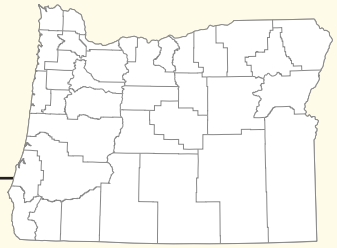


Regional Natural Hazards Mitigation Plan

Northeast Oregon



Baker, Grant, Union and Wallowa Counties, and Addenda for Baker City, Enterprise, Halfway, John Day, and La Grande













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Photos: Gary Halvorson, Oregon State Archives

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NORTHEAST OREGON MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN

Report for:

Baker County	Grant County	Union County	Wallowa County
Baker City	John Day	La Grande	Enterprise
Halfway			

Prepared by:

University of Oregon's Community Service Center:
Resource Assistance to Rural Environments and
Oregon Partnership for Disaster Resilience
1209 University of Oregon
Eugene, Oregon 97403-1209

February 2014

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SPECIAL THANKS & ACKNOWLEDGEMENTS

Baker, Grant, Union and Wallowa counties developed this Multi-jurisdictional Natural Hazards Mitigation Plan (NHMP) through a regional partnership funded by the Federal Emergency Management Agency's Pre-Disaster Mitigation Competitive Grant Program. FEMA awarded the grant to support the update of the natural hazards mitigation plan. The county's planning process utilized a four-phased planning process, plan templates and plan development support provided by the Resource Assistance to Rural Environments (RARE) and the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Community Service Center. This project would not have been possible without technical and in-kind staff support provided by Baker, Grant, Union and Wallowa counties and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

Partners include:

Baker County
City of Baker City
City of Halfway
Union County
City of La Grande
Grant County
City of John Day
Wallowa County
City of Enterprise
Oregon Military Department – Office of Emergency Management
Community Service Center, Oregon Partnership for Disaster Resilience
Community Service Center, Resource Assistance to Rural Environments

Project Steering Committee:

Baker County

Representatives from the following organizations served as steering committee members for the Baker County natural hazards mitigation planning process.

Convener, Gary Timm	Baker County Emergency Management (Fire Division)
Convener, Jason Yencopal	Baker County Emergency Management
Val Bogdanowitz	United States Army Corps of Engineers
Mark Bennett	Baker County Commissioner
Willy Crippen	United States Forest Service
Page Frederickson	City of Halfway Public Works
Holly Kerns	Baker County Planning Department
Rick Lusk	Baker County Water Master
Jason McClaughry	Oregon Department of Geology and Mineral Industries
Jeff Stidham	United States Army Corps of Engineers

Grant Young	DLCD Regional Representative

City of Baker City

Representatives from the following organizations served as steering committee members for the Baker City natural hazards mitigation planning process.

Convener, Michelle Owen	Baker City Public Works
Cliff Hall	Baker City Fire Department
Holly Kerns	Baker County Planning Department
Michael Regan	Baker City Police Department
Gary Timm	Baker County Emergency Management
Jason Yencopal	Baker County Emergency Management

City of Halfway

Representatives from the following organizations served as steering committee members for the City of Halfway natural hazards mitigation planning process.

Convener, Page Frederickson	City of Halfway Public Works
Sheila Farwell	Mayor

Grant County

Representatives from the following organizations served as steering committee members for the Grant County natural hazards mitigation planning process.

Convener, Scott Myers	Grant County Judge
Patrick Bentz	Grant County Regional Airport Manager
Peggy Gray	City of John Day
Richard Gray	John Day Police Department
Angia Hannibal	John Day Dispatch
Dean Hicks	Prairie City Fire Department
David Holland	John Day Public Works
Susan Horn	Grant County Road Department
Irene Jerome	CWPP/Firewise – Grant County
Eric Julsrud	Oregon Water Resources Department
Valerie Luttrell	John Day Dispatch
Les Miller	United States Army Corps of Engineers
Rob Pentzer	Oregon Department of Forestry
Corry Rider	Town of Canyon City
Ron Smith	John Day Fire Department
Shannon Springer	Grant County Planning Department

City of John Day

Representatives from the following organizations served as steering committee members for the City of John Day natural hazards mitigation planning process.

Convener, Peggy Gray	City Manager
David Holland	John Day Public Works
Ron Smith	John Day Fire Department
Richard Tirico	John Day Police

Union County

Representatives from the following organizations served as steering committee members for the Union County natural hazards mitigation planning process.

Convener, JB Brock	Union County Emergency Manager
Convener, Annette Powers	Union County Department Specialist
Bill Benson	Eastern Oregon University
April Brock	Grande Ronde Hospital
Candice Cornford	Grande Ronde Hospital
Dennis Hackney	Oregon Department of Transportation
Scott Hartell	Union County Planning Department
Charlie Mitchell	City of La Grande Economic Development
Rob Shanks	Grande Ronde Hospital
Dan Stark	Union County Economic Development Corporation
Don Voetberg	City of Union City Council
Craig Ward	Union County Sheriff's Office
Andi Walsh	Center for Human Development
Bruce Weimer	La Grande Fire Department
Larry Wooldridge	La Grande Rural Fire Protection District
Doug Wright	Union County Public Works

City of La Grande

Representatives from the following organizations served as steering committee members for the City of La Grandenatural hazards mitigation planning process.

Convener, Michael Boquist	City Planner
Charlie Mitchell	City of La Grande Economic Development
Dan Stark	Union County Economic Development Corporation
Bruce Weimer	La Grande Fire Department

Wallowa County

Representatives from the following organizations served as steering committee members for the Wallowa County natural hazards mitigation planning process.

Convener, Harold Black	Wallowa County Planning Director
Nils Cristoffersen	Wallowa Resources
Nathan Goodrich	United States Forest Service
Mike Hayward	Wallowa County Commissioner
Matt Howard	Oregon Department of Forestry
Paul Karvoski	Wallowa County Emergency Services
Russ McMartin	Wallowa County Road Department
Steve Rogers	Wallowa County Sheriff
Dennis Sands	City of Joseph Mayor
Mike Shaw	Oregon Department of Forestry
Michele Young	City of Enterprise City Administrator

City of Enterprise

Representatives from the following organizations served as steering committee members for the City of Enterprisenatural hazards mitigation planning process.

Convener, Michele Young	City Administrator
Paul Karvoski	Wallowa County Emergency Services

Project Managers:

Michael Howard, Program Specialist, Oregon Partnership for Disaster Resilience

Willy Sercombe, Resource Assistance to Rural Environments

Community Service Center Staff:

Josh Bruce, Interim Director, Oregon Partnership for Disaster Resilience

Julie Foster, Grants Administrator, Community Service Center

Julie Havens, Office Coordinator, Community Service Center

About the Community Service Center

The Community Service Center (CSC), a research center affiliated with the Department of Planning, Public Policy, and Management at the University of Oregon, is an interdisciplinary organization that assists Oregon communities by providing planning and technical assistance to help solve local issues and improve the quality of life for Oregon residents. The role of the CSC is to link the skills, expertise, and innovation of higher education with the transportation, economic development, and environmental needs of communities and regions in the State of Oregon, thereby providing service to Oregon and learning opportunities to the students involved.

About the Oregon Partnership for Disaster Resilience

The Oregon Partnership for Disaster Resilience (OPDR) is a coalition of public, private, and professional organizations working collectively toward the mission of creating a disaster-resilient and sustainable state. Developed and coordinated by the Community Service Center at the University of Oregon, the OPDREmploys a service-learning model to increase community capacity and enhance disaster safety and resilience statewide.

About the Resource Assistance to Rural Environments

Resource Assistance to Rural Environments (RARE) is an AmeriCorps program administered through the University of Oregon's Community Service Center. RARE is currently supported through grants from the Corporation for National and Community Service (AmeriCorps), The Ford Family Foundation, the University of Oregon, the Oregon Food Bank, the Federal Emergency Management Agency, and other agencies. In addition, each participating community provides $19,000 of approximately $32,000 needed to place, train and support a full-time RARE member.

Plan Template Disclaimer

This Natural Hazards Mitigation Plan is based in part on a plan template developed by the Oregon Partnership for Disaster Resilience. The template is structured to address the requirements contained in 44 CFR 201.6; where language is applicable to communities throughout Oregon, OPDR encourages the use of standardized language. As part of this regional planning initiative, OPDR provided copies of the plan templates to communities for use in developing or updating their natural hazards mitigation plans. OPDR hereby authorizes the use of all content and language provided to Baker, Grant, Union and Wallowa counties in the plan template.

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NORTHEAST OREGON MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN

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U.S. Department of Homeland Security
FEMA Region X
Federal Regional Center
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

June 5, 2014

Honorable Fred Warner, Jr.
Chair, Baker County Commissioners
1995 Third Street
Baker City, Oregon 97814

Dear Chair Warner:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has approved the ***Northeast Oregon Multi-Jurisdictional Natural Hazards Mitigation Plan*** as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through June 4, 2019:

Baker County	**Grant County**
Baker City	**City of John Day**
City of Halfway	

The plan's approval provides the above jurisdictions eligibility to apply for hazard mitigation projects through your State. All requests for funding will be evaluated individually according to the specific eligibility and other requirements of the particular program under which the application is submitted. For example, a specific mitigation activity or project identified in the plan may not meet the eligibility requirements for FEMA funding, and even eligible mitigation activities are not automatically approved for FEMA funding under any of the aforementioned programs. Approved mitigation plans may be eligible for points under the National Flood Insurance Program's Community Rating System (CRS). Additional information regarding the CRS can be found at www.fema.gov/business/nfip/crs.shtm or through your local floodplain manager.

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

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

Sincerely,

Mark Carey

Mark Carey, Director
Mitigation Division

cc: Dennis Sigrist, Oregon Office of Emergency Management

BH:bb

U.S. Department of Homeland Security
FEMA Region X
Federal Regional Center
130 228th Street, SW
Bothell, WA 98021-8627

FEMA

June 5, 2014

Honorable Scott W. Myers
Chair, Grant County Commissioners
201 S. Humbolt Street, No. 280
Canyon City, Oregon 97820

Dear Judge Myers:

The U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) has approved the ***Northeast Oregon Multi-Jurisdictional Natural Hazards Mitigation Plan*** as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through June 4, 2019:

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

Sincerely,

Mark Carey, Director
Mitigation Division

cc: Dennis Sigrist, Oregon Office of Emergency Management

BH:bb

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

FEMA

July 23, 2014

Honorable Steve McClure
Chair, Union County Commissioners
1106 K Avenue
La Grande, Oregon 97850

Dear Chair McClure:

On June 5, 2014, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) approved the ***Northeast Oregon Multi-Jurisdictional Natural Hazards Mitigation Plan*** as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through June 4, 2019:

Baker County	**Grant County**	**Wallowa County**	**Union County**
Baker City	**City of John Day**	**City of Enterprise**	**City of La Grande**
City of Halfway			

The list of approved jurisdictions has been updated to include Wallowa County, City of Enterprise, Union County, and the City of La Grande, which have recently adopted their respective addendums to the Northeast Oregon Multi-Jurisdictional Natural Hazards Mitigation Plan. To continue eligibility the plan must be reviewed, revised as appropriate, and resubmitted within five years of the original approval date.

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

Sincerely,

For Mark Carey, Director
Mitigation Division

cc: Dennis Sigrist, Oregon Office of Emergency Management

Enclosure

BH:bb

July 23, 2014

Honorable Mike Hayward
Chair, Wallowa County Commissioners
101 South River Street
Enterprise, Oregon 97828

Dear Chair Hayward:

On June 5, 2014, the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) approved the ***Northeast Oregon Multi-Jurisdictional Natural Hazards Mitigation Plan*** as a multi-jurisdictional local plan as outlined in 44 CFR Part 201. With approval of this plan, the following entities are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through June 4, 2019:

Baker County	**Grant County**	**Wallowa County**	**Union County**
Baker City	**City of John Day**	**City of Enterprise**	**City of La Grande**
City of Halfway			

The list of approved jurisdictions has been updated to include Wallowa County, City of Enterprise, Union County, and the City of La Grande, which have recently adopted their respective addendums to the Northeast Oregon Multi-Jurisdictional Natural Hazards Mitigation Plan. To continue eligibility the plan must be reviewed, revised as appropriate, and resubmitted within five years of the original approval date.

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

Sincerely,

For Mark Carey, Director
Mitigation Division

cc: Dennis Sigrist, Oregon Office of Emergency Management

Enclosure

BH:bb

THE BOARD OF COUNTY COMMISSIONERS OF THE STATE OF OREGON FOR THE COUNTY OF BAKER

IN THE MATTER OF

ADOPTING THE NORTHEAST OREGON REGIONAL NATURAL HAZARDS MITIGATION PLAN

) RESOLUTION NO. 2014-1004

WHEREAS, Baker County recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

WHEREAS, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, Baker County has fully participated in the FEMA prescribed mitigation planning process to prepare the Northeast Oregon Regional Natural Hazards Mitigation Plan, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

WHEREAS, Baker County has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the Baker County to the impacts of future disasters within the Northeast Oregon Regional Natural Hazards Mitigation Plan; and

WHEREAS, these proposed projects and programs have been incorporated into the Northeast Oregon Regional Natural Hazards Mitigation Plan that has been prepared and promulgated for consideration and implementation by Baker County and the other participating counties and cities of Northeast Oregon; and

WHEREAS, the Oregon Office of Emergency Management and Federal Emergency Management Agency, Region X officials have reviewed the Northeast Oregon Regional Natural Hazards Mitigation Plan and pre-approved it (dated, April 1, 2014) contingent upon this official adoption of the participating governments and entities;

NOW, THEREFORE, be it resolved, that Baker County adopts the Northeast Oregon Regional Natural Hazards Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that Baker County will submit this Adoption Resolution to the Oregon Military Department's Office of Emergency Management and Federal Emergency Management Agency, Region X officials to enable final approval of the Northeast Oregon Regional Natural Hazards Mitigation Plan.

Done and Dated this 21st day of May, 2014.

BAKER COUNTY BOARD OF COMMISSIONERS

Fred Warner Jr., Commission Chair

Tim L. Kerns, Commissioner

Mark E. Bennett, Commissioner

Resolution No. 3720

A Resolution Adopting Baker City's Representation in the Updates to the Northeast Oregon Regional Natural Hazards Mitigation Plan

Whereas, Baker City recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

Whereas, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, Baker City has fully participated in the FEMA prescribed mitigation planning process to prepare the *Northeast Oregon Regional Natural Hazards Mitigation Plan*, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

Whereas, Baker City has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the Baker City to the impacts of future disasters within the *Northeast Oregon Regional Natural Hazards Mitigation Plan*; and

Whereas, these proposed projects and programs have been incorporated into the *Northeast Oregon Regional Natural Hazards Mitigation Plan* that has been prepared and promulgated for consideration and implementation by Baker City and the other participating counties and cities of Northeast Oregon; and

Whereas, the Oregon Office of Emergency Management and Federal Emergency Management Agency, Region X officials have reviewed the *Northeast Oregon Regional Natural Hazards Mitigation Plan* and pre-approved it (dated, April 1 2014) contingent upon this official adoption of the participating governments and entities;

Now, therefore, be it resolved, that Baker City adopts the *Northeast Oregon Regional Natural Hazards Mitigation Plan* as an official plan; and

Be it further resolved, that Baker City will submit this Adoption Resolution to the Oregon Military Department's Office of Emergency Management and Federal Emergency Management Agency, Region X officials to enable final approval of the *Northeast Oregon Regional Natural Hazards Mitigation Plan.*

Adopted this 13th day of May, 2014

Mayor

City Recorder

Ayes:	6	*(Langrell, Button, Coles, Mosier, Dorrah, Johnson)*
Nays:		
Absent:	1	*(Downing)*
Abstain:		

Resolution # 2014-01

A Resolution Adopting Halfway's Representation in the Updates to the Northeast Oregon Regional Natural Hazards Mitigation Plan

Whereas, the City of Halfway recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

Whereas, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the City of Halfway has fully participated in the FEMA prescribed mitigation planning process to prepare the *Northeast Oregon Regional Natural Hazards Mitigation Plan*, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

Whereas, the City of Halfway has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the City of Halfway to the impacts of future disasters within the *Northeast Oregon Regional Natural Hazards Mitigation Plan*; and

Whereas, these proposed projects and programs have been incorporated into the *Northeast Oregon Regional Natural Hazards Mitigation Plan* that has been prepared and promulgated for consideration and implementation by the City of Halfway and the other participating counties and cities of Northeast Oregon; and

Whereas, the Oregon Office of Emergency Management and Federal Emergency Management Agency, Region X officials have reviewed the *Northeast Oregon Regional Natural Hazards Mitigation Plan* and pre-approved it (dated, April 1 2014) contingent upon this official adoption of the participating governments and entities;

Now, therefore, be it resolved, that the City of Halfway adopts the *Northeast Oregon Regional Natural Hazards Mitigation Plan* as an official plan; and

Be it further resolved, that the City of Halfway will submit this Adoption Resolution to the Oregon Military Department's Office of Emergency Management and Federal Emergency Management Agency, Region X officials to enable final approval of the *Northeast Oregon Regional Natural Hazards Mitigation Plan*.

Sheila Farwell

Sheila Farwell, Mayor

ATTEST:

Terrie Simons, Recorder/Treasurer

DATE: 5.8.14

IN THE COUNTY COURT OF THE STATE OF OREGON

IN AND FOR THE COUNTY OF GRANT

IN THE MATTER OF ADOPTING THE NORTHEAST OREGON MULTI-JURISDICTIONAL NATURAL HAZARDS MITIGATION PLAN 2014 UPDATE	} } }	RESOLUTION 2014-17

THIS BEING the 4th day of June, 2014, and a day set aside for a regular meeting of the Grant County Court, and there being present Grant County Judge Scott W. Myers, and Grant County Commissioners Chris B. Labhart and Boyd Britton; and

WHEREAS, the Grant County Court recognizes the threat that natural hazards pose to people within our communities; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people and property from future hazard occurrences; and

WHEREAS, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre and post-disaster mitigation grant programs; and

WHEREAS, the Northeast Oregon Regional Natural Hazards Mitigation Plan 2014 update has been pre-approved by FEMA pending adoption; and

NOW THEREFORE BE IT RESOLVED, Grant County, hereby, adopts the Northeast Oregon Regional Natural Hazards Mitigation Plan 2014 update

BE IT FURTHER RESOLVED, Grant County will submit this adoption resolution to the Oregon Partnership for Disaster Resilience Community Service Center, where it will be forwarded to FEMA.

DATED this 4th day of June, 2014.

