners

By: Tom S. Stroschein
Latah Board of County Commissioners

K Rickert, Deputy 6-22-05
Attested by:
Susan Peterson, Clerk / Auditor / Recorder

8.5.2 Resolution of the City Council of Bovill

Resolution of the City Council of Bovill
located in Latah County, Idaho
#R-2005-

A resolution of the City Council of Bovill declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Bovill supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Bovill has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Bovill,

Therefore be it resolved, that the City Council of Bovill does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 27th Day of June 2005

City Council of Bovill located in Latah County, Idaho

By: Brad Dorendorf
Mayor, City of Bovill

Attested by:
Terry Christie, City Clerk

8.5.3 Resolution of the City Council of Deary

Resolution of the City Council of Deary
located in Latah County, Idaho
190

A resolution of the City Council of Deary declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Deary supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Deary has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Deary,

Therefore be it resolved, that the City Council of Deary does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 20th Day of June 2005

City Council of Deary located in Latah County, Idaho

John W Henderson

By: John Henderson
Mayor, City of Deary

Judy Heath

Attested by:
Judy Heath, City Clerk

CITY OF DEARY SEAL IDAHO

8.5.4 Resolution of the City Council of Genesee

Resolution of the City Council of Genesee
located in Latah County, Idaho
2005-2

A resolution of the City Council of Genesee declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Genesee supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Genesee has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Genesee,

Therefore be it resolved, that the City Council of Genesee does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 15th Day of June 2005

City Council of Genesee located in Latah County, Idaho

By: Tim Sperber
Mayor, City of Genesee

CITY OF GENESEE
LATAH CO. IDAHO

Attested by:
Mert Geltz, City Clerk

8.5.5 Resolution of the City Council of Juliaetta

Resolution of the City Council of Juliaetta
located in Latah County, Idaho
#2005-02

A resolution of the City Council of Juliaetta declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Juliaetta supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Juliaetta has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Juliaetta,

Therefore be it resolved, that the City Council of Juliaetta does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 7th Day of June 2005

City Council of Juliaetta located in Latah County, Idaho

Jeff J Lohman

By: Jeff Lohman
Mayor, City of Juliaetta

Becky Lefft

Attested by:
~~Mary Jo Vallem~~, City Clerk
Becky Lefft

8.5.6 Resolution of the City Council of Kendrick

Resolution of the City Council of Kendrick
located in Latah County, Idaho
5-2007

A resolution of the City Council of Kendrick declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Kendrick supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Kendrick has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Kendrick,

Therefore be it resolved, that the City Council of Kendrick does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 27th Day of June 2005

City Council of Kendrick located in Latah County, Idaho

Dana Magnuson

By: Dana Magnuson
Mayor, City of Kendrick

Barbara Brady

Attested by:
Barbara Brady, City Clerk

8.5.7 Resolution of the City Council of Moscow

RESOLUTION NO. 2005 - 07

A RESOLUTION OF THE CITY OF MOSCOW, A MUNICIPAL CORPORATION OF THE STATE OF IDAHO, DECLARING SUPPORT AND ADOPTION OF THE LATAH COUNTY ALL HAZARDS MITIGATION PLAN, WHICH INCLUDES THE WILDLAND-URBAN INTERFACE WILDFIRE MITIGATION PLAN; PROVIDING THIS RESOLUTION TO BE EFFECTIVE UPON ITS PASSAGE AND APPROVAL.

WHEREAS, The City Council of Moscow supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

WHEREAS, The City Council of Moscow has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

WHEREAS, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Moscow,

NOW, THEREFORE, BE IT RESOLVED by the Mayor and City Council of the City of Moscow, Idaho that the City Council of Moscow does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

PASSED AND APPROVED by the Mayor of the City of Moscow, Idaho, this 27th day of June, 2005.