Scott W. Myers

Scott W. Myers, County Judge

Chris B. Labhart

Chris B. Labhart, County Commissioner

Boyd Britton

Boyd Britton, County Commissioner

RESOLUTION NO. 14-719-05

A Resolution Adopting John Day's Representation in the Updates to the Northeast Oregon Regional Natural Hazards Mitigation Plan

Whereas, the City of John Day recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

Whereas, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the City of John Day has fully participated in the FEMA prescribed mitigation planning process to prepare the *Northeast Oregon Regional Natural Hazards Mitigation Plan*, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

Whereas, the City of John Day has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the City of John Day to the impacts of future disasters within the *Northeast Oregon Regional Natural Hazards Mitigation Plan*; and

Whereas, these proposed projects and programs have been incorporated into the *Northeast Oregon Regional Natural Hazards Mitigation Plan* that has been prepared and promulgated for consideration and implementation by the City of John Day and the other participating counties and cities of Northeast Oregon; and

Whereas, the Oregon Office of Emergency Management and Federal Emergency Management Agency, Region X officials have reviewed the *Northeast Oregon Regional Natural Hazards Mitigation Plan* and pre-approved it (dated, April 1 2014) contingent upon this official adoption of the participating governments and entities;

Now, therefore, be it resolved, that the City of John Day adopts the *Northeast Oregon Regional Natural Hazards Mitigation Plan* as an official plan; and

Be it further resolved, that the City of John Day will submit this Adoption Resolution to the Oregon Military Department's Office of Emergency Management and Federal Emergency Management Agency, Region X officials to enable final approval of the *Northeast Oregon Regional Natural Hazards Mitigation Plan.*

PASSED BY THE CITY COUNCIL AND APPROVED BY THE MAYOR, this 22nd day of April 2014.

Ron Lundbom, Mayor

ATTEST:

Peggy Gray, City Manager

BE IT REMEMBERED, that at a regular term of the Board of Commissioners of the State of Oregon, for the County of Union, sitting for the transaction of County business, begun and held at the Joseph Building Annex in the City of La Grande, in said County and State, on Wednesday of said month and the time fixed by law for holding a regular term of said Commission, when were present:

The Honorable	**Steve McClure**	**Chairman**
	Mark D. Davidson	**Commissioner**
	William D. Rosholt	**Commissioner**

WHEN, on Wednesday the 21st day of May, 2014, among others the following proceedings were had to wit:

IN THE MATTER OF ADOPTING UNION COUNTY'S REPRESENTATION IN THE UPDATES TO THE NORTHEAST OREGON REGIONAL NATURAL HAZARDS MITIGATION PLAN	RESOLUTION 2014-02

WHEREAS, Union County recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

WHEREAS, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

WHEREAS, Union County has fully participated in the FEMA prescribed mitigation planning process to prepare the Northeast Oregon Regional Natural Hazards Mitigation Plan, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

WHEREAS, Union County has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the Union County to the impacts of future disasters within the Northeast Oregon Regional Natural Hazards Mitigation Plan; and

WHEREAS, these proposed projects and programs have been incorporated into the Northeast Oregon Regional Natural Hazards Mitigation Plan that has been prepared and promulgated for consideration and implementation by Union County and the other participating counties and cities of Northeast Oregon; and

WHEREAS, the Oregon Office of Emergency Management and Federal Emergency Management Agency, Region 10 officials have reviewed the Northeast Oregon Regional Natural Hazards Mitigation Plan and pre-approved it (dated, April 1, 2014) contingent upon this official adoption of the participating governments and entities;

NOW, THEREFORE, BE IT RESOLVED, that Union County adopts the Northeast Oregon Regional Natural Hazards Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED, that Union County will submit this Adoption Resolution to the Oregon Military Department's Office of Emergency Management and Federal Emergency Management Agency, Region 10 officials to enable final approval of the Northeast Oregon Regional Natural Hazards Mitigation Plan.

Adopted this 21st day of May, 2014.

Steve McClure, CHAIRMAN

Mark D. Davidson, COMMISSIONER

William D. Rosholt, COMMISSIONER

CITY of LA GRANDE
RESOLUTION NUMBER 4683
SERIES 2014

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LA GRANDE, UNION COUNTY, OREGON, ADOPTING THE CITY OF LA GRANDE'S REPRESENTATION IN THE UPDATES TO THE NORTHEAST OREGON REGIONAL NATURAL HAZARDS MITIGATION PLAN

WHEREAS, the City of La Grande recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and,

WHEREAS, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and,

WHEREAS, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and,

WHEREAS, the city of La Grande has fully participated in the FEMA prescribed mitigation planning process to prepare the Northeast Oregon Regional Natural Hazards Mitigation Plan, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and,

WHEREAS, the city of La Grande has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the City of La Grande to the impacts of future disasters within the Northeast Oregon Regional Natural Hazards Mitigation Plan; and,

WHEREAS, these proposed projects and programs have been incorporated into the Northeast Oregon Regional Natural Hazards Mitigation Plan that has been prepared and promulgated for consideration and implementation by the City of La Grande and the other participating counties and cities of Northeast Oregon; and,

WHEREAS, the Oregon Office of Emergency Management and Federal Emergency Management Agency, Region X officials have reviewed the Northeast Oregon Regional Natural Hazards Mitigation Plan and pre-approved it (dated, April 1, 2014) contingent upon this official adoption of the participating governments and entities;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of La Grande, Union County, Oregon, that the Northeast Oregon Regional Natural Hazards Mitigation Plan be adopted as an official plan; and,

BE IT FURTHER RESOLVED by the City Council of the City of La Grande, Union County, Oregon, that the city of La Grande will submit this Adoption Resolution to the Oregon Military Department's Office of Emergency Management and Federal Emergency Management Agency, Region X officials to enable final approval of the Northeast Oregon Regional Natural Hazards Mitigation Plan.

PASSED and EFFECTIVE ON this Sixteenth (16th) day of July, 2014, by Seven (7) of Seven (7) Councilors present and voting in the affirmative.

Daniel S. Pokorney, Mayor

Mary Ann Miesner, Mayor Pro Tem

John Bozarth, Councilor

John R. Lackey, Councilor

Gary Lillard, Councilor

Troy Pointer, Councilor

Jerry Sebestyen, Councilor

ATTEST:

Angelika Brooks, City Recorder

s:\admin\city council\2014\07-16\admin reso.docx

BEFORE THE BOARD OF COMMISSIONERS
IN AND FOR THE COUNTY OF WALLOWA
IN AND OF THE STATE OF OREGON

COPY

IN THE MATTER OF ADOPTING THE REGIONAL NATURAL HAZARD MITIGATION PLAN FOR NORTHEAST OREGON	))))	**RESOLUTION 2014-002**

WHEREAS, the Wallowa County Board of Commissioners has been presented with the Northeast Oregon Regional Natural Hazard Mitigation Plan (Plan) for their review and adoption; **AND**

WHEREAS, Wallowa County has participated in development of the Plan through the Planning Director, Emergency Services Director, Public Works Director, and County Commission; **AND**

WHEREAS, the Plan recognizes the regional nature of natural hazards and coordinates with Baker, Grant, Union, and Wallowa Counties; **AND**

WHEREAS, the Plan incorporates previous planning efforts including the Community Wildfire Protection Plan; **NOW**

THEREFORE, BE IT RESOLVED, that the Wallowa County Board of Commissioners hereby adopt the Northeast Oregon Regional Natural Hazard Mitigation Plan.

Dated this 16th day of June, 2014.

WALLOWA COUNTY BOARD OF COMMISSIONERS

Chairman Mike Hayward

Commissioner Susan Roberts

Commissioner Paul Castilleja

Attest: Sandy Lathrop, Exec. Asst.

Resolution No. 582

A Resolution Adopting Enterprise's Representation in the Updates to the Northeast Oregon Regional Natural Hazards Mitigation Plan

Whereas, the City of Enterprise recognizes the threat that natural hazards pose to people, property and infrastructure within our community; and

Whereas, undertaking hazard mitigation actions will reduce the potential for harm to people, property and infrastructure from future hazard occurrences; and

Whereas, an adopted Natural Hazards Mitigation Plan is required as a condition of future funding for mitigation projects under multiple FEMA pre- and post-disaster mitigation grant programs; and

Whereas, the city of Enterprise has fully participated in the FEMA prescribed mitigation planning process to prepare the *Northeast Oregon Regional Natural Hazards Mitigation Plan*, which has established a comprehensive, coordinated planning process to eliminate or minimize these vulnerabilities; and

Whereas, the city of Enterprise has identified natural hazard risks and prioritized a number of proposed actions and programs needed to mitigate the vulnerabilities of the City of Enterprise to the impacts of future disasters within the *Northeast Oregon Regional Natural Hazards Mitigation Plan*; and

Whereas, these proposed projects and programs have been incorporated into the *Northeast Oregon Regional Natural Hazards Mitigation Plan* that has been prepared and promulgated for consideration and implementation by the City of Enterprise and the other participating counties and cities of Northeast Oregon; and

Whereas, the Oregon Office of Emergency Management and Federal Emergency Management Agency, Region X officials have reviewed the *Northeast Oregon Regional Natural Hazards Mitigation Plan* and pre-approved it (dated, April 1 2014) contingent upon this official adoption of the participating governments and entities;

Now, therefore, be it resolved, that the city of Enterprise adopts the *Northeast Oregon Regional Natural Hazards Mitigation Plan* as an official plan; and

Be it further resolved, that the city of Enterprise will submit this Adoption Resolution to the Oregon Military Department's Office of Emergency Management and Federal Emergency Management Agency, Region X officials to enable final approval of the *Northeast Oregon Regional Natural Hazards Mitigation Plan*.

Adopted this 09th day of June, 2014 by a vote of 6 ayes and 1 nays of the Enterprise City Council.

Margie Shaw

Margie Shaw, Mayor

ATTEST:

Michele R. Young

Michele R. Young, City Admin., Recorder

LOCAL MITIGATION PLAN REVIEW TOOL

The *Local Mitigation Plan Review Tool* demonstrates how the Local Mitigation Plan meets the regulation in 44 CFR §201.6 and offers States and FEMA Mitigation Planners an opportunity to provide feedback to the community.

- The Regulation Checklist provides a summary of FEMA's evaluation of whether the Plan has addressed all requirements.
- The Plan Assessment identifies the plan's strengths as well as documents areas for future improvement.
- The Multi-jurisdiction Summary Sheet is an optional worksheet that can be used to document how each jurisdiction met the requirements of the each Element of the Plan (Planning Process; Hazard Identification and Risk Assessment; Mitigation Strategy; Plan Review, Evaluation, and Implementation; and Plan Adoption).

The FEMA Mitigation Planner must reference this *Local Mitigation Plan Review Guide* when completing the *Local Mitigation Plan Review Tool*.

Jurisdiction:	**Title of Plan:**	**Date of Plan:**
Baker Co., Grant Co., Union Co., and Wallowa Co., OR	NE Oregon Multi-Jurisdictional Natural Hazards Mitigation Plan	February 2014

Baker County Contact: Gary Timm	**Address:** 1995 Third Street Baker City, OR 97814
Title: Deputy Director	**Phone Number:** 541-524-2003
Agency: Baker County Emergency Management	**E-Mail:** gtimm@bakercounty.org

Grant County Contact: Scott Myers	**Address:** 201 S Humbolt, Box 280 Canyon City, OR 97820
Title: Grant County Judge	**Phone Number:** 541-575-0059
Agency: Grant County Court	**E-Mail:** myerssw@grantcounty-or.gov

Union County Contact: JB Brock	**Address:** 1001 Fourth Street, Suite C La Grande, OR 97850
Title: Emergency Services Officer/ SAR Coordinator	**Phone Number:** 541-963-1009
Agency: Union County Emergency Management	**E-Mail:** jbrock@union-county.org

Wallowa County Contact: Harold Black	**Address:** 101 S. River St, Room B-1 Enterprise, OR 97828
Title: Planning Director	**Phone Number:** 541-426-4543, ext. 169
Agency: Wallowa County Planning Department	**E-Mail:** plandir@co.wallowa.or.us

State Reviewer: Joseph Murray	**Title:** EM Specialist – Hazard Mitigation and Disaster Recovery	**Date:**

FEMA Reviewer: Sara Reynolds Nathan Slaughter Brett Holt	**Title:** STARR, Planner STARR, Planner FEMA, Mitigation Planner	**Date:** 3/19/14 3/25/14 4/1/14
Date Received in FEMA Region X	2/26/14	
Plan Not Approved		
Plan Approvable Pending Adoption	4/1/14	
Plan Approved	6/5/14	

SECTION 1:
REGULATION CHECKLIST

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT A. PLANNING PROCESS			
A1. Does the Plan document the planning process, including how it was prepared and who was involved in the process for each jurisdiction? (Requirement §201.6(c)(1))	Acknowledgements; pp. i to iv; 1-3; 2-2; 3-1 to 2, 6; 4-2 to 4; BC-1 to 3, 6, 27, 33; EP-1 to 2, 5, 26, 32; HA-1 to 2, 5, 26, 32;JD-1 to 2, 5, 27, 33; LG-1 to 2, 6, 29, 35; B-1 to 82	X	
A2. Does the Plan document an opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, agencies that have the authority to regulate development as well as other interests to be involved in the planning process? (Requirement §201.6(b)(2))	Acknowledgments; pp. i to iv; 1-3; 4-2 to 4; BC-2, 6; EP-2, 5; HA-2, 5; JD-2, 5; LG-2, 6; B-37 to 40, 42, 44, 46-47, 49, 51 to 52, 54 to 55, 57, 59, 61, 63 to 64, 66 to 67, 69 to 70, 72, 74, 77, 79	X	
A3. Does the Plan document how the public was involved in the planning process during the drafting stage? (Requirement §201.6(b)(1))	pp. 1-3; BC-2; EP-2; HA-2; JD-2; LG-2; B-26 to 36; F-v to A-19	X	
A4. Does the Plan describe the review and incorporation of existing plans, studies, reports, and technical information? (Requirement §201.6(b)(3))	pp. 3-2; BC-24 to 25; EP-23 to 24; HA-23 to 24; LG-28 to 29; C-45; Footnotes throughout plan	X	
A5. Is there discussion of how the community(ies) will continue public participation in the plan maintenance process? (Requirement §201.6(c)(4)(iii))	pp. iii to iv; 4-9 to 10; BC-7; EP-6; HA-6; JD-6; LG-7	X	
A6. Is there a description of the method and schedule for keeping the plan current (monitoring, evaluating and updating the mitigation plan within a 5-year cycle)? (Requirement §201.6(c)(4)(i))	pp. viii; 4-1 to 6, 9 to 11; BC-6, 7 to 8; EP-5, 6-7; HA-5, 6 to 7; JD-5, 6 to 7; LG-6, 7 to 8	X	
ELEMENT A: REQUIRED REVISIONS			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT B. HAZARD IDENTIFICATION AND RISK ASSESSMENT			
B1. Does the Plan include a description of the type, location, and extent of all natural hazards that can affect each jurisdiction(s)? (Requirement §201.6(c)(2)(i))	pp. 2-3, 4 to 15; DR-1 to 5, 11; EQ-1 to 5, 8 to 11; FL-1 to 9, 11; LS-1 to 5, 5 to 7, 10, A-LS-1, A-LS-2; SW-1 to 4, 6 to 9; VE-1 to 4, 5, 7 to 8; WF-1 to 5, 17; BC-27 to 31; EP-26 to 29; HA-26 to 30; JD-27 to 31; LG-29 to 33	X	
B2. Does the Plan include information on previous occurrences of hazard events and on the probability of future hazard events for each jurisdiction? (Requirement §201.6(c)(2)(i))	pp. 2-3 to 5, 6, 7, 8, 11 to 12, 14 to 15, 24 to 25; DR-3 to 10, 11 to 12; EQ-5 to 8, 13 to 15; FL-9 to 10, 15 to 17; LS-5, 7 to 8, 9; SW-4 to 6, 11 to 15; VE-4 to 6, 8 to 10; WF-5 to 11, 12 to 14; BC-27 to 31; EP-26 to 29; HA-26 to 30; JD-27 to 31; LG-29 to 33	X	
B3. Is there a description of each identified hazard's impact on the community as well as an overall summary of the community's vulnerability for each jurisdiction? (Requirement §201.6(c)(2)(ii))	pp. 2-15 to 27; DR-11 to14; EQ-12 to 19; FL- 15 to 17; LS-7 to 11; SW-9 to 15; VE-8 to 12; WF-12 to 18; BC-9, 27 to 32; EP-8, 26 to 31; HA-8, 26 to 31; JD-8, 27 to 32; LG-9, 29 to 34	X	
B4. Does the Plan address NFIP insured structures within the jurisdiction that have been repetitively damaged by floods? (Requirement §201.6(c)(2)(ii))	pp. 2-18 to 22; FL-11 to 15	X	
ELEMENT B: REQUIRED REVISIONS			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT C. MITIGATION STRATEGY			
C1. Does the plan document each jurisdiction's existing authorities, policies, programs and resources and its ability to expand on and improve these existing policies and programs? (Requirement §201.6(c)(3))	pp. 3-2; 4-5; DR-14 to 15; EQ-19 to 20; FL-17 to 21; LS-11 to 14; SW-15 to 17; VE-12; WF-18 to 21; BC-6 to 7, 23 to 26; EP-5 to 6, 22 to 25; HA-5 to 6, 22 to 25; JD-5 to 6, 24 to 26; LG-6 to 7, 25 to 28; C-44 to 53	X	
C2. Does the Plan address each jurisdiction's participation in the NFIP and continued compliance with NFIP requirements, as appropriate? (Requirement §201.6(c)(3)(ii))	pp. 2-18 to 22; 3-7, 12; FL- 11 to 15, 17 to 18, 20 to 21; BC-5, 30; EP-4, 28; HA-4, 28; JD-4; LG-4,	X	
C3. Does the Plan include goals to reduce/avoid long-term vulnerabilities to the identified hazards? (Requirement §201.6(c)(3)(i))	pp. 3-1 to 2; BC-33; EP-32; HA-32; JD-33; LG-35	X	
C4. Does the Plan identify and analyze a comprehensive range of specific mitigation actions and projects for each jurisdiction being considered to reduce the effects of hazards, with emphasis on new and existing buildings and infrastructure? (Requirement §201.6(c)(3)(ii))	pp. 3-6 to 13; DR-15; EQ-20 to 22; FL-21; LS-14; SW-17; VE-12; WF-21 to 22; BC-2 to 5, 36; EP-2 to 4, 35 to 36; HA-2 to 4, 35to 37; JD-2 to 4, 36; LG-2 to 5, 38 to 40; A-1 to 107	X	
C5. Does the Plan contain an action plan that describes how the actions identified will be prioritized (including cost benefit review), implemented, and administered by each jurisdiction? (Requirement §201.6(c)(3)(iv)); (Requirement §201.6(c)(3)(iii))	pp. 3-6 to 13; 4-6 to 9; BC-2 to 5, 36; EP-2 to 4, 35 to 36; HA-2 to 4, 35to 37; JD-2 to 4, 36; LG-2 to 5, 38 to 40; A-1 to 107; D-1 to 9; E-1 to 5	X	
C6. Does the Plan describe a process by which local governments will integrate the requirements of the mitigation plan into other planning mechanisms, such as comprehensive or capital improvement plans, when appropriate? (Requirement §201.6(c)(4)(ii))	pp. 3-4 to 5; 4-5; BC-6 to 7, 34; EP-5 to 6, 33; HA-5 to 6, 33; JD-5 to 6, 34; LG-6 to 7, 36; B-6 to 22	X	
ELEMENT C: REQUIRED REVISIONS			

1. REGULATION CHECKLIST Regulation (44 CFR 201.6 Local Mitigation Plans)	Location in Plan (section and/or page number)	Met	Not Met
ELEMENT D. PLAN REVIEW, EVALUATION, AND IMPLEMENTATION (applicable to plan updates only)			
D1. Was the plan revised to reflect changes in development? (Requirement §201.6(d)(3))	pp. 2-16; BC-12 to 17; EP-11 to 16; HA-11 to 16; JD-11 to 17; LG-12 to 18; C-10 to 20, 32 to 33	X	
D2. Was the plan revised to reflect progress in local mitigation efforts? (Requirement §201.6(d)(3))	pp. A-1 to 107; B-6 to 22	X	
D3. Was the plan revised to reflect changes in priorities? (Requirement §201.6(d)(3))	pp. vi to vii; 3-1 to 2, 6 to 13; BC-2 to 5; EP-2 to 4; HA-2 to 4; JD-2 to 4; LG-2 to 5; B-5 to 22	X	
ELEMENT D: REQUIRED REVISIONS			
ELEMENT E. PLAN ADOPTION			
E1. Does the Plan include documentation that the plan has been formally adopted by the governing body of the jurisdiction requesting approval? (Requirement §201.6(c)(5))	p. viii to ix; 4-1	X	
E2. For multi-jurisdictional plans, has each jurisdiction requesting approval of the plan documented formal plan adoption? (Requirement §201.6(c)(5))	p. viii to ix; BC-6; EP-5; HA-5; JD-5; LG-6	X	
ELEMENT E: REQUIRED REVISIONS Element E1 and E2: Documentation of adoption must be provided following FEMA review and "Approvable Pending Adoption" status.			
ELEMENT F. ADDITIONAL STATE REQUIREMENTS (OPTIONAL FOR STATE REVIEWERS ONLY; NOT TO BE COMPLETED BY FEMA)			
F1.			
F2.			
ELEMENT F: REQUIRED REVISIONS			

SECTION 2:
PLAN ASSESSMENT

A. Plan Strengths and Opportunities for Improvement

This section provides a discussion of the strengths of the plan document and identifies areas where these could be improved beyond minimum requirements.

Element A: Planning Process

Plan Strengths:

- Appendix B provides information on the plan update process. A memo is included that details all of the major changes made to the 2008 plan during the 2013 plan update as well as the 2013 public participation process. Meeting agendas, sign-in sheets, and a brief summary of the 2006-2007 plan development and public participation process are also included.
- Volume III includes addenda for each of the participating cities which provide details on the planning processes specific to Baker City, Enterprise, Halfway, John Day, and La Grande.
- A press release was submitted by Baker County to the *Baker City Herald, Hells Canyon Journal, and the Record-Courier*; by Grant Count to the *Blue Mountain* Eagle; by Union County to the *La Grande* Observer; and by Wallowa County to the *Chieftain* to solicit public input on the plan update which was made available for comment online on the counties and cities websites.
- A household survey was conducted in 2003 to gauge the overall perception of natural hazards and determine a baseline level of loss reduction activity for residents in the community and to determine citizens' support for different types of community planning actions. The survey was sent to 1,500 households in Baker, Grant, Union, and Wallowa Counties.
- Citations and footnotes are used to document the existing plans, reports, and technical information that were reviewed and incorporated throughout the plan.
- Each county has a designated convener and coordinating body (which includes representatives from the county and each participating city) responsible for monitoring and evaluating the plan semi-annually and updating the plan every 5 years. The plan update toolkit includes questions to evaluate the plan and determine plan update needs.

Opportunities for Improvement:

- Include a more detailed narrative that describes the steps taken during the plan update to further document the planning process.
- In addition to submitting press releases and providing opportunities for comment on the plan, consider inviting specific representatives from neighboring communities as well as other interests, such as business, academia, and other private and non-profit organizations, to be engaged in the plan update process by joining the steering committee or attending steering committee meetings.

- Since no comments were received via the plan update website during the public review period, consider using more diverse methods of participation, such as surveys, questionnaires, and workshops to solicit feedback.
- Conduct a new preparedness survey to gauge how the current overall perception of natural hazards has changed since the 2003 public survey was conducted.
- Include a narrative to identify and describe how the various plans, studies, and reports that are cited throughout the document were reviewed and incorporated into the plan.

Element B: Hazard Identification and Risk Assessment

Plan Strengths:

- Maps are used to delineate the areas at risk to earthquake, landslide, volcano, and wildfire.
- The plan reviews the region's vulnerability in terms of populations, economy, environment, and critical facilities and infrastructure. A vulnerability score (high, medium, low) was assigned to each hazard to summarize the level of exposure of the population and property in each participating jurisdiction based on an "average" occurrence. A rough estimate of the percentage of population and property that could be impacted under a worst-case scenario is also provided for each hazard (maximum threat).
- A risk assessment was conducted based on history, vulnerability, maximum threat, and probability to develop total threat scores and number rankings for each hazard specific to each of the participating jurisdictions.
- The jurisdiction-specific addenda include an analysis of hazard risks that are specific to each of the participating jurisdictions compared to those of the counties. This includes asset identification that summarizes the vulnerability of population, critical roads, bridges, and critical facilities in each municipality.

Opportunities for Improvement:

- Include maps to delineate the location of areas at risk to the flood hazard. Also consider including more detailed jurisdiction-level maps of the hazards in addition to the regional and state-level hazard maps provided.
- Estimate the number and types of future buildings, infrastructure, and critical facilities located in hazardous areas.
- Estimate the number of potential deaths or injuries and dollar losses to vulnerable structures and infrastructure under different hazard scenarios for each of the identified hazards (i.e. 100-year flood and 500-year flood events).

Element C: Mitigation Strategy

Plan Strengths:

- The community profiles include an assessment of government departments that can have a role in hazard mitigation, existing plans and policies that can be linked to the hazard mitigation plan and can be used to implement the action items, and community organizations, programs, and social systems that can be involved in hazard mitigation through education and outreach, information dissemination, or plan/project implementation.
- Existing mitigation activities are also discussed within each hazard annex.
- The plan states that the hazard-specific information, noted deficiencies in local capability, and issues identified through the risk assessment were used as the local-level rationale for the mitigation actions included in the plan's mitigation strategy. The plan explicitly links each action item to the hazard it will mitigate as well as the goal(s) with which it align(s).
- The mitigation action items cover a comprehensive range of strategies, including prevention, property protection, and public education/awareness, that are county-wide and that are specific to each participating jurisdiction.
- The plan identifies the priority, lead agency, partner organizations, timeline, and status for each mitigation action.

Opportunities for Improvement:

- Expand the community profile to include an assessment of funding capability to implement mitigation actions, such as funding through taxing authority or annual budgets.
- Although the plan did include a comprehensive range of mitigation actions, consider including additional actions that address natural resource protection and structural projects.
- Provide a more specific timeline for mitigation action implementation rather than ongoing, short-term (one to two years), or long-term (one to five years).
- Better integrate mitigation actions with existing local programs and resources by indicating each action's alignment with any existing plans/policies. Currently, this has only been done for two actions (MH #11 and WF #1).
- In addition to listing available state and federal resources, programs, and grants; identify potential funding sources that are specific to each of the mitigation actions.
- Make additional linkages between the vulnerability, hazard risk, and mitigation strategy. For example, target mitigation actions at specific locations/areas that have been identified as vulnerable to a hazard.
- In addition to identifying the accomplishments and completed mitigation actions in Appendix B to demonstrate how the previously approved mitigation plan has been incorporated into other planning mechanisms, consider using a narrative to make this information more readily available in the Basic Plan or Jurisdictional Addenda.

Element D: Plan Update, Evaluation, and Implementation (*Plan Updates Only*)

Plan Strengths:

- The plan includes land use asset identification tables for each participating jurisdiction that identify developments subject to hazards and summarize current and future development trends.
- The plan also states that it is essential to consider the immediate and long-term socio-demographic implications of hazard resilience, including immediate concerns regarding the growing elderly population.
- The plan reviews the status of the 2008 mitigation action items and any actions that are not ongoing or were not completed have been deleted or deferred. An explanation of the accomplishments and any changes made is provided, including rationale for deleting any action items.
- The steering committees reviewed and confirmed the overall purpose and intent of the plan and plan goals (two of the four goals were slightly modified) and reprioritized the mitigation actions during the plan update process.

Opportunities for Improvement:

- Identify solutions to the barriers or obstacles to successful implementation of the existing mitigation actions that have not been completed (e.g., ways to increase funding and staff resources).
- Although the plan reprioritized all of the new and deferred mitigation actions, consider including a narrative description of if and how any priorities have changed since the plan was previously approved in order to reflect current financial, legal, political, and post-disaster conditions.
- Include documentation of the semi-annual plan reviews.

B. Resources for Implementing Your Approved Plan

- The **Local Mitigation Planning Handbook** is available. While the requirements under §201.6 have not changed, the Handbook provides guidance to local governments on developing or updating hazard mitigation plans to meet the requirements is available through the FEMA Library website. You can find it in the FEMA Library at http://www.fema.gov/library/viewRecord.do?id=7209.
- The **Mitigation Ideas: A Resource for Reducing Risk from Natural Hazards** resource presents ideas for how to mitigate the impacts of different natural hazards, from drought and sea level rise, to severe winter weather and wildfire. The document also includes ideas for actions that communities can take to reduce risk to multiple hazards, such as incorporating a hazard risk assessment into the local development review process. You can find it in the FEMA Library at http://www.fema.gov/library/viewRecord.do?id=6938.
- The **Integrating Hazard Mitigation Into Local Planning: Case Studies and Tools for Community Officials** resource provides practical guidance on how to incorporate risk reduction strategies into existing local plans, policies, codes, and programs that guide community development or redevelopment patterns. It includes recommended steps and tools to assist with local integration efforts, along

with ideas for overcoming possible impediments, and presents a series of case studies to demonstrate successful integration in practice. You can find it in the FEMA Library at http://www.fema.gov/library/viewRecord.do?id=7130.

- **Region 10 Integrating Natural Hazard Mitigation into Comprehensive Planning**: This resource is specific to Region 10 states and provide examples of how communities are integrating natural hazard mitigation strategies into comprehensive planning. It expected to be released later this year. You can find it in the FEMA Library at http://www.fema.gov/media-library/assets/documents/89725.
- The FEMA Region X **Risk Mapping, Analysis, and Planning program (RiskMAP)** releases a monthly newsletter that includes information about upcoming events and training opportunities, as well as hazard and risk related news from around the Region. Past newsletters can be viewed at http://www.starr-team.com/starr/RegionalWorkspaces/RegionX/Pages/default.aspx. If you would like to receive future, email rxnewsletter@starr-team.com.
- The mitigation strategy includes projects that are eligible for FEMA's grant programs. Contact the State Hazard Mitigation Officer, Dennis Sigrist, at dsigrist@oem.state.or.us for application information.

SECTION 3:
MULTI-JURISDICTION SUMMARY SHEET (OPTIONAL)

MULTI-JURISDICTION SUMMARY SHEET												
#	Jurisdiction Name	Jurisdiction Type (city/borough/ township/ village, etc.)	Plan POC	Mailing Address	Email	Phone	Requirements Met (Y/N)					
							A. Planning Process	B. Hazard Identification & Risk Assessment	C. Mitigation Strategy	D. Plan Review, Evaluation & Implementation	E. Plan Adoption	F. State Require-ments
1	Baker	County					Y	Y	Y	Y	Y	
2	Baker City	City					Y	Y	Y	Y	Y	
3	Halfway	City					Y	Y	Y	Y	Y	
4	Grant	County					Y	Y	Y	Y	Y	
5	John Day	City					Y	Y	Y	Y	Y	
6	Union	County					Y	Y	Y	Y	N	
7	La Grande	City					Y	Y	Y	Y	N	
8	Wallowa	County					Y	Y	Y	Y	N	
9	Enterprise	City					Y	Y	Y	Y	N	

Volume I:
Basic Plan

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EXECUTIVE SUMMARY

Four Northeast Oregon Counties (Baker, Grant, Union, and Wallowa) developed this Multi-jurisdictional Natural Hazards Mitigation Plan (NHMP) in an effort to prepare for the long-term effects resulting from natural hazards. The cities of Baker City, Enterprise, Halfway, John Day and La Grande have developed jurisdictional addenda to this NHMP.It is impossible to predict exactly when naturalhazards will occur, or the extent to which they will affect the community. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to create a resilient community that will benefit from long-term recovery planning efforts.

44 CFR 201.6 – The local mitigation plan is the representation of the jurisdiction's commitment to reduce risks from natural hazards, serving as a guide for decision makers as they commit resources to reducing the effects of natural hazards. . . .

The Federal Emergency Management Agency (FEMA) defines mitigation as ". . . the effort to reduce loss of life and property by lessening the impact of disasters . . . through risk analysis, which results in information that provides a foundation for mitigation activities that reduce risk." Said another way, natural hazard mitigation is a method of permanently reducing or alleviating the losses of life, property, and injuries resulting from natural hazards through long and short-term strategies. Example strategies include policy changes, such as updated ordinances, projects, such as seismic retrofits to critical facilities; and education and outreach to targeted audiences, such as Spanish speaking residents or the elderly. Natural hazard mitigation is the responsibility of the "Whole Community" - individuals, private businesses and industries, state and local governments, and the federal government.

Why Develop this Mitigation Plan?

44 CFR 201.6(a)(1) – A local government must have a mitigation plan approved pursuant to this section in order to receive HMGP project grants . . .

In addition to establishing a comprehensive community-level mitigation strategy, the Disaster Mitigation Act of 2000 (DMA2K) and the regulations contained in 44 CFR 201 require that jurisdictions maintain an approved NHMP in order to receive federal funds for mitigation projects. Local and federal approval of this plan ensures that the counties and listed jurisdictions will remain eligible for pre- and post-disaster mitigation project grants.

Who Participated in Developing the Plan?

The Northeast Oregon Multi-jurisdictional Natural Hazards Mitigation Plan (NHMP) is the result of a collaborative effort between the counties, cities, special districts, citizens, public agencies, non-profit organizations, the private sector, and regional organizations. Four county level project steering committees guided the plan development process. The project steering committees included representatives from the following organizations.

Baker County

- Oregon Department of Geology and Mineral Industries
- Department of Land Conservation and Development
- United States Army Corps of Engineers (Walla Walla Office)
- United States Forest Service
- Baker County, Board of Commissioners
- Baker County, Emergency Management
- Baker County, Planning Department
- Baker County, Water Master
- Baker City, Fire Department
- Baker City, Planning Department
- Baker City, Police Department
- Baker City, Public Works Department
- City of Halfway, Mayor
- City of Halfway, Public Works Department

44 CFR 201.6(c)(1) – Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Grant County

- Oregon Department of Forestry
- Oregon Water Resources Department
- United States Army Corps of Engineers (Portland Office)
- Grant County, County Judge
- Grant County, Community Wildfire Protection Plan Coordinator
- Grant County Regional Airport
- Grant County, Road Department
- Grant County, Planning Department
- Town of Canyon City, Mayor
- City of John Day, City Manager
- City of John Day, Dispatch
- City of John Day, Fire Department
- City of John Day, Police Department
- City of John Day, Public Works
- Prairie City, Fire Department

Union County

- Union County, Center for Human Development

- Union County, Economic Development Corporation
- Union County, Emergency Management
- Union County, Planning Department
- Union County, Public Works Department
- Eastern Oregon University
- Grande Ronde Hospital
- City of La Grande, Economic Development
- City of La Grande, Fire Department
- City of La Grande, Planning Department
- City of Union, City Council

Wallowa County

- Oregon Department of Forestry
- Wallowa County, Board of Commissioners
- Wallowa County, Emergency Services
- Wallowa County, Planning Department
- Wallowa County, Road Department
- Wallowa County, Sheriff
- Wallowa Resources
- City of Enterprise, Administration

For Baker County, The Baker County Emergency Management Coordinators co-convened the planning process and will take the lead in implementing, maintaining and updating the plan.

For Grant County, The Grant County Judge convened the planning process and will take the lead in implementing, maintaining and updating the plan.

For Union County, The Union County Emergency Management Coordinator and the Union County Department Specialist co-convened the planning process and will take the lead in implementing, maintaining and updating the plan.

For Wallowa County, The Wallowa County Planning Director convened the planning process and will take the lead in implementing, maintaining and updating the plan.

Each of the participating counties is dedicated to directly involving the public in the continual reviewing and updating of the natural hazards mitigation plan, see addenda (Section III) for more information on conveners and coordinating bodies.

Although members of the steering committees represent the public to some extent, the public will also have the opportunity to continue to provide feedback about the plan throughout the implementation and maintenance period.

The counties will ensure continued public involvement by posting the Northeast Oregon Multi-jurisdictional Natural Hazard Mitigation Plan on their respective county websites. The

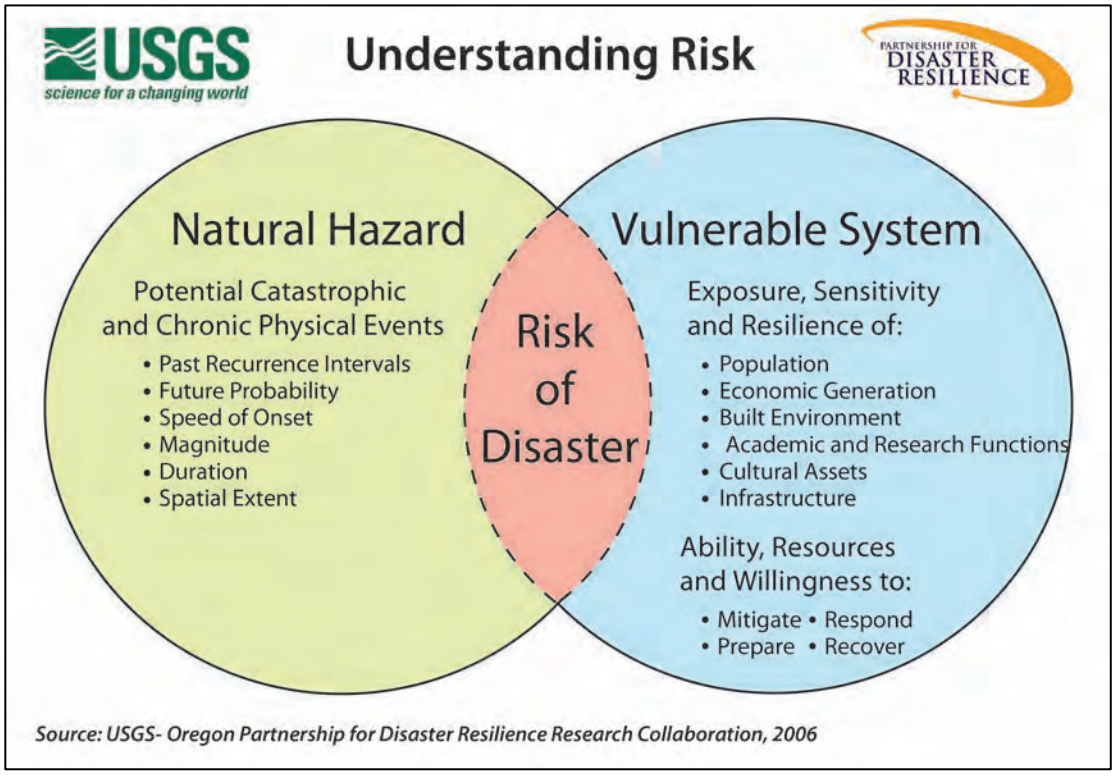
plan will also be archived and posted on the University of Oregon Libraries' Scholar's Bank Digital Archive.