Marshall H. Comstock, Mayor

ATTEST:

Stephanie Kalasz, City Clerk

CITY OF MOSCOW INCORPORATED JULY 12 1887 STATE OF IDAHO

8.5.8 Resolution of the City Council of Onaway

Resolution of the City Council of Onaway
located in Latah County, Idaho
#2005-4

A resolution of the City Council of Onaway declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Onaway supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Onaway has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Onaway,

Therefore be it resolved, that the City Council of Onaway does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 24 Day of June 2005

City Council of Onaway located in Latah County, Idaho

Rex Benson

By: Rex Benson

Mayor, City of Onaway

Dianne Nagle

Attested by:
Diane Nagle, City Clerk

8.5.9 Resolution of the City Council of Potlatch

Resolution of the City Council of Potlatch
located in Latah County, Idaho
#_05-06_

A resolution of the City Council of Potlatch declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Potlatch supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Potlatch has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Potlatch,

Therefore be it resolved, that the City Council of Potlatch does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 27th Day of June 2005

City Council of Potlatch located in Latah County, Idaho

David N Brown

By: David Brown
Mayor, City of Potlatch

Debbie Rynearson

Attested by:
Debbie Rynearson, City Clerk

8.5.10 Resolution of the City Council of Troy

Resolution of the City Council of Troy
located in Latah County, Idaho
2005-01

A resolution of the City Council of Troy declaring City support and adoption of the Latah County All Hazards Mitigation Plan, which includes the Wildland-Urban Interface Wildfire Mitigation Plan.

Whereas, The City Council of Troy supports the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The City Council of Troy has participated in the development of the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan, and

Whereas, The Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan will be utilized as a guide for planning as related to FEMA Pre-Disaster Mitigation, The National Fire Plan, The Healthy Forest Restoration Act, and other purposes as deemed appropriate by the City Council of Troy,

Therefore be it resolved, that the City Council of Troy does hereby adopt, support, and will facilitate the Latah County All Hazards Mitigation Plan and the Wildland-Urban Interface Wildfire Mitigation Plan's implementation.

Passed and approved this 27TH Day of June 2005

City Council of Troy located in Latah County, Idaho

Kenneth Whitney Jr.

By: Ken Whitney
Mayor, City of Troy

Gary LeFors

Attested by:
Gary LeFors, City Clerk

8.6 Literature Cited

Breckenridge, R.M., R.S. Lewis, G.W. Adema, and D.W. Weisz. 2003. *Miocene and Younger Faults in Idaho.* Map series of the Idaho Geological Survey, University of Idaho, Moscow.

Dillman, D.A. 1978. Mail and Telephone Surveys: The Total Design Method. Hoboken: John Wiley & Sons, Incorporated. 344 p.

FEMA 2004. Federal Emergency Management Agency Internet web site at http://www.fema.gov/nfip/10110309.shtm last accessed on October 5, 2004.

Fragaszy, J. 2002. USGS 2004. National Landslide Hazards - Mitigation Strategy - A Framework for Loss Reduction. Circular 1244. U.S. Department of the Interior U.S. Geological Survey. Accessed on the internet at http://pubs.usgs.gov/circ/c1244/c1244.txt on October 1, 2004.

Harris, C., P.S. Cook, and J. O'Laughlin. 2003. Forest Resource-Based Economic Development in Idaho: Analysis of Concepts, Resource Management Policies, and Community Effects. Policy Analysis Group, University of Idaho, College of Natural Resources, Report № 22. Pp 82.

IDEQ (Idaho Department of Environmental Quality). 2003. Rules of the Department of Environmental Quality, IDAPA 58.01.02, "Water Quality Standards and Wastewater Treatment Requirements". Idaho Administrative Code (3-20-97), IDAPA 58.01.02, Boise, ID.

IBHS 2004. Idaho Bureau of Homeland Security Internet web site at http://www.bhs.idaho.gov/disaster/flood.htm last accessed on October 1, 2004.

IDOCL 2004. Idaho Department of Commerce and Labor. Data last accessed on the Internet at www.idoc.state.id.us/idcomm/profiles/cppdfs/Kamiah.pdf on October 6, 2004.

IDWR 2004. Idaho Department of Water Resources, Internet web site at http://www.idwr.state.id.us/water/flood/flood1.pdf, last accessed on October 1, 2004.

IGS 2004. Idaho Geological Society, Internet web site at http://www.idahogeology.com/Services/GeologicHazards/Earthquakes/ last accessed on October 5, 2004.

Levinson, D.H. 2002. Montana/Idaho Airshed Group; Operating Guide. Montana / Idaho Airshed Group, Missoula, MT 59808

Louks, B. 2001. Air Quality PM 10 Air Quality Monitoring Point Source Emissions; Point site locations of DEQ/EPA Air monitoring locations with Monitoring type and Pollutant. Idaho Department of Environmental Quality. Feb. 2001. As GIS Data set. Boise, Id.