How Does this Mitigation Plan Reduce Risk?

44 CFR 201.6(c)(2) – A Risk Assessment that provides the factual basis for activities proposed in the strategy . . .

The natural hazards mitigation plan is intended to assist NortheastOregon reduce the risk from natural hazards by identifying resources, information, and strategies for risk reduction. It is also intended to guide and coordinate mitigation activities throughout the county. A risk assessment consists of three phases: hazard identification, vulnerability assessment, and risk analysis, as illustrated in the following graphic.

Figure ES-1 Understanding Risk



Source: Oregon Partnership for Disaster Resilience.

By identifying and understanding the relationship between natural hazards, vulnerable systems, and existing capacity, Northeast Oregon is better equipped to identify and implement actions aimed at reducing the overall risk to natural hazards.

What are the County's Overall Risk to Hazards?

The Northeast Oregon counties reviewed and updated their risk assessment to evaluate the probability of each hazard as well as the vulnerability of the community to that hazard. In addition, the steering committees for Baker City, Enterprise, Halfway, John Day, and La

Grande reviewed the recently updated county risk assessments to compare risk and vulnerability particular to their jurisdiction. Table ES-1 below summarizes hazard vulnerability and probability as determined by the steering committees.

Table ES-1 Northeast Oregon County Risk Assessment Summary

Hazard	Baker County		Grant County	
	Probability	Vulnerability	Probability	Vulnerability
Drought	**High**	**High**	**High**	**High**
Dust Storm	Moderate	Moderate	N/A	N/A
Earthquake - Cascadia	Moderate	Moderate	N/A	N/A
Earthquake - Crustal	Low	**High**	Low	Moderate
Extreme Temperatures	N/A	N/A	N/A	N/A
Flood	**High**	Moderate	**High**	**High**
Landslide	**High**	Moderate	**High**	Moderate
Volcanic Eruption	Low	Low	Low	High
Wildfire	**High**	**High**	**High**	**High**
Windstorm	**High**	**High**	**High**	**High**
Winter Storm	**High**	**High**	**High**	**High**

Source: Baker County NHMP Steering Committee, 2013; Grant County NHMP Steering Committee, 2013
Note: N/A – This hazard was determined to be of no threat to this county. The Extreme temperatures hazard was not evaluated for Baker County during the 2013 update.

Table ES-1 Northeast Oregon County Risk Assessment Summary (continued)

Hazard	Union County		Wallowa County	
	Probability	Vulnerability	Probability	Vulnerability
Drought	**High**	Moderate	**High**	Moderate
Dust Storm	Low	Low	N/A	N/A
Earthquake - Cascadia	N/A	N/A	N/A	N/A
Earthquake - Crustal	Low	**High**	Low	Low
Extreme Temperatures	**High**	**High**	N/A	N/A
Flood	High	**High**	**High**	Moderate
Landslide	Low	Low	Moderate	Low
Volcanic Eruption	Low	Low	Low	Low
Wildfire	**High**	**High**	**High**	Moderate
Windstorm	**High**	**High**	**High**	Moderate
Winter Storm	**High**	**High**	**High**	Moderate

Source: Union County NHMP Steering Committee.2013; Wallowa County NHMP Steering Committee. 2013.
Note: N/A – This hazard was determined to be of no threat to this county.

What is the Plan's Mission?

The mission of the Northeast Oregon Multi-jurisdictional Natural Hazards Mitigation Plan is to:

Mission: *To create a disaster-resilient Northeast Oregon*

What are the Plan Goals?

44 CFR 201.6(c)(3)(i) – A description of mitigation goals to reduce or avoid long-term vulnerabilities to the identified hazards.

The plan goals describe the overall direction that the participating jurisdiction's agencies, organizations, and citizens can take toward mitigating risk from natural hazards.

Goal 1: *Protect human welfare, property, and natural resources*

Goal 2*: Increase the resilience of local and regional economies*

Goal 3: *Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness*

Goal 4: *Strengthen organizational and community capacity*

How are the Action Items Organized?

44 CFR 201.6(c)(3)(ii) – A section that identifies and analyzes a comprehensive range of specific mitigation actions . . .

The action items are organized within an action matrix included within Section 3, *Mitigation Strategy* (full descriptions are provided in Appendix A, *Action Item Forms*).

Priority

The County Steering Committees and City working groups designated certain action items with a 'High' priority, which indicates a higher level of importance than the other action items. Included below is a list of the highest priority action items as identified by each of the steering committees.

Table ES-2 Highest Priority Actions

2013 Action Item	Proposed Action Title	Prioritized Jurisdictions								
		Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
MH #1	Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties							X	X	
MH #2	Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)								X	
MH #6	Enhance communication and response coordination between all of the incorporated areas in each county.								X	
MH #7	Develop a Memorandum of Understanding to establish a regional committee responsible for oversight and implementation of the regional plan, and to oversee reviewing and updating the NE Natural Hazards								X	
MH #8	Create a position for a Regional Hazards Mitigation Project Coordinator				X				X	
MH #12	Update City and County addresses within the County's GIS database						X	X		
MH #14	Continue to pursue a secondary emergency access route along the west bank of the Wallowa Lake (between Wallowa Lake and Lake Shore Drive).								X	
MH #17	Encourage ODOT to reclassify the Prairie Creek, Hwy 10 bridge near the Enterprise High School football field									X
DR #2	Increase water efficiency among municipal water users		X							
DR #4	Conduct an aquifer study for the Pine and Baker Valleys	X	X	X						
DR #5	Conduct an aquifer study for the Grande Ronde Valley						X	X		
FL #2	Explore the costs and benefits for participation in the NFIP's Community Rating System	X	X		X					X
FL #3	Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	X	X		X	X			X	X
FL #4	Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	X	X		X	X			X	
FL #5	Explore mitigation opportunities for the Canyon City bridge (bridge # 7)				X					
FL #6	Seek Silver Jackets assistance to investigate opportunities to prevent large infiltration of flood waters into the wastewater treatment facility			X						
WF #1	Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.		X							

Source: 2013 NHMP Steering Committees

Data collection, research and the public participation process resulted in the development of the action items. The Action Item Matrix portrays the overall plan framework and identifies linkages between the plan goals, and actions. The matrix documents the title of each action along with, the coordinating organization, timeline, and the plan goals addressed. Action items particular to each of the participating cities are included at the end of the action item matrix.

How will the plan be implemented?

44 CFR 201.6(c)(3)(iii) – An action plan describing how the actions . . . will be prioritized, implemented and administered . . .

44 CFR 201.6(c)(4) – A plan maintenance process . . .

The plan maintenance section of this plan details the formal process that will ensure that the Northeast Oregon NHMP remains an active and relevant document. The Action Item MH #8 proposes a position for a regional natural hazards mitigation coordinator to be created and have shared responsibilities among the four counties. This plan could be implemented and maintained through this regional coordinator. Without the regional coordinator the plan will be implemented, maintained and updated by designated local conveners.The Baker County Emergency Management Coordinators, Grant County Judge, Union County Emergency Management Coordinator, and Wallowa County Planning Director are the designated conveners and are responsible for overseeing the annual review and implementation processes. The plan maintenance process includes a schedule for monitoring and evaluating the plan bi-annually and producing a plan revision every five years. This section describes how the communities will integrate public participation throughout the plan maintenance process.

Plan Adoption

44 CFR 201.6(c)(5) – Documentation that the plan has been formally adopted by the governing body of the jurisdiction . . .

44 CFR 201.6(d) – Plan review [process] . . .

Once the plan is locally reviewed and deemed complete the Plan Conveners submit it to the State Hazard Mitigation Officer at Oregon Military Department – Office of Emergency Management (OEM). OEM reviews the plan and submits it to the Federal Emergency Management Agency (FEMA – Region X) for review. This review will address the federal criteria outlined in FEMA Interim Final Rule 44 CFR Part 201.6.Once the plan is pre-approved by FEMA, the county and cities formally adopt the plan via resolution. The Plan Conveners will be responsible for ensuring local adoption of the Northeast Oregon NHMP and providing the support necessary to ensure plan implementation. Once the resolution is executed at the local level and documentation is provided to FEMA, the plan is formally acknowledged by FEMA and the counties (and participating cities) will re-establish eligibility for the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program funds, and the Flood Mitigation Assistance program funds.

The accomplishment of the Natural Hazards Mitigation Plan goals and actions depends upon regular Steering Committee participation and adequate support from city leadership. Thorough familiarity with this Plan will result in the efficient and effective implementation of appropriate mitigation activities and a reduction in the risk and the potential for loss from future natural hazard events.

Baker, Grant, Union and Wallowa counties and the cities of Baker City, Halfway, John Day, La Grande and Enterprise will review the plan annually or semi-annually (see Section 4, *Implementation and Maintenance* for more information).

The Baker County steering committee met on three occasions May 9th, 2013, June 26th, 2013, and September 13th, 2013 to review the plan update process. The Baker City steering committee met on one occasion, September 13th, 2013. The City of Halfway steering committee met on one occasion, June 27th, 2013.

The Grant County steering committee met on three occasions May 8th, 2013, June 25th, 2013, and September 12th, 2013 to review the plan update process. The John Day steering committee met on one occasion, September 12th, 2013.

The Union County steering committee met on three occasions May 9th, 2013, July 11th, 2013, and September 10th, 2013 to review the plan update process. The La Grande steering committee met on one occasion, September 9th, 2013.

The Wallowa County steering committee met on three occasions May 10th, 2013, July 10th, 2013, and September 11th, 2013 to review the plan update process. The Enterprise steering committee met on one occasion, September 11th, 2013.

Baker County adopted the plan on **May 21, 2014.**

The City of Baker City adopted the plan on **May 13, 2014.**

The City of Halfway adopted the plan on **May 8, 2014.**

Grant County adopted the plan on **June 4, 2014.**

The City of John Day adopted the plan on **April 22, 2014.**

Union County adopted the plan on **May 21, 2014.**

The City of La Grande adopted the plan on **July 16, 2014.**

Wallowa County adopted the plan on **June 16, 2014.**

The City of Enterprise adopted the plan on **June 9, 2014.**

FEMA Region X approved the Northeast Oregon Multi-jurisdictional NHMP on **June 5, 2014**. With approval of this plan, the entities listed above are now eligible to apply for the Robert T. Stafford Disaster Relief and Emergency Assistance Act's hazard mitigation project grants through **June 4, 2019**.

SECTION I: INTRODUCTION

This section provides a general introduction to natural hazard mitigation planning. In addition, Section I: Introduction addresses the planning process requirements contained in 44 CFR 201.6(b) thereby meeting the planning process documentation requirement contained in 44 CFR 201.6(c)(1). This section concludes with a general description of how the plan is organized.

What is Natural Hazard Mitigation?

The Federal Emergency Management Agency (FEMA) defines mitigation as ". . . the effort to reduce loss of life and property by lessening the impact of disasters . . . through risk analysis, which results in information that provides a foundation for mitigation activities that reduce risk. "Said another way, natural hazard mitigation is a method of permanently reducing or alleviating the losses of life, property, and injuries resulting from natural hazards through long and short-term strategies. Example strategies include policy changes, such as updated ordinances, projects, such as seismic retrofits to critical facilities; and education and outreach to targeted audiences, such as Spanish speaking residents or the elderly. Natural hazard mitigation is the responsibility of the "Whole Community" - individuals, private businesses and industries, state and local governments, and the federal government.

Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

Why Develop a Mitigation Plan?

The Northeast Oregon counties of Baker, Grant, Union and Wallowa developed this Natural Hazards Mitigation Plan (NHMP) in an effort to reduce future loss of life and damage to property resulting from natural hazards. It is impossible to predict exactly when natural hazard events will occur, or the extent to which they will affect community assets. However, with careful planning and collaboration among public agencies, private sector organizations, and citizens within the community, it is possible to minimize the losses that can result from natural hazards.

In addition to establishing a comprehensive community-level mitigation strategy, the Disaster Mitigation Act of 2000 (DMA2K) and the regulations contained in 44 CFR 201 require that jurisdictions maintain an approved NHMP in order to receive federal funds for mitigation projects. Local and federal approval of this plan ensures that the county and listed cities will remain eligible for pre- and post-disaster mitigation project grants.

What Federal Requirements Does This Plan Address?

DMA2K is the latest federal legislation addressing mitigation planning. It reinforces the importance of mitigation planning and emphasizes planning for natural hazards before they

occur. As such, this Act established the Pre-Disaster Mitigation (PDM) grant program and new requirements for the national post-disaster Hazard Mitigation Grant Program (HMGP). Section 322 of the Act specifically addresses mitigation planning at the state and local levels. State and local jurisdictions must have approved mitigation plans in place in order to qualify to receive post-disaster HMGP funds. Mitigation plans must demonstrate that their proposed mitigation measures are based on a sound planning process that accounts for the risk to the individual and their capabilities.

Chapter 44 Code of Federal Regulations (CFR), section 201.6, also requires a local government to have an approved mitigation plan in order to receive HMGP project grants.[1] Pursuant of Chapter 44 CFR, the NHMP planning processes shall include opportunity for the public to comment on the plan during review, and the updated NHMP shall include documentation of the public planning process used to develop the plan.[2] The NHMP update must also contain a risk assessment, mitigation strategy and a plan maintenance process that has been formally adopted by the governing body of the jurisdiction.[3] Lastly, the NHMP must be submitted to Oregon Military Department – Office of Emergency Management for initial plan review, and then federal approval.[4]

What State Requirements Does this Plan Address?

To be eligible to apply for the Federal Emergency Management Agency's (FEMA) financial and technical assistance provided through the Emergency Management Performance Grant (EMPG) applicants must have a current and FEMA approved local Natural Hazard Mitigation Plan. Plans under review by FEMA, or in the draft/ update phase are considered as those meeting the eligibility requirements for funding consideration. EMPG funds are provided for the development of an all-hazard emergency management capability to promote preparedness, mitigation, response, and recovery.

What is the Policy Framework for Natural Hazards Planning in Oregon?

Planning for natural hazards is an integral element of Oregon's statewide land use planning program, which began in 1973. All Oregon cities and counties have comprehensive plans and implementing ordinances that are required to comply with the statewide planning goals. The challenge faced by state and local governments is to keep this network of local plans coordinated in response to the changing conditions and needs of Oregon communities.

Statewide land use planning Goal 7: Areas Subject to Natural Hazards calls for local plans to include inventories, policies and ordinances to guide development in or away from hazard areas. Goal 7, along with other land use planning goals, has helped to reduce losses from natural hazards. Through risk identification and the recommendation of risk-reduction

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[1] Code of Federal Regulations. Chapter 44. Section 201.6, subsection (a). 2010

[2] ibid, subsection (b). 2010

[3] ibid, subsection (c). 2010

[4] ibid, subsection (d). 2010

actions, this plan aligns with the goals of the jurisdiction's Comprehensive Plan, and helps each jurisdiction meet the requirements of statewide land use planning Goal 7.

The primary responsibility for the development and implementation of risk reduction strategies and policies lies with local jurisdictions. However, resources exist at the state and federal levels. Some of the key agencies in this area include Oregon Military Department – Office of Emergency Management (OEM), Oregon Building Codes Division (BCD), Oregon Department of Forestry (ODF), Oregon Department of Geology and Mineral Industries (DOGAMI), and the Department of Land Conservation and Development (DLCD).

How was the Plan Developed?

The steering committees for Baker, Grant, Union and Wallowa counties developed this plan and the steering committees for the cities of Baker City, Enterprise, Halfway, John Day, and La Grande developed jurisdictional addenda (Volume III). The county steering committees formally convened on three occasions to discuss and revise the plan. Each of the participating city steering committees met once formally (see Section 4 and Appendix B for more information). Steering committee members contributed data and maps and reviewed and updated the community profile, risk assessment, action items and implementation plan.

An open public involvement process is essential to the development of an effective plan. In order to develop a comprehensive approach to reducing the effects of natural disasters, the planning process shall include opportunity for the public, neighboring communities, local and regional agencies, as well as, private and non-profit entities to comment on the plan during review.[5]Baker County submitted a press release in the Baker City Herald, Hells Canyon Journal and the Record-Courier; Grant County submitted a press release to the Blue Mountain Eagle; Union County submitted a press release to the La Grande Observer; and Wallowa County submitted a press release to the Chieftain. In addition the county and cities included a link to the draft plan on their websites, to encourage the public to offer feedback on the plan update.

How is the Plan Organized?

Each volume of the mitigation plan provides specific information and resources to assist readers in understanding the hazard-specific issues facing county and city residents, businesses, and the environment. Combined, the sections work in synergy to create a mitigation plan that furthers the community's mission to reduce or eliminate long-term risk to people and their property from hazards and their effects. This plan structure enables stakeholders to use the section(s) of interest to them.

Volume I: Basic Plan

Section 1: Introduction

The Introduction briefly describes the region-wide mitigation planning efforts and the methodology used to develop the plan.

[5]Code of Federal Regulations. Chapter 44. Section 201.6, subsection (b). 2010

Section 2: Risk Assessment

Section 2 provides the factual basis for the mitigation strategies contained in Section 3.Appendix C contains an overall description of the participating counties and cities. This section includes a brief description of community sensitivities and vulnerabilities and an overview of the hazards addressed in Volume II of this plan. The Risk Assessment allows readers to gain an understanding of each of the county's, and other jurisdictions', sensitivities – those community assets and characteristics that may be impacted by natural hazards, as well as each of the county's, and other jurisdictions', resilience – the ability to manage risk and adapt to hazard event impacts. Additionally, this section provides information on the jurisdictions' participation in the National Flood Insurance Program (NFIP).

Section 3: Mitigation Strategy

This section documents the plan vision, mission, goals, and actions and also describes the components that guide implementation of the identified mitigation strategies. Actions are based on community sensitivity and resilience factors and the hazard assessments in Section 2 and the Hazard Annexes (Volume II).

Section 4: Plan Implementation and Maintenance

This section provides information on the implementation and maintenance of the plan. It describes the process for prioritizing projects, and includes a suggested list of tasks for updating the plan to be completed at the semi-annual and five-year review meetings.

Volume II: Hazard Annexes

The hazard annexes describe the risk assessment process and summarize the best available local hazard data. A hazard summary is provided for each of the hazards addressed in the plan. The summary includes hazard history, location, extent, vulnerability, impacts, and probability.

The hazard specific annexes included with this plan are the following:

- Drought;
- Earthquake;
- Flood;
- Landslide;
- Severe Weather;
    - Dust Storm;
    - Extreme Temperatures;
    - Windstorm;
    - Winter Storm;
- Volcanic Event;
- Wildfire.

Volume III: Jurisdictional Addenda

Volume III of the plan is reserved for any city or special district addendums developed through this multi-jurisdictional planning process. Each of the cities with a FEMA approved

addendum went through an update to coincide with each of the county's updates; in addition the City of Enterprise created an addendum to the plan in 2013.

The plan includes city addenda for the following jurisdictions:

- Baker City
- Enterprise
- Halfway
- John Day
- La Grande

Volume IV: Mitigation Resources

The resource appendices are designed to provide the users of the Northeast Oregon NHMP with additional information to assist them in understanding the contents of the mitigation plan, and provide them with potential resources to assist with plan implementation.

Appendix A: Action Item Forms

This appendix contains the detailed action item forms for each of the mitigation strategies identified in this plan.

Appendix B: Planning and Public Process

This appendix includes documentation of all the countywide public processes utilized to develop the plan. It includes invitation lists, agendas, sign-in sheets, and summaries of Steering Committee meetings as well as any other public involvement methods.

Appendix C: Community Profile

The community profile describes the participating counties and cities from a number of perspectives in order to help define and understand the regions sensitivity and resilience to natural hazards. The information in this section represents a snapshot in time of the current sensitivity and resilience factors in the region when the plan was updated. Sensitivity factors can be defined as those community assets and characteristics that may be impacted by natural hazards, (e.g., special populations, economic factors, and historic and cultural resources). Community resilience factors can be defined as the community's ability to manage risk and adapt to hazard event impacts (e.g., governmental structure, agency missions and directives, and plans, policies, and programs). Additional profile information is contained within each city's addendum.

Appendix D: Economic Analysis of Natural Hazard Mitigation Projects

This appendix describes the Federal Emergency Management Agency's (FEMA) requirements for benefit cost analysis in natural hazards mitigation, as well as various approaches for conducting economic analysis of proposed mitigation activities. The Partnership for Disaster Resilience developed this appendix. It has been reviewed and accepted by the Federal Emergency Management Agency (FEMA) as a means of documenting how the prioritization of actions shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

Appendix E: Grant Programs and Resources

This appendix lists state and federal resources and programs by hazard.

Appendix F: Regional Household Preparedness Survey (2007)

Appendix F includes the survey instrument and results from the household preparedness survey implemented by ONHW (now OPDR) in 2007. The survey aims to gauge household knowledge of mitigation tools and techniques to assist in reducing the risk and loss from natural hazards, as well as assessing household disaster preparedness.

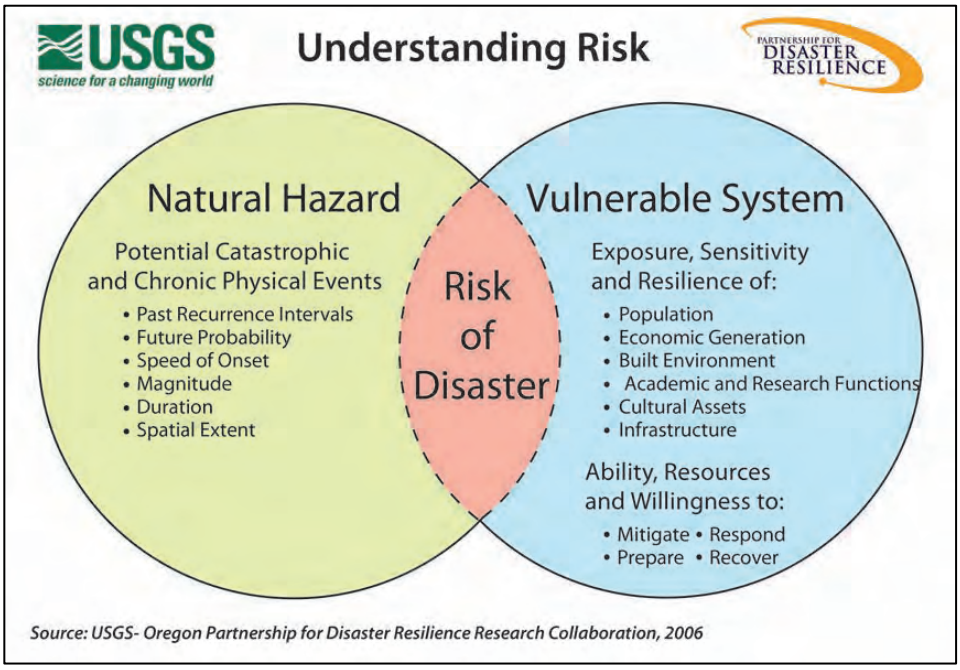
SECTION 2:
RISK ASSESSMENT

This section of the Natural Hazards Mitigation Plan (NHMP) addresses 44 CFR 201.6(b)(2) - Risk Assessment. In addition, this chapter can serve as the factual basis for addressing Oregon Statewide Planning Goal 7 – Areas Subject to Natural Hazards. Assessing natural hazard risk has three phases:

- Phase 1: Identify hazards that can impact the jurisdiction. This includes an evaluation of potential hazard impacts – type, location, extent, etc.
- Phase 2: Identify important community assets and system vulnerabilities. Example vulnerabilities include people, businesses, homes, roads, historic places, and drinking water sources.
- Phase 3: Evaluate the extent to which the identified hazards overlap with, or have an impact on, the important assets identified by each community.

The information presented below, along with hazard specific information presented in the Hazard Annexes and community characteristics presented in the Community Profile Appendix, will be used as the local level rationale for the risk reduction actions identified in Section 3 – Mitigation Strategy. The risk assessment process is graphically depicted in Figure 2-1 below. Ultimately, the goal of hazard mitigation is to reduce the area where hazards and vulnerable systems overlap.

Figure 2-1 Understanding Risk

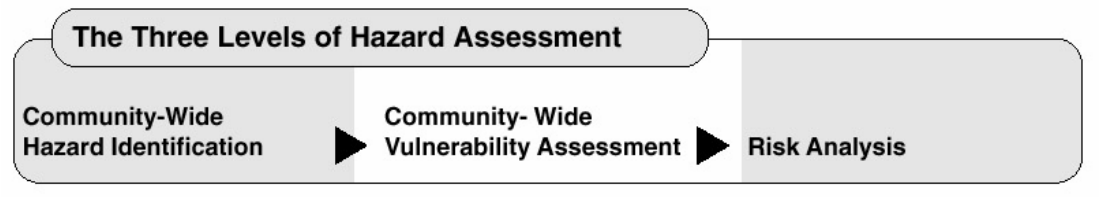


Source: Oregon Partnership for Disaster Resilience

What is a Risk Assessment?

A risk assessment consists of three phases: hazard identification, vulnerability assessment, and risk analysis, as illustrated in the following graphic.

Figure 2-2 Three Phases of a Risk Assessment



Source: Planning for Natural Hazards: Oregon Technical Resource Guide, 1998

The first phase, **hazard identification**, involves the identification of the geographic extent of a hazard, its intensity, and its probability of occurrence. This level of assessment typically involves producing a map. The outputs from this phase can also be used for land use planning, management, and regulation; public awareness; defining areas for further study; and identifying properties or structures appropriate for acquisition or relocation.[1]

The second phase, **vulnerability assessment**, combines the information from the hazard identification with an inventory of the existing (or planned) property and population exposed to a hazard, and attempts to predict how different types of property and population groups will be affected by the hazard. This step can also assist in justifying changes to building codes or development regulations, property acquisition programs, policies concerning critical and public facilities, taxation strategies for mitigating risk, and informational programs for members of the public who are at risk.[2]

The third phase, **risk analysis**, involves estimating the damage, injuries, and costs likely to be incurred in a geographic area over a period of time. Risk has two measurable components: (1) the magnitude of the harm that may result, defined through the vulnerability assessment, and (2) the likelihood or probability of the harm occurring. An example of a product that can assist communities in completing the risk analysis phase is HAZUS, a risk assessment software program for analyzing potential losses from floods, hurricane winds and earthquakes. In Hazards U.S. – Multi-Hazard (HAZUS-MH) current scientific and engineering knowledge is coupled with the latest geographic information systems (GIS) technology to produce estimates of hazard-related damage before, or after a disaster occurs.

This three-phase approach to developing a risk assessment should be conducted sequentially because each phase builds upon data from prior phases. However, gathering data for a risk assessment need not occur sequentially.

[1]Burby, R.1998.Cooperating with Nature. Washington, DC: Joseph Henry Press, 126.

[2]Burby, R.1998.Cooperating with Nature. Washington, DC: Joseph Henry Press, 133.

Hazard Identification

The four counties in Northeast Oregon identified eleven natural hazards that could have an impact on the county. These hazards include drought, dust storm, earthquake (Cascadia), earthquake (crustal), extreme temperature, flood, landslide/ debris flows, volcanic event, wildfire, windstorm, and winter storm. For specific information pertaining to individual hazards, reference the Hazard Annexes (Volume II). Table 2-1 displays which hazards were identified by each steering committee. Compared to the 2008 NHMP, the notable additions are dust storm, earthquake (Cascadia), and extreme temperature.

Table 2-1 Northeast Oregon Hazard Identification

Baker County	Grant County	Union County	Wallowa County
Drought	Drought	Drought	Drought
Dust Storm		Dust Storm	
Earthquake (Cascadia)			
Earthquake (Crustal	Earthquake (Crustal	Earthquake (Crustal	Earthquake (Crustal
		Extreme Temperature	
Flood	Flood	Flood	Flood
Landslide/ Debris Flows	Landslide/ Debris Flows	Landslide/ Debris Flows	Landslide/ Debris Flows
Volcanic Event		Volcanic Event	
Wildfire	Wildfire	Wildfire	Wildfire
Windstorm		Windstorm	
Winter Storm	Winter Storm	Winter Storm	Winter Storm

Source: Baker County NHMP Steering Committee (2013), Grant County NHMP Steering Committee (2013), Union County NHMP Steering Committee (2013), Wallowa County NHMP Steering Committee (2013)

Federal Disaster and Emergency Declarations

Looking at the past events that have occurred in the region can provide a general sense of the hazards that have caused significant damage. Where trends emerge, disaster declarations can help inform hazard mitigation project priorities.

President Dwight D. Eisenhower approved the first federal disaster declaration in May 1953 following a tornado in Georgia. Since then, federally declared disasters have been approved within every state as a result of natural hazard related events. As of October 2013, FEMA has approved a total of 28 federal major disaster declarations, two (2) emergency declarations and 53 fire management assistance declarations in Oregon.[3] When governors ask for presidential declarations of major disaster or emergency, they stipulate which counties in their state they want included in the declaration. Table 2-2 summarizes the major disasters declared for the Northeast Oregon counties since 1964. The table shows that the two major disaster declarations for the region have been weather related.

An Emergency Declaration is more limited in scope and without the long-term federal recovery programs of a Major Disaster Declaration. Generally, federal assistance and funding are provided to meet a specific emergency need or to help prevent a major disaster

[3]FEMA.Declared Disasters by Year or State.http://www.fema.gov/news/disaster_totals_annual.fema#markS. Accessed October 10, 2013

from occurring. Fire Management Assistance is provided after a State submits a request for assistance to the Federal Emergency Management Agency (FEMA) Regional Director at the time a "threat of major disaster" exists. Table 2-2 lists the only federal emergency declaration (EM-3039; drought) and the only fire management assistance declaration (FM-2712) for the region.

Table 2-2 FEMA Major Disaster, Emergency, and Fire ManagementDeclarations for Baker, Grant, Union, and Wallowa County[4]

Declaration Number	Declaration Date	Incident(s) Period	Incident(s)	Individual Assistance	Public Assistance Categories	Designated Northeast Oregon County
FM-2657	07/25/06	07/24/06 to 08/04/06	Foster Gulch Fire Complex	None	A, B	**Baker**
DR-1510	2/19/04	12/26/03 to 1/14/04	Severe Winter Storm	None	A, B, C, D, E, F, G	**Baker, Grant, Union, and Wallowa**
FM-2448	07/19/02	07/18/02 to 07/21/02	Flagtail Fire	None	B	**Grant**
DR-1160	01/23/97	12/25/96 to 01/06/97	Severe Winter Storms/Flooding	Wallowa	A, B, C, D, E, F, G	**Baker, Grant, Wallowa**
DR-1099	02/09/96	02/04/96 to 02/21/96	Severe Storms/Flooding	Union	A, B, C, D, E, F, G	**Union and Wallowa**
EM-3039	04/29/77	04/20/77	Drought	None	A, B	**Baker, Grant, Union, and Wallowa**
DR-413	01/25/74	01/25/74	Severe Storms, Snow Melt, Flooding	Wallowa	A, B, C, D, E, F, G	**Wallowa**
DR-184	12/24/64	12/24/64	Heavy Rains, Flooding	Baker, Grant, Union, and Wallowa	A, B, C, D, E, F, G	**Baker, Grant, Union, and Wallowa**

Source: FEMA, Oregon Disaster History. Disaster Declarations.

Drought

Characteristics

Droughts are not uncommon in Oregon, particularly in eastern Oregon. Droughts tend to be an economic hazard, particularly damaging to the hydro-power and agricultural sectors. Agriculture makes up a particularly large portion of Northeast Oregon businesses and drought therefore affects the economic stability of the region. The environmental consequences also are far-reaching. They include insect infestations in forests and the lack of water to support endangered fish species. In recent years, the state has addressed drought emergencies through the Oregon Drought Council. This interagency (state/federal) council meets to discuss forecasts and to advise the Governor as the need arises.

The Oregon State University Extension Service published a report in June 1979 following the 1977 drought (EM-3039). Highlights of the survey findings indicate that the 1977 drought affected 80% of ranches in eastern Oregon, decreased forage, increased purchase of feed,

[4] FEMA. Oregon Disaster History. Major Disaster Declarations

reduced rate of gain of cattle, delayed breeding, herd health problems and increased water hauling and equipment investments.[5]

Location/Extent

The extent of drought events depends upon the degree of moisture deficiency, and the duration and size of the affected area. Typically, droughts occur as regional events and often affect more than one city and county.

The incidence of drought in Oregon is between eight and twelve years.[6] Northeast Oregon is susceptible to droughts because of its location east of the Cascades and within the high desert. The region experiences dry conditions annually during the summer months from June to September.

For more information on the Drought Hazard in Northeast Oregon see the Drought Annex in Volume II.

Dust Storms

Characteristics

A dust storm is a strong, violent wind that carries fine particles such as silt, sand, clay, and other materials, often for long distances. Dust storms usually arrive with little warning and advance in the form of a big wall of dust and debris. The dust is blinding, making driving safely a challenge. A dust storm may last only a few minutes at any given location, but often leave serious car accidents in their wake, occasionally massive pileups. The arid regions of Central and Eastern Oregon can experience sudden dust storms on windy days.

Location/Extent

The areas of most concern to dust storm events are on highways that have a potential to cause a collision. These types of dust storms were considered by the steering committees during a worst-case scenario type event.

For more information on the Dust Storm Hazard in Northeast Oregon see the Severe Weather Annex in Volume II.

Earthquake

Characteristics

Oregon and the Pacific Northwest in general are susceptible to earthquakes from three sources: 1) shallow crustal events within the North American Plate; 2) deep intra-plate

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5Oregon State University Extension Services."Effects of the 1977 Drought on Eastern Oregon Ranches."June 1979.http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/4743/SR%20no.%20555_ocr.pdf?sequence=1. Northeast Oregon's cow herd production alone decreased more than 37%.

6 Oregon Natural Hazards Mitigation Plan (2012) Region 7: Regional Profile

events within the sub ducting Juan de Fuca Plate; and 3) the off-shore Cascadian Subduction Zone.[7]

Northeast Oregon has not experienced damaging earthquakes in the past 40 years. Primary earthquake hazards include ground shaking amplification, liquefaction, and earthquake-induced landslides.

Location/Extent

The areas most susceptible to ground amplification and liquefaction have young, soft alluvial sediments, found along river and stream channels. The extent of the damage to structures and injury and death to people will depend upon the type of earthquake, proximity to the epicenter and the magnitude and duration of the event. Buildings, dams, levees and lifelines including water, sewer, storm water and gas lines, transportation systems, and utility and communication networks are particularly at risk. Also, damage to roads, bridges and water systems will make it difficult to respond to post-earthquake fires. The areas that are most at risk to the earthquake hazard are in the Baker and Grande Ronde Valleys where the larger population centers Baker City and La Grande are. Baker County is considered to be the most active seismic area in the northeast region.

For more information on the Earthquake Hazard in Northeast Oregon see the Earthquake Annex in Volume II.

Extreme Temperatures

Characteristics

Northeast Oregon can also be a place of extreme temperature events. From extreme cold spells to extreme heat waves, extreme temperature events have the potential to inflict serious health damage. In extreme heat environments the body must work harder to maintain a normal temperature, these conditions can induce heath related illnesses, particularly among vulnerable population types.[8] Extreme cold events can be defined similarly -- where conditions get so severe that health related illnesses occur.

Location/Extent

Perhaps the most notable place in Oregon for extreme cold events is the town of Seneca (Grant County). Seneca currently holds the record for coldest Oregon temperature at -54° F in 1933, and frequently gets negative temperature readings.[9]

For more information on the Extreme Temperatures Hazard in Northeast Oregon see the Severe Weather Annex in Volume II.

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[7]Planning for Natural Hazards: Oregon Technical Resource Guide, Department of Land Conservation and Development, Community Planning Workshop, (July 2000). P. 8-8.

8 FEMA "Extreme Heat" http://www.ready.gov/heat

[9] Taylor, George H. and Chris Hannan. The Oregon Weather Book. Corvallis, OR: Oregon State University Press. 1999

Flood

Characteristics

The principal types of flood that occur in Northeast Oregon include snow melt (spring) floods resulting from rapid snowmelt, occasionally augmented by rainfall, riverine, and local flash floods.

Riverine Flooding

Riverine floods occur when water levels in rivers and streams overflow their banks. Most communities located along such water bodies have the potential to experience this type of flooding after spring rains, heavy thunderstorms or rapid runoff from snow melt. Riverine floods can be slow or fast-rising, but usually develop over a period of days.