MacDonald, L.H., J. Benavides-Solorio, J. Stednick , J. Pietraszek, D. Hughes. 2004. Controls on post-fire erosion rates from wild and prescribed fires in the Colorado front range. Geophysical Research Abstracts, Vol. 6, 06003, 2004 SRef-ID: 1607-7962/gra/EGU04-A-06003. European Geosciences Union 2004. Last accessed on the Internet at http://www.cosis.net/abstracts/EGU04/06003/EGU04-J-06003-2.pdf on October 6, 2004.

McClelland D.E., R.B. Foltz, W.D. Wilson, T.W. Cundy, R. Heinemann, J.A. Saurbier, R.L. Schuster. 1977. Assessment of the 1995 & 1996 floods and landslides on the Clearwater National Forest Part 1: Landslide Assessment, A Report to the regional Forester Northern Region U.S. Forest Service, December 1997.

National Register of Historic Places. 2003. Internet web site listings for Latah County, Idaho. On the Internet at www.nationalregisterofhistoricalplaces.com last accessed on October 1, 2004.

Norton, P. 2002. Bear Valley National Wildlife Refuge Fire Hazard Reduction Project: Final Environmental Assessment, June 20, 2002. Fish and Wildlife Service, Bear Valley National Wildlife Refuge.

Rasmussen, L.M. 2000. Soil Survey of Adams-Washington Area, Idaho, Parts of Lewis and Nez Perce Counties. USDA Natural Resources Conservation Service. Available on the Internet at http://www.or.nrcs.usda.gov/pnw_soil/idaho/id656.html

Redmond, R.L. 1997. Mapping existing vegetation and land cover across western Montana and Northern Idaho. Wildlife Spatial Analysis Lab. Montana Cooperative Fish and Wildlife Research Unit. University of Montana, Missoula, MT 59812.

Schiappa, T. and P.K. Link. 2002. Cenozoic Geologic History of Gem and Payette Counties. As presented on the Idaho State University Internet web site at http://imnh.isu.edu/digitalatlas/counties/gem/geomap.htm last accessed on October 1, 2004.

SHELDUS. 2004. Hazards Research Lab and the Board of Trustees of the University of South Carolina. SHELDUS Ver 2.1 Last accessed December 10, 2004, on the Internet at http://www.cla.sc.edu/GEOG/hrl/index.htm

SIU 2003. Southern Illinois University – Perspectives: Drop by Drop: Some Fast Water Facts. On the Internet at http://www.siu.edu/~perspect/03_fall/water3.html last accessed on October 6, 2004.

USDA-Forest Service (United States Department of Agriculture, Forest Service). 2000. Incorporating Air Quality Effects of Wildland Fire Management into Forest Plan Revisions – A Desk Guide. April 2000. – Draft

Weisz, D.W., K.L. Othberg, and R. M. Breckenridge. 2003. Surficial Geological Map of the Payette Quadrangle, Idaho and Lewis Counties, Idaho. Idaho Geological Survey Map, scale 1:24,000.

WRCC 2004. Western Regional Climate Center data last accessed on the Internet at http://www.wrcc.dri.edu/narratives/IDAHO.htm on October 6, 2004.

This plan was developed by Northwest Management, Inc., under contract with the Latah County Commissioners and the Clearwater Resource Conservation and Development Council, Inc., with funding provided by the USDI Bureau of Land Management, the Idaho Bureau of Homeland Security, and Latah County.

Citation of this work:

Schlosser, W.E., S. Rollins, and V.P. Corrao. *Lead Authors.* 2005. Latah County, Idaho, All Hazards Mitigation Plan; Volume I. Northwest Management, Inc., Moscow, Idaho. June 20, 2005. Pp. 174.

Schlosser, W.E., S. Rollins, and V.P. Corrao. *Lead Authors.* 2005. Latah County, Idaho, Wildland-Urban Interface Wildfire Mitigation Plan; Volume II. Northwest Management, Inc., Moscow, Idaho. June 20, 2005. Pp. 212.

Schlosser, W.E., S. Rollins, and V.P. Corrao. *Lead Authors.* 2005. Latah County, Idaho, Wildland-Urban Interface Wildfire Mitigation Plan Appendices; Volume III. Northwest Management, Inc., Moscow, Idaho. June 20, 2005. Pp. 43.

Last Page of Document

Northwest Management, Inc.
233 East Palouse River Drive
PO Box 9748
Moscow ID 83843

208-883-4488 Telephone
208-883-1098 Fax
NWManage@consulting-foresters.com e-Mail
http://www.Consulting-Foresters.com/ Internet

(Remainder Intentionally Blank)