Snow-melt Flooding

Flooding throughout the region is most commonly linked to the spring cycle of melting snow. The weather pattern that produces these floods occurs during the winter months and has come to be associated with La Nina events, a three to seven year cycle of cool, wet weather. In brief, cool, moist weather conditions are followed by a system of warm, moist air from tropical latitudes. The intense warm air ssociated with this system quickly melts foothill and mountain snow. Above-freezing temperatures may occur well above pass levels (4,000-5,000 feet). Such conditions were especially noteworthy with low bridge clearances which have particularly damaged Northeast Oregon areasa as seen in the recent flooding of the Grant-Union High School. The recent 2011 flooding in Pine Valley was also the result of snow-melt flooding.

Flash Floods

Flash floods usually result from intense storms dropping large amounts of rain within a brief period. Flash floods usually occur in the summer during thunderstorm season, appear with little or no warning and can reach full peak in a few minutes. They are most common in the arid and semi-arid central and eastern areas of the state where there is steep topography, little vegetation and intense but short duration rainfall. Flash floods can occur in both urban and rural settings, often along smaller rivers and drainage ways. In flash flood situations, waters not only rise rapidly, but also generally move at high velocities and often carry large amounts of debris. In these instances a flash flood may arrive as a fast moving wall of debris, mud, water or ice. Such material can accumulate at a natural or man-made obstruction and restrict the flow of water. Water held back in such a manner can cause flooding both up stream and then later down stream if the obstruction is removed or breaks free.

For more information on the Flood Hazard in Northeast Oregon see the Flood Annex in Volume II.

Landslide

Characteristics

In Oregon, a significant number of locations are at risk to dangerous landslides. While not all landslides result in private property damage, many landslides impact transportation

corridors, fuel and energy conduits, and communication facilities. They can also pose a serious threat to human life.

All landslides can be classified into one of the following six types of movements: (1) slides, (2) flows, (3) spreads, (4) topples, (5) falls, or (6) complex.[10] In addition, landslides may be broken down into the following two categories: (1) rapidly moving; and (2) slow moving[11]. Rapidly moving landslides are typically "off-site" (debris flows and earth flows) and present the greatest risk to human life. Rapidly moving landslides have caused most of the recent landslide-related injuries and deaths in Oregon, including eight deaths in 1996 following La Niña storms[12]. Slow moving landslides tend to be "on-site" (slumps, earthflows, and block slides) and can cause significant property damage, but are less likely to result in serious human injuries[13].

Landslides vary greatly in the volumes of rock and soil involved, the length, width, and depth of the area affected, frequency of occurrence, and speed of movement. Some characteristics that determine the type of landslide are slope of the hillside, moisture content, and the nature of the underlying materials.[14]

Location/Extent

In general, areas at risk to landslides have steep slopes (25 percent or greater,) or a history of nearby landslides. In otherwise gently sloped areas, landslides can occur along steep river and creek banks, and along ocean bluff faces. At natural slopes under 30 percent, most landslide hazards are related to excavation and drainage practices, or the reactivation of preexisting landslide hazards.[15]The severity or extent of landslides is typically a function of geology and the landslide triggering mechanism. Rainfall initiated landslides tend to be smaller, and earthquake induced landslides may be very large. Even small slides can cause property damage, result in injuries, or take lives. Natural conditions and human activities can both play a role in causing landslides. The incidence of landslides and their impact on people and property can be accelerated by development.[16]

While Northeast Oregon has rarely experience major landslides, there are areas in the county that are potentially vulnerable as identified by the steering committee:

- Baker County: Smith Ditch can block the Powder River; Highway 86 near Huntington has frequent landslide issues; Highway 86 near Halfway/Richland

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[10]Interagency Hazard Mitigation Team. 2012- Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

[11] DLCD, CPW, Planning for Natural Hazards: Oregon Technical Resource Guide, 1999

[12] Ibid

[13] Ibid.

14 Ibid.

15Interagency Hazard Mitigation Team.2012- Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

16 DLCD, CPW, Planning for Natural Hazards: Oregon Technical Resource Guide, 1999

- Grant County: threat of landslide and debris flow near Rock Creek and Picture Gorge. Highway 63 near Izee is at risk related to flash floods
- Union County: Hamburger Hill, Highway US 30 on the way to I-84, Minam Grade – Highway 82 connection to Wallowa County. The EOU NHMP (2012) had an action item calling for a detailed landslide study to be completed near the University. In addition, the hill behind the Grande Ronde Hospital was recently assessed for landslide hazards.
- Wallowa County: Wallowa Lake District has landslide issues; Troy frequently has slides every year; the Imnaha River frequently has landslides.

For more information on the Landslide Hazard in Northeast Oregon see the Landslide Annex in Volume II.

Volcanic Event

Characteristics

Northeast Oregon (and the greater Pacific Northwest) lays within the "ring of fire", an area of very active volcanic activity surrounding the Pacific Basin. Volcanic eruptions occur regularly along the ring of fire, in part because of the movement of the Earth's tectonic plates. Volcanic eruptions have the potential to coincide with numerous other hazards including ash fall, earthquakes, lava flows, pyroclastic flows, lahars and debris flows, and landslides. Ash fall is likely the only hazard that could have the potential to impact Northeast Oregon directly.

Location/Extent

The volcanic Cascade Mountain Range is not within the northeast Oregon counties. Therefore risk from local volcano-associated hazards (e.g. lahars, pyroclastic flows, lava flows, etc.) is not a consideration. The indirect effects of airborne tephra from Mt. St. Helens must be considered as well; including disruption of engines of motor vehicles and vulnerable populations, such as people with asthma. Mt. St. Helens is about 250 air miles from the City of Enterprise, consequently placing that community at risk. Mt. Jefferson, located 150 miles west of John Day, it is a possible, but unlikely source of airborne tephra.

For more information on the Volcanic Event Hazard in Northeast Oregon see the Volcanic Event Annex in Volume II.

Wildfire

Characteristics

Wildfires are common to the arid areas of central and eastern Oregon, as such the potential for losses due to Wildland-Urban Interface (WUI) fires in the urbanized region should not be ignored. Fire is an essential part of Oregon's ecosystem, but it is also a serious threat to life and property. Wildfires that have the potential to affect Northeast Oregon can be divided into four categories: interface, wildland,firestorms and prescribed burns. Ignition of a wildfire may occur naturally from lightning or from human causes such as debris burns,

arson, careless smoking, and recreational activities or from an industrial accident. Once started, fuel, topography, weather and development conditions affect fire behavior.

Location/Extent

In eastern Oregon, large costly fires have become regular events, disrupted communities, cost millions of dollars in suppression and recovery costs, and increased the risk to private property owners. According to the Oregon Department of Forestry, "large fires that threaten dwellings are 48% more expensive to fight, and the likelihood of human-caused fires exponentially increases with the addition of each new home. Throughout Oregon's wildland-urban interfaces historically normal fires have become economically and socially unacceptable due to the scale of damage they cause."[17]

The extent of damage to the region from WUI fires is dependent on a number of factors, including temperature, wind speed and direction, humidity, proximity to fuels, and steepness of slopes. WUI fires can be intensified by development patterns, vegetation and natural fuels, and can merge into unwieldy and unpredictable events.

The Northeast Oregon counties have four Community Wildfire Protection Plans (CWPPs)– Baker County CWPP (2006), Grant County CWPP (2013), Union County CWPP (2005), and Wallowa County CWPP (2006). Table 2-3, on the following page, lists the wildland/urban interface communities that are considered to be at a higher risk to a wildfire in the four counties.

[17] Oregon Department of Forestry, *Oregon Forests Report*, 2007-2009

Table 2-3 Wildland/Urban Interface Communities

Baker County	Grant County	Union County	Wallowa County
Anthony Lakes Resort	Canyon City	Beaver Creek Watershed	Alder Slope
Auburn Gulch	Granite	Blue Springs	Bear Creek
Baker City WS/ Face of the Elkhorns	John Day	Catherine Creek	Hurricane Creek
Black Mountain	Long Creek	Cove	Imnaha River Woods
Bourne	Mt. Vernon	Kamela	Liberty
Cornucopia	Prairie City	Medical Springs	Troy
Eagle Creek	Seneca	Morgan	Wallowa Lake Basin
East Eagle/Main Eagle		Mt. Emily	
Elkhorn Estate/Deer Cr./ McEwen		Palmer	
Greenhorn		Perry/ Hilgard	
Huntington		Stubblefield	
Oxbow			
Rock Creek/ Bulger Flats			
Sparta			
Stices Gulch			
Sumpter/McCully Forks Watershed			
Surprise Valley			
Wood Tick Village/ Rattlesnake Est.			

Source: Baker County CWPP 2006, Grant County CWPP 2013, Union County CWPP 2004, Wallowa County CWPP 2006

Recent Fire/ WUI Events

There have been a number of significant wildfires that have threatened Northeast Oregon in the past 20 years. Pursuant to the Conflagration Act (ORS 476.510) conflagrations are wildfires that include calls for assistance from other fire suppression authorities and/ or equipment from around the state.[18] These are often extraordinary fires that can receive federal assistance and can only be issued by the governor. The table below includes a list of wildfire conflagrations since 1996.

[18] Oregon State Police – Oregon Office of State Fire Marshal
http://www.oregon.gov/osp/SFM/Pages/Oregon_Mob_Plan.aspx

Table 2-4 Wildfire Conflagration History (1996-2013)

Fire Name	Date	Location	Comments
Wildcat/Prairie City Fire	Aug. 1996	Grant County	52 Structures threatened near Prairie City. Conflagration mobilization cost: $176,107
Cumming Creek Fire	Aug. 1999	Grant County	Executive Order NO. EO - 00 - 15. The Cummings Creek Fire is located 11 miles west of Mt. Vernon. 50 structures threatened, one structure lost. Conflagration mobilization costs: $52,296
Carrol Creek Fire/The Thorn Fire	Aug. 2000	Wallowa County	Executive Order NO. EO - 00 - 27. The Carrol Creek and the Thorn Fire were two of several fires near Enterprise and Imnaha. Carol Creek is 10 miles east of Wallowa Lake, Thorn Fire is 37 miles northeast of Enterprise.
Horse Creek Fire	Aug. 2001	Wallowa County	Executive Order NO. EO - 01 - 20. The Horse Creek Fire was caused by lightning and is located north of Imnaha; threatening the town of Imnaha and residences along the Imnaha River. Conflagration mobilization costs: $274,704
Monument Complex Fires	Aug. 2001	Grant County	Exective Order NO. EO - 01 - 21. The Monument Complex Fires were lightning caused fires. Three of the fires threatened the town of Monument. 28 structures threatened, zero structures lost. Conflagration mobilization costs: $229,717; federal funding: $229,717
Mahleur Complex/Flagtail Fire	July 2002	Grant County	Executive Order NO. EO - 02 - 09. These fires were lightning caused and threatened large portions of Grant County near Austin Junction and Seneca. Two structures lost. Conflagration mobilization costs: $188,697; federal funding: $188,697.
Booth Fire	Aug. 2003	Union County	Both fire threatened the Bridge Creek Wildlife area south of Ukiah, threatening over 1,063 structures, 11 of which were lost. Conflagration mobilization costs: $1,124,630; federal funding $705,921
McLean Creek Fire (Foster Gulch Complex)	July 2006	Baker County	Executive Order NO. EO - 06 - 11. 60 homes near Pine Creek were threatened, more than 1,500 acres of grass and timber were burned. Conflagration mobilization costs: $703,102; federal funding: $478,693
Grouse Mountain Fire	Aug. 2013	Grant County	Threatened the town of John Day including approximately 400 residences and 11 structures, one structure was lost. Conflagration mobilization cost (as of 9-12-13): $17,084

Source: Governor's List of Executive Orders: http://www.oregon.gov/gov/Pages/exec_orders.aspx; Oregon Governor-Declared Conflagrations http://www.oregon.gov/osp/SFM/docs/ConflagrationHistory.pdf

For more information on the Wildfire Hazard in Northeast Oregon see the Wildfire Annex in Volume II.

Windstorm

Characteristics

Extreme winds occur throughout Oregon, and most communities have some level of vulnerability to windstorms. Windstorms can result in collapsed or damaged buildings, damaged or blocked roads and bridges, damaged traffic signals, streetlights, and parks,

among other impacts. Roads blocked by fallen trees during a windstorm may have severe consequences to people who need access to emergency services. Emergency response operations can be complicated when roads are blocked or when power supplies are interrupted. Windstorms can trigger flying debris, which can also damage utility lines; overhead power lines can be damaged even in relatively minor windstorm events. Industry and commerce can suffer losses from interruptions in electric service and from extended road closures.

Although rare, tornados can and do occur in Oregon, with recorded events happening in all four counties and a particularly destructive tornado in Wallowa County.[19] Tornadoes are the most concentrated and violent storms produced by the earth's atmosphere. They are created by a vortex of rotating winds and strong vertical motion, which possess remarkable strength and cause widespread damage. Smaller wind events, often known as, "dust devils", are fairly common in Northeast Oregon and pose some risk to the local community.

Location/Extent

The damaging effects of windstorms may extend for distances of 100 to 300 miles from the center of storm activity. Windstorms in Northeast Oregon usually occur from October to March, and their extent is determined by their track, intensity (the air pressure gradient they generate), and local terrain. More intense windstorms generally occur within the valley corridors – Baker Valley and Grande Ronde Valley.[20]

Oregon and other western states experience tornadoes on occasion, many of which have produced significant damage and occasionally injury or death. Most of the tornadoes that develop in Oregon are caused by intense local thunderstorms. These storms also produce lightning, hail, and heavy rain, and are more common during the warm season from April to October.[21]

For more information on the Windstorm Hazard in Northeast Oregon see the Severe Weather Annex in Volume II.

Winter Storm

Characteristics

Severe winter storms can consist of rain, freezing rain, ice, snow, cold temperatures, and wind. They originate from troughs of low pressure offshore that ride along the jet stream during fall, winter, and early spring months. Severe winter storms affecting Northeast

[19]Taylor, George H. & Chris Hannan, The Climate of Oregon, OSU Press, 1999. The 1968 Wallowa County event was considered to be a category 7 in damages, ranging between $5 million and $50 million in destruction of timber land.

[20]Natural Hazards Mitigation Plan Risk Assessment Meetings

[21] Taylor, George H., Holly Bohman, and Luke Foster. August 1996. A History of Tornadoes in Oregon.Oregon Climate Service. Corvallis, OR: Oregon State University. http://www.ocs.orst.edu/pub_ftp/reports/book/tornado.html

Oregontypically originate in the Gulf of Alaska or in the central Pacific Ocean. These storms are most common from October through March.[22]

Winter storm events are relatively common in eastern Oregon, where the air is generally cold enough for snow and ice, when a Pacific storm is associated with an air mass from the Gulf of Alaska, a major snowstorm may ensue.

Like snow, ice storms are comprised of cold temperatures and moisture, but subtle changes can result in varying types of ice formation, including freezing rain, sleet, and hail. Freezing rain can be the most damaging of ice formations. While sleet and hail can create hazards for motorists when it accumulates, freezing rain can cause the most dangerous conditions within a community. Ice buildup can bring down trees, communication towers, and wires creating hazards for property owners, motorists, and pedestrians alike.

Location/Extent

All of Northeast Oregon is vulnerable to winter storms and impacts typically extend region-wide. The magnitude or severity of severe winter storms is determined by a number of meteorological factors including the amount and extent of snow or ice, air temperature, wind speed, and event duration.

For more information on the Winter Storm Hazard in Northeast Oregon see the Severe Weather Annex in Volume II.

Hazard Probability

Probability is the likelihood of future occurrence within a specified period of time.Baker County, Grant County, Union County, and Wallowa County and the cities of Baker City, Enterprise, Halfway, John Day, and La Grande evaluated the best available probability data to develop the probability scores presented below. For the purposes of this plan, the county and cities utilized the Oregon Military Department – Office of Emergency Management (OEM) Hazard Analysis methodology definitions to determine hazard probability. The definitions are:

LOW = one incident likely within 75 to 100 years scores between 1 and 3 points

MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points

HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Tables 2-4 and 2-5 present the probability scores for each of the natural hazards present in the participating jurisdictions. As shown in the table, several hazards are rated with high probabilities, particularly: drought, flood, wildfire, windstorm, and winter storm.

[22]Interagency Hazard Mitigation Team.2012- Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

Table 2-5 Natural Hazard Probability Assessment Summary

Hazard	Baker County	Baker City	Halfway	Grant County	John Day
Drought	**High**	**High**	**High**	**High**	**High**
Dust Storm	Moderate	N/A	N/A	N/A	N/A
Earthquake - Cascadia	Moderate	Moderate	N/A	N/A	N/A
Earthquake - Crustal	Low	Low	Low	Low	Low
Extreme Temperature	N/A	**High**	N/A	N/A	N/A
Flood	**High**	**High**	**High**	**High**	**High**
Landslide	**High**	Moderate	**High**	**High**	Moderate
Volcanic Event	Low	Low	Low	Low	Low
Wildfire	**High**	**High**	**High**	**High**	**High**
Windstorm	**High**	**High**	**High**	**High**	**High**
Winter Storm	**High**	**High**	Moderate	**High**	**High**

Source: Baker County, Baker City, Halfway, Grant County, John Day NHMP Steering Committees, 2013.

Table 2-5 Natural Hazard Probability Assessment Summary(cont'd)

Hazard	Union County	La Grande	Wallowa County	Enterprise
Drought	**High**	**High**	**High**	Moderate
Dust Storm	Low	Low	N/A	N/A
Earthquake - Cascadia	N/A	Low	N/A	N/A
Earthquake - Crustal	Low	**High**	Moderate	Low
Extreme Temperature	**High**	**High**	N/A	**High**
Flood	**High**	**High**	**High**	**High**
Landslide	Low	Moderate	**High**	Low
Volcanic Event	Low	Low	Low	Low
Wildfire	**High**	**High**	**High**	Low
Windstorm	**High**	**High**	**High**	**High**
Winter Storm	**High**	**High**	**High**	**High**

Source: Union County, La Grande, Wallowa County, Enterprise NHMP Steering Committees, 2013.

Community Vulnerability

Community vulnerabilities are an important supplement to the NHMP risk assessment. For more in-depth information regarding specific community vulnerabilities, reference Appendix C*ommunity Profile*.

Populations

The socio-demographic qualities of the community population such as language, race and ethnicity, age, income, and educational attainment are significant factors that can influence the community's ability to cope, adapt to and recover from natural disasters. Historically, 80 percent of the disaster burden falls on the public.[23] Of this number, a disproportionate burden is placed upon special needs groups, particularly children, the elderly, the disabled, minorities, and low-income persons. Population vulnerabilities can be reduced or eliminated with proper outreach and community mitigation planning. For planning purposes, it is essential that the region consider both immediate and long-term socio-demographic implications of hazard resilience.

[23] Hazards Workshop Session Summary #16, Disasters, Diversity, and Equity. (July 2000). University of Colorado, Boulder.

Vulnerabilities

- Age may be the most significant indicator that influences socio demographic vulnerability in the Northeast Region. The population of Northeast Oregon greater than 50 is 44%, much larger than the State of Oregon's (34%) and the United States' (32%) age groups. These numbers are more impressive in Baker, Grant, and Wallowa Counties; Union County is the youngest county, partially attributed to Eastern Oregon University and a larger urban environment.

- There are 3,030 households with individuals over 64 years of age living alone in the Northeast Region (approximately 12.6% of all households) and 1,822 single parent households (approximately 7.6% of all households), these populations will likely require additional support during a disaster and will inflict strain on the system if improperly managed. Baker and Grant County have the largest percent of households over 64 years of age living alone at 14.9% and 14.6% respectively. Union County has the largest percent of single parent households.

- The median household income across the region is nearly $40,000; this is nearly 25% lower than the State of Oregon median income of $49,850. While every county's median income increased relative to the real 2000 median income (not adjusted for inflation), nominally (inflation adjusted) the region decreased in median income with the exception of Baker County. Grant County suffered the greatest decline in median income at approximately 19.2%. Baker County had the highest median income in 2011 at around $40,989, and the greatest percent increase between 2000 and 2011 (approximately 3.3%).

- Between 2000 and 2010, the Northeast region's population was stagnant, experiencing a 0.2% decrease as a whole. Baker, Grant, and Wallowa counties all decreased in population over the ten year period, a combined population decrease of over 1,300 people. Union County increased by 5% and was the only county to experience growth; however, its rate of growth was less than half of the state as a whole.

Economy

Economic diversification, employment and industry are measures of economic capacity. However, economic resilience to natural disasters is far more complex than merely restoring employment or income in the local community. Building a resilient economy requires an understanding of how the component parts of employment sectors, workforce, resources and infrastructure are interconnected in the existing economic picture. The current and anticipated financial conditions of a community are strong determinants of community resilience, as a strong and diverse economic base increases the ability of individuals, families and the community to absorb disaster impacts for a quick recovery. It is imperative that the region recognize that economic diversification is a long-term issue; more immediate strategies to reduce vulnerability should focus on risk management for the dominant industries.[24]

[24] Ibid.

Vulnerabilities

- According to the Oregon Employment Department Northeast Oregon has less business diversity than the state as whole. Without a broad economic base to rely upon businesses may suffer more during a natural disaster.
- Over 50% of all businesses in the Northeast region fall into five industry sectors. 15% (2,514) are engaged in Retail, 14% (2,604) are engaged in Education and Health Services, 10% (1,865) are engaged in manufacturing, 9% (1,807) are engaged in leisure and hospitality and 4% (790) are engaged in construction.
- Travel spending and related economic impacts occur within Oregon's urban areas; however, the rural impacts are arguably more impressive. Dean Runyan Associates study on travel impacts claims that: "in general, more rural counties have a bigger share of travel-generated employment."According to the Northeast Oregon Economic Development District's Comprehensive Economic Development Strategy (2013) tourism continue to be one of the primary diversifications of the region's economy. One of the insights confirmed in the Steering Committee's Risk Assessment Meetings is the increase in bicycle tourism which generates 15 million dollars a year for Eastern Oregon. Travelers may be more vulnerable in the event of a natural hazard due to their familiarity of the region.

Environment

The capacity of the natural environment is essential in sustaining all forms of life including human life, yet it often plays an underrepresented role in community resiliency to natural hazards. The natural environment includes land, air, water and other natural resources that support and provide space to live, work and recreate.[25] Natural capital such as wetlands and forested hill slopes play significant roles in protecting communities and the environment from weather-related hazards, such as flooding and landslides. When natural systems are impacted or depleted by human activities, those activities can adversely affect community resilience to natural hazard events.

Vulnerabilities

- Temperatures in the northeast region are highly similar and are generally within a few degrees difference among them. All four counties belong to the same Oregon Climate Service designated climate zone and experience similar temperature variability for each month. The region usually experiences freezing winters -- Seneca in Grant County has experienced the coldest temperature day on record for the state of Oregon at -54°F; and blistering summers which can approach as high as 119°F.
- Climate change is projected to have an impact on one of northeast Oregon's primary competitive advantage: agriculture.

[25]Mayunga, J. 2007. Understanding and Applying the Concept of Community Disaster Resilience: A capital-based approach. Summer Academy for Social Vulnerability and Resilience Building.

Critical Facilities and Infrastructure

Critical facilities (i.e. police, fire, and government facilities), housing supply and physical infrastructure are critical during a disaster and are essential for proper functioning and response. The lack or poor condition of infrastructure can negatively affect a community's ability to cope, respond and recover from a natural disaster. Following a disaster, communities may experience isolation from surrounding cities and counties due to infrastructure failure. These conditions force communities to rely on local and immediately available resources.

Vulnerabilities

- It is critical to maintain the quality of built capacity (transportation networks, critical facilities, utility transmission, etc.) throughout the area. There are two major highways that run through the Northeast region. I-84 is a major transportation corridor that connects Portland with eastern Oregon and beyond. State Highway 82 connects the very northeastern part of the State with I-84.
- Based on U.S. Census data, more than 80% of the residential housing throughout the region was built prior to current seismic building standards of 1990 and nearly 72% were constructed prior to the local implementation of the flood elevation requirements of the 1970's (county FIRMs were not completed until the 1980s).
- Correctional facilities were considered to be a vulnerable population type during the steering committee risk assessment meetings. There is one correctional facility located in Baker County. The Powder River Correctional Facility in Baker City has an inmate capacity of 286.

National Flood Insurance Program (NFIP)

Northeast Oregon's flood hazards are identified through its FEMA issued Flood Insurance Rate Maps (FIRM), in conjunction with their Flood Insurance Studies (FIS). Flood records are often not well documented, particularly in unincorporated areas because their floodplains are sparsely developed.[26] There are numerous flood sources for the four counties, principal among them are the Powder River (Baker County), the John Day River (Grant County) the Grande Ronde River (Union County), and the Wallowa River (Wallowa County).[27]Flooding is usually caused by heavy rainfall and snowmelt when soil is near saturation.The Northeast Oregon Flood Insurance Rate Maps (FIRMs), like much of eastern Oregon are not modernized.

The table below shows that as of June 2013, Baker County (including the cities of Baker City, Halfway, and Sumpter) has 130 National Flood Insurance Program (NFIP) policies in force, three total paid claims and zero repetitive loss buildings. There has been a recent Community Assistance Visits (CAVs) for Baker County and Baker City in 2011. The county has

[26] Baker County Flood Insurance Study NFIP, 6/3/89; Grant County FIS NFIP, 5/18/1982; Union County FIS NFIP, 4/3/1996; Wallowa County FIS, NFIP 2/17/88

[27] Ibid; for more information on flood sources for the four counties visit the flood hazard annex in Volume II of the plan.

no repetitive flood loss properties and is not a member of the Community Rating System (CRS). The table below shows that none of the cities have repetitive flood loss properties nor currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 16 non-residential structures with flood insurance policies.

Table 2-6 Baker County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Baker County	-	173	123	153	0	4	16
Baker County*	6/3/88	43	29	38	0	0	5
Baker City	6/3/88	125	91	111	0	4	10
Green Horn	Not Mapped	NA	NA	NA	NA	NA	NA
Haines	6/3/88	0	0	0	0	0	0
Halfway	6/3/88	3	3	2	0	0	1
Huntington	6/3/98	0	0	0	0	0	0
Sumpter	6/3/98	2	0	2	0	0	0

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage Claims	Repetitive Loss Buildings	Total Paid Amount	CRS Class Rating	LAST CAV
Baker County	$22,549,700	3	0	0	$29,769	-	$111,424
Baker County*	$6,709,100	1	0	0	$4,278	NP	10/12/11
Baker City	$15,336,600	2	0	0	$25,491	NP	10/12/01
Green Horn	NA	NA	NA	NA	NA	NP	NA
Haines	$0	0	0	0	$0	NP	7/1/91
Halfway	$324,000	0	0	0	$0	NP	NA
Huntington	$0	0	0	0	$0	NP	NA
Sumpter	$180,000	0	0	0	$0	NP	NA

Source: Information compiled by Department of Land Conservation and Development

The table below shows that as of June 2013, Grant County (including the cities of Canyon City, Dayville, John Day, Long Creek, Mt. Vernon, and Prairie City) has 106 National Flood Insurance Program (NFIP) policies in force, seven total paid claims and one repetitive loss buildings. The repetitive flood loss claim in John Day resulted in $16,643 in payments over two losses. There has been a recent Community Assistance Visits (CAVs) in the last 15 years. The county The county has one repetitive flood loss property and is not a member of the Community Rating System (CRS). The table below shows that the only city with repetitive flood loss properties is John Day and none of the cities currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 19 non-residential structures with flood insurance policies.

The Community Repetitive Loss record for Grant County identifies one repetitive loss building (which is not currently insured) and two total repetitive loss claims totaling $16,644. The repetitive loss building is located within the City of John Day. There are no repetitive loss buildings within any other city in the county. The one identified repetitive flood loss (RFL) property is a single-family residential building located in Zone A03 of the existing FIRM. The property is located on NW Bridge Street, between NW 7th Avenue and NW 5th Avenue.

Table 2-7 Grant County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Grant County	-	106	72	81	3	3	19
Grant County*	5/18/82	27	16	23	0	1	3
Canyon City	9/18/87	11	10	10	0	0	1
Dayville	9/24/84	1	0	1	0	0	0
Granite	Not Mapped	NA	NA	NA	NA	NA	NA
John Day	2/23/82	48	31	31	2	2	13
Long Creek	9/24/84	1	1	1	0	0	0
Monument	9/24/84	0	0	0	0	0	0
Mt. Vernon	9/18/87	16	12	13	1	0	2
Prairie City	2/17/88	2	2	2	0	0	0
Seneca	9/24/84	0	0	0	0	0	0

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage Claims	Repetitive Loss Buildings	Total Paid Amount	CRS Class Rating	LAST CAV
Grant County	$11,498,400	7	1	1		-	-
Grant County*	$2,919,400	0	0	0	$0	NP	6/29/94
Canyon City	$1,231,800	0	0	0	$0	NP	7/1/89
Dayville	$113,000	0	0	0	$0	NP	NA
Granite	NA	NA	NA	NA	NA	NA	NA
John Day	$5,678,800	7	1	1	$51,094	NP	6/14/93
Long Creek	$25,000	0	0	0	$0	NP	NA
Monument	$0	0	0	0	$0	NP	NA
Mt. Vernon	$1,185,400	0	0	0	$0	NP	6/14/93
Prairie City	$345,000	0	0	0	$0	NP	7/1/89
Seneca	$0	0	0	0	$0	NP	NA

Source: Information compiled by Department of Land Conservation and Development

The table below shows that as of June 2013, Union County (including the cities of Cove, Elgin, Island City, La Grande, Summerville, and Union) has 193 National Flood Insurance Program (NFIP) policies in force, 13 total paid claims and one repetitive loss building. There has been a recent Community Assistance Visits (CAVs) for Union County, La Grande, and Union in 2004. The county has one repetitive flood loss property and is not a member of the Community Rating System (CRS). The table below shows that none of the cities have repetitive flood loss properties nor currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 28 non-residential structures with flood insurance policies.

The Community Repetitive Loss record for Grant County identifies one repetitive loss building (which is currently insured) and four total repetitive loss claims totaling $17,526. The repetitive loss building is located in Union County. There are no repetitive loss buildings within any city in the county. The one identified repetitive flood loss (RFL) property is a single-family residential building located in Zone C of the existing FIRM. The property is located on N College Street, between Willowdale Lane and E Bryan Street.

Table 2-8 Union County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Union County	-	193	128	150	9	6	28
Union County*	4/3/96	50	30	35	0	0	15
Cove	never mapped	NA	NA	NA	NA	NA	NA
Elgin	11/15/78	9	7	7	0	0	2
Island City	9/30/87	8	6	6	1	0	1
La Grande	4/3/96	78	56	58	8	6	6
North Powder	6/29/78	0	0	0	0	0	0
Summerville	1/15/80	2	1	2	0	0	0
Union	12/15/78	46	28	42	0	0	4

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage	Repetitive Loss	Total Paid Amount	CRS Class Rating	LAST CAV
Union County	$33,963,000	13	0	0	$91,174	-	-
Union County*	$8,765,000	5	0	1*	$33,921	NP	4/29/04
Cove	NA	NA	NA	NA	NA	NA	NA
Elgin	$1,593,000	0	0	0	$0	NP	9/17/92
Island City	$1,539,800	0	0	0	$0	NP	9/17/92
La Grande	$14,452,300	4	0	0	$38,334	NP	4/29/04
North Powder	$0	0	0	0	$0	NP	7/1/91
Summerville	$245,000	0	0	0	$0	NP	NA
Union	$7,367,900	4	0	0	$18,919	NP	4/28/04

Source: Information compiled by Department of Land Conservation and Development

The table below shows that as of June 2013, Wallowa County (including the cities of Enterprise, Joseph, Lostine, and Wallowa) has 109 National Flood Insurance Program (NFIP) policies in force, three total paid claims and zero repetitive loss buildings. There has been a recent Community Assistance Visits (CAVs) for Enterprise in 2011. The county has no repetitive flood loss properties and is not a member of the Community Rating System (CRS). The table below shows that none of the cities have repetitive flood loss properties nor currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 19 non-residential structures with flood insurance policies.

Table 2-9 Wallowa County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Wallowa County	-	109	74	85	3	2	19
Wallowa County*	2/17/88	32	20	29	0	0	3
Enterprise	2/17/88	68	48	49	3	2	14
Joseph	2/17/88	3	2	3	0	0	0
Lostine	2/17/88	1	0	1	0	0	0
Wallowa	2/17/88	5	4	3	0	0	2

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage Claims	Repetitive Loss Buildings	Total Paid Amount	CRS Rating Class	LAST CAV
Wallowa County	$19,693,700	3	0	0	$16,288	-	-
Wallowa County*	$7,652,000	2	0	0	$15,788	NP	11/4/98
Enterprise	$10,674,500	0	0	0	$0	NP	9/11/11
Joseph	$630,000	0	0	0	$0	NP	11/4/98
Lostine	$350,000	0	0	0	$0	NP	NA
Wallowa	$387,200	1	0	0	$500	NP	12/14/99

Source: Information compiled by Department of Land Conservation and Development

Vulnerability Summary

Vulnerability is a measure of the exposure of the built environment to hazards. The exposure of community assets to hazards is critical in the assessment of the degree of risk a community has to each hazard. Identifying the facilities and infrastructure at risk from various hazards can assist the county in prioritizing resources for mitigation, and can assist in directing damage assessment efforts after a hazard event has occurred. The exposure of county and city assets to each hazard and potential implications are explained in each hazard section.

Vulnerability includes the percentage of population and property likely to be affected under an “average” occurrence of the hazard.Baker County, Grant County, Union County, Wallowa County and the cities of Baker City, Enterprise, John Day, Halfway, and La Grande evaluated the best available vulnerability data to develop the vulnerability scores presented below. For the purposes of this plan, the county, cities and special district utilized the Oregon Military Department – Office of Emergency Management (OEM) Hazard Analysis methodology vulnerability definitions to determine hazard probability. The definitions are:

LOW = less than 1-percent affected scores between 1 and 3 points

MEDIUM = between 1 and 10-percent affected scores between 4 and 7 points

HIGH = more than 10-percent affected scores between 8 and 10 points

The tables below present the vulnerability scores for each of the natural hazards present in the region. As shown in the tables, the communities are highly vulnerable to earthquake, flood, and winter storm events, while low or moderately vulnerable to volcanic events.

Table 2-10 Community Vulnerability Assessment Summary

Hazard	Baker County	Baker City	Halfway	Grant County	John Day
Drought	**High**	**High**	Moderate	**High**	Low
Dust Storm	Moderate	N/A	N/A	N/A	N/A
Earthquake - Cascadia	Moderate	Moderate	N/A	N/A	N/A
Earthquake - Crustal	Low	**High**	**High**	Low	**High**
Extreme Temperature	N/A	Moderate	N/A	N/A	Moderate
Flood	**High**	Moderate	**High**	**High**	**High**
Landslide	**High**	Low	**High**	**High**	Low
Volcanic Event	Low	Low	Low	Low	Moderate
Wildfire	**High**	**High**	Moderate	**High**	Moderate
Windstorm	**High**	Moderate	Moderate	**High**	**High**
Winter Storm	**High**	**High**	Low	**High**	**High**

Source: Baker County, Baker City, Halfway, Grant County, John Day NHMP Steering Committees, 2013.

Table 2-10 Community Vulnerability Assessment Summary (continued)

Hazard	Union County	La Grande	Wallowa County	Enterprise
Drought	**High**	Low	**High**	Low
Dust Storm	Low	Low	N/A	N/A
Earthquake - Cascadia	N/A	N/A	N/A	N/A
Earthquake - Crustal	Low	**High**	Moderate	Moderate
Extreme Temperature	**High**	**High**	N/A	Moderate
Flood	**High**	**High**	**High**	**High**
Landslide	Low	Moderate	**High**	Low
Volcanic Event	Low	Low	Low	Low
Wildfire	**High**	**High**	**High**	Low
Windstorm	**High**	Moderate	**High**	Moderate
Winter Storm	**High**	**High**	**High**	Moderate

Source: Union County, La Grande, Wallowa County, Enterprise NHMP Steering Committees, 2013.

Risk Assessment

TheNHMP Steering Committees updated their county hazard analysis matrix at risk assessment meetings held on June 25, 2013, June 26, 2013, July 10, 2013, and July 11, 2013.Table 2-12-2-15 presents the entire updated hazard analysis matrixes for each northeast county. The hazards are listed in rank order from high to low. The table shows that hazard scores are influenced by each of the four categories combined. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities, but does not predict the occurrence of a particular hazard.

With considerations for past historical events, the probability or likelihood of a particular hazard event occurring, the vulnerability to the community, and the maximum threat or worst-case scenario. Thetables below shows similarity among wildfire and winter storm; some similarity among windstorm, and earthquake; anddissimilarity among drought, flood, and landslide.

The table below shows the Baker County OEM Total Threat Scores. The top four scoring hazards were drought, winter storm, wildfire, and windstorm.

Table 2-11 Hazard Analysis Matrix – Baker County

Hazard	History (WF=2)	Vulnerability (WF=5)	Maximum Threat (WF=10)	Probability (WF=7)	Total Threat Score	Ranking
Drought	20	50	100	70	240	#1
Winter Storm	18	50	100	70	238	#2
Wildfire	20	40	90	70	220	#3
Windstorm	16	40	90	56	202	#4
Flood	20	25	40	70	155	#5
Earthquake - Crustal	2	40	100	7	149	#6
Landslide	20	25	30	56	131	#7
Dust Storm	2	20	40	28	90	#8
Earthquake - Cascadia	2	20	20	42	84	#9
Volcano	2	5	40	7	54	#10
Extreme Temperature	N/A	N/A	N/A	N/A	N/A	N/A

Source: Baker County NHMP Steering Committee, Updated June 26, 2013.

The table belowshows the Grant County OEM Total Threat Scores. The top three hazards were drought, wildfire, and flood which all received the highest ranking priority.

Table 2-12 Hazard Analysis Matrix – Grant County

Hazard	History (WF=2)	Vulnerability (WF=5)	Maximum Threat (WF=10)	Probability (WF=7)	Total Threat Score	Ranking
Drought	20	50	100	70	240	# 1
Flood - Riverine	20	50	100	70	240	# 1
Wildfire	20	50	100	70	240	# 1
Windstorm	18	50	100	63	231	# 4
Winter Storm	18	50	100	63	231	# 4
Landslide	16	20	80	63	179	# 6
Volcano	2	40	80	7	129	# 7
Earthquake - Crustal	6	25	80	14	125	# 8
Dust Storm	N/A	N/A	N/A	N/A	N/A	N/A
Earthquake - Cascadia	N/A	N/A	N/A	N/A	N/A	N/A
Extreme Temperature	N/A	N/A	N/A	N/A	N/A	N/A

Source: Grant County NHMP Steering Committee, Updated June 25, 2013.

The table belowshows the Union County OEM Total Threat Scores. The top four scoring hazards were winter storm, flood, wildfire, and extreme temperatures.

Table 2-13 Hazard Analysis Matrix – Union County

Hazard	History (WF=2)	Vulnerability (WF=5)	Maximum Threat (WF=10)	Probability (WF=7)	Total Threat Score	Ranking
Winter Storm	20	50	100	70	240	#1
Flood	20	45	90	70	225	#2
Wildfire	20	40	80	70	210	#3
Extreme Temperature	10	45	80	63	198	#4
Windstorm	16	40	60	56	172	#5
Earthquake - Crustal	4	50	100	14	168	#6
Drought	18	20	30	63	131	#7
Landslide	2	10	50	14	76	#8
Dust Storm	4	10	10	14	38	#9
Volcano	2	5	10	7	24	#10
Earthquake - Cascadia	N/A	N/A	N/A	N/A	N/A	N/A

Source: Union County NHMP Steering Committee, Updated July 11, 2013.

The table belowshows the Wallowa County OEM Total Threat Scores. The top four scoring hazards were wildfire, winter storm, drought, and windstorm.

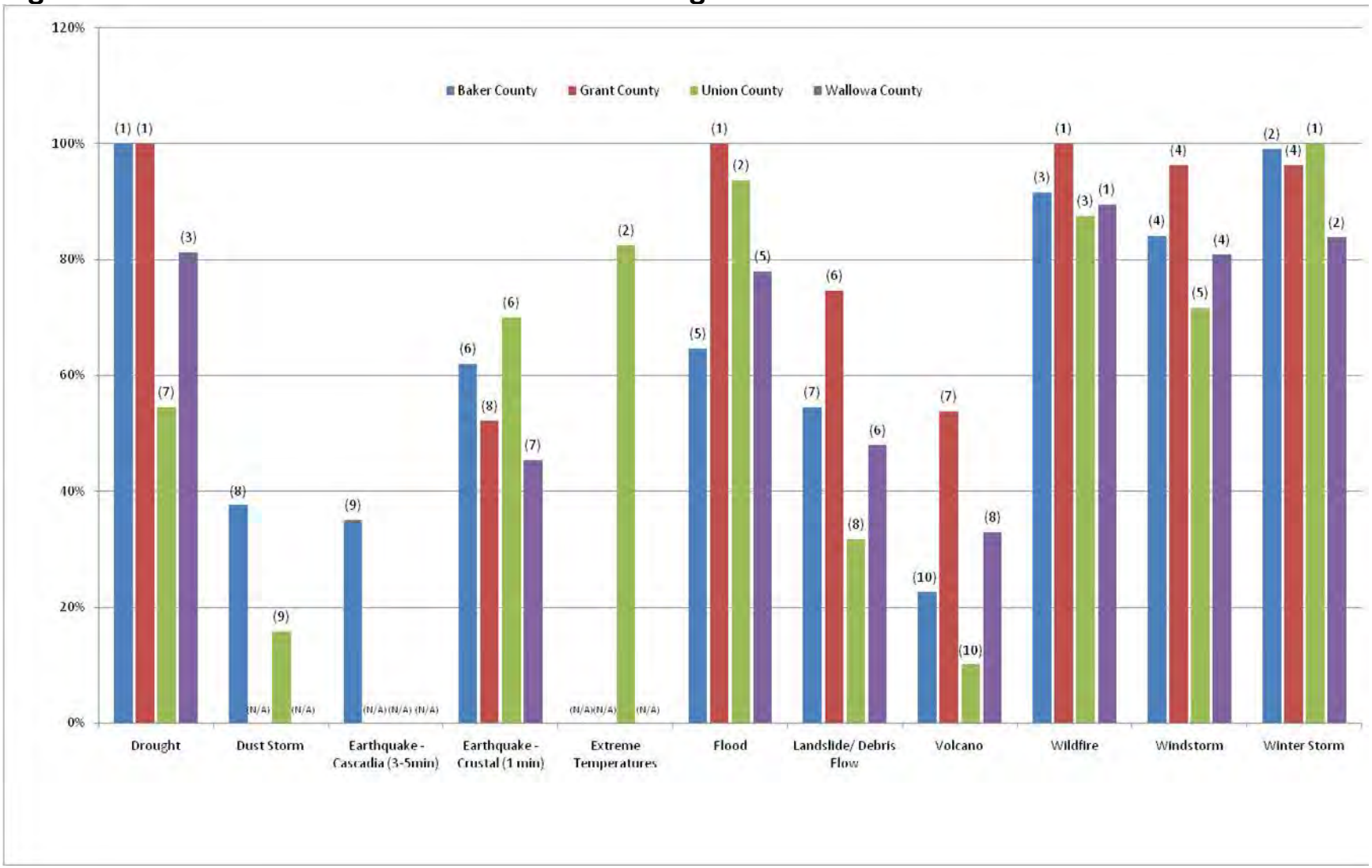
Table 2-14 Hazard Analysis Matrix – Wallowa County

Hazard	History (WF=2)	Vulnerability (WF=5)	Maximum Threat (WF=10)	Probability (WF=7)	Total Threat Score	Ranking
Wildfire	20	35	90	70	215	#1
Winter Storm	20	35	90	56	201	#2
Drought	20	35	70	70	195	#3
Windstorm	16	35	80	63	194	#4
Flood	16	35	80	56	187	#5
Landslide	10	10	60	35	115	#6
Earthquake - Crustal	2	10	90	7	109	#7
Volcano	2	10	60	7	79	#8
Dust Storm	N/A	N/A	N/A	N/A	N/A	N/A
Earthquake - Cascadia	N/A	N/A	N/A	N/A	N/A	N/A
Extreme Temperature	N/A	N/A	N/A	N/A	N/A	N/A

Source: Baker County NHMP Steering Committee, Updated July 10, 2013.

Figure 2-3 shows a comparison of the hazards rankings among the four NE Oregon Counties. The information shows similarity among wildfire and winter storm; some similarity among windstorm, and earthquake; dissimilarity among drought, flood, and landslide.

Figure 2-3 Total Threat Scores for Northeast Oregon Counties



Source: Baker County Risk Assessment Meeting, Grant County Steering Committee Meeting, Union County Steering Committee Meeting, Wallowa County Steering Committee Meeting. Numbers indicate hazard rank for each assessment score per county.

Multi-Jurisdictional Risk Assessment

Multi-jurisdictional Risk Assessment - §201.6(c) (2) (iii): For multi-jurisdictional plans, the risk assessment must assess each jurisdiction's risks where they vary from the risks facing the entire planning area.

The five participating cities in the northeast region: Baker City, Enterprise, John Day, Halfway, and La Grande each held local steering committee meetings and completed a hazard analysis to compare to the assessment completed by the county NHMP Steering Committees. The multi-jurisdictional risk assessment information is located within the Risk Assessment section of each of the cities' which are located in Volume III of this NHMP.

SECTION 3: MITIGATION STRATEGY

Section 3 outlines Northeast Oregon's strategy to reduce or avoid long-term vulnerabilities to the identified hazards. Specifically, this section presents a mission and specific goals and actions thereby addressing the mitigation strategy requirements contained in 44 CFR 201.6(c). The Natural Hazard Mitigation Plan steering committees reviewed and updated the mission, goals and action items documented in this plan. Additional planning process documentation is in Appendix B.

Mitigation Plan Mission

The plan mission states the purpose and defines the primary functions of Northeast Oregon's Natural Hazard Mitigation Plan. It is intended to be adaptable to any future changes made to the plan and need not change unless the community's environment or priorities change.

The mission of the Northeast Oregon Multi-jurisdictional Natural Hazards Mitigation Plan is to:

To create a disaster-resilient Northeast Oregon

The 2013 plan update steering committees reviewed the 2008 plan and agreed that the above statement best describes the over purpose and intent of this plan.

Mitigation Plan Goals

Mitigation plan goals are more specific statements of direction that Northeast Oregon citizens, and public and private partners can take while working to reduce the region's risk from natural hazards. These statements of direction form a bridge between the broad mission statement and particular action items. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Public participation was a key aspect in developing the 2008 plan goals. Meetings with the project steering committees and stakeholder interviews served as methods to obtain input and priorities in developing goals for reducing risk and preventing loss for natural hazards in the region.

The 2013 Northeast Oregon NHMP Steering Committees reviewed the 2008 plan goals and modified two of the goals while keeping the other two goals unchanged. All the plan goals are important and are listed below in no order of priority. Establishing community priorities within action items neither negates nor eliminates any goals, but it establishes which action items to fund first, should funding become available. During the steering committee meetings for the participating jurisdictions (Baker City, Enterprise, John Day, Halfway, and La Grande) the Northeast Oregon NHMP mission statement and goal statements were reviewed and agreed upon by each community. Below is a list of the plan goals (Note: although numbered the goals are not prioritized):

Goal 1: *Protect human welfare, property, and natural resources*

Goal 2*: Increase the resilience of local and regional economies*

Goal 3: *Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness*

Goal 4: *Strengthen organizational and community capacity*

Existing Mitigation Activities

Existing mitigation activities include current mitigation programs and activities that are being implemented by the counties and participating jurisdictions in an effort to reduce the community's overall risk to natural hazards. Documenting these efforts can assist the jurisdiction to better understand risk and can assist in documenting successes. For a comprehensive list of existing mitigation activities for each specific hazard, reference Volume II,*Hazard Annexes*.

Government Structure

Beyond Emergency Management, most departments within the county and city governance structures have some degree of responsibility in building overall community resilience. Each plays a role in ensuring that jurisdiction functions and normal operations resume after an incident, and the needs of the population are met. For further explanation regarding how these departments influence hazard resilience, reference Appendix C, *Community Profile* and within the city addenda.

Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Linking existing plans and policies to the NHMP helps identify what resources already exist that can be used to implement the action items identified in the Plan. Plans and policies already in existence have support from local residents, businesses and policy makers.[1] A list documenting plans and policies already in place in the county and participating cities can be found in Appendix C, *Community Profile*and within the city addenda.

Community Organizations and Programs

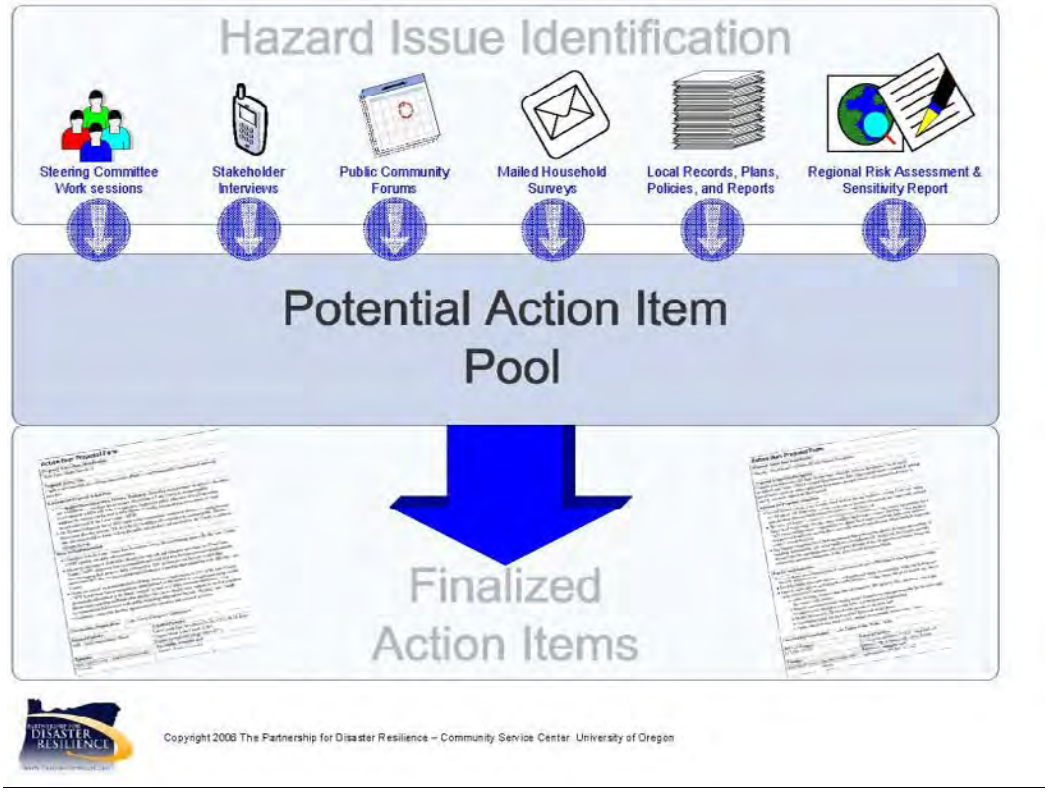
In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. The counties and cities can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation. Appendix C, *Community Profile*, provides a comprehensive list of community organizations and programs, and offers a more thorough explanation of how existing community organizations and programs can be utilized for hazard mitigation.

[1]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

Mitigation Plan Action Items

Short- and long-term action items identified through the planning process are an important part of the mitigation plan. Action items are detailed recommendations for activities that local departments, citizens and others could engage in to reduce risk. They address both multi-hazard (MH) and hazard-specific issues. Action items can be developed through a number of sources. The figure below illustrates some of these sources. A description of how the plan's mitigation actions were developed is provided below.

Figure 3-1 Development of Action Items



Source: Oregon Partnership for Disaster Resilience, 2006

Action Item Worksheets

Each action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below. These action item worksheets are located in Appendix A, *Action Items.*

Proposed Action Title

Each action item includes a brief description of the proposed action.

Alignment with Plan Goals

The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

Alignment with Existing Plans/ Policies

Identify any existing community plans and policies where the action item can be incorporated. Incorporating the mitigation action into existing plans and policies, such as comprehensive plans, will increase the likelihood that it will be implemented.

Rationale or Key Issues Addressed

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from a number of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in Section 2 and the Hazard Annexes.

Implementation through Existing Programs

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance process. Ideas for implementation could include: (1) collaboration with relevant organizations, (2) alignment with the community priority areas, and (3) applications to new grant programs. When an action is implemented, more work will probably be needed to determine the exact course of action.

The Northeast Oregon Natural Hazard Mitigation Plan includes a range of action items that, when implemented, will reduce loss from hazard events in the region. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. The northeast Oregon counties and their participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvements plans, strategic plans and mandated standards and building codes. To the extent possible, the jurisdictions will work to incorporate the recommended mitigation action items into existing programs and procedures.

Many of the Northeast Oregon Natural Hazard Mitigation Plan's recommendations are consistent with the goals and objectives of the existing plans and policies. Where possible, the northeast Oregon counties and the participating cities will implement the multi-jurisdictional Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[2] Implementing

[2]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

Coordinating Organization

The coordinating organization is the public agency or non-profit organization with the regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

Internal and External Partners

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project Steering Committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the county or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

Potential Funding Sources

Where possible, identify potential funding sources for the action item. Example funding sources can include: the federal Pre-Disaster Mitigation and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

Estimated Cost

Where possible, an estimate of the cost for implementing the action item is included.

Timeline

Action items include both short and long-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term action items* (ST) are activities that may be implemented with existing resources and authorities in one to two years. *Long-term action items* (LT) may require new or additional resources and/or authorities, and may take from three to five years to implement. *Ongoing action items* are activities that are currently being performed and will continue into the foreseeable future.

Status

As action items are implemented or new ones are created during the plan maintenance process, it is important to indicate the status of the action item—whether it is new,

ongoing,deferred, or complete. Documenting the status of the action will make reviewing and updating mitigation plan easier during the plan's five-year update, and can be used as a benchmark for progress.*Deferred* action items have yet to see any significant work begin on the particular action.

PRIORITY

The County Steering Committees and City working groups can designate action items with a 'High' priority, which indicates a higher level of importance than the other action items.

Action Item Development Process

Development of action items was a multi-step, iterative process that involved brainstorming, discussion, review, and revisions. The majority of the action items were first created during the 2007-2008 NHMP planning process. During that process, the steering committee developed maps of local vulnerable populations, facilities, and infrastructure in respect to each identified hazard. Review of these maps generated discussion around potential actions to mitigate impacts to the vulnerable areas. OPDR provided guidance in the development of action items by presenting and discussing actions that were used in other communities. OPDR also took note of ideas that came up in steering committee meetings and drafted specific actions that met the intent of the committee. All actions were then reviewed by the committee, discussed at length, and revised as necessary before becoming a part of this document.

Action Item Matrix

The action item matrix portrays the overall action plan framework and identifies linkages between the plan goals, partnerships (coordination and partner organizations), and actions. The matrix documents a description of the action, steering committee identified highest priority action items, the coordinating organization, partner organizations, timeline, and the plan goals addressed. Refer to Appendix A for detailed information about each action item.

Included below is a list of the highest priority action items as identified by each of the steering committees. These actions are repeated in Table 3-2below.

Table 3-1 Highest Priority Actions

2013 Action Item	Proposed Action Title	Prioritized Jurisdictions								
		Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
MH #1	Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties							X	X	
MH #2	Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)								X	
MH #6	Enhance communication and response coordination between all of the incorporated areas in each county.								X	
MH #7	Develop a Memorandum of Understanding to establish a regional committee responsible for oversight and implementation of the regional plan, and to oversee reviewing and updating the NE Natural Hazards								X	
MH #8	Create a position for a Regional Hazards Mitigation Project Coordinator				X				X	
MH #12	Update City and County addresses within the County's GIS database						X	X		
MH #14	Continue to pursue a secondary emergency access route along the west bank of the Wallowa Lake (between Wallowa Lake and Lake Shore Drive).								X	
MH #17	Encourage ODOT to reclassify the Prairie Creek, Hwy 10 bridge near the Enterprise High School football field									X
DR #2	Increase water efficiency among municipal water users		X							
DR #4	Conduct an aquifer study for the Pine and Baker Valleys	X	X	X						
DR #5	Conduct an aquifer study for the Grande Ronde Valley						X	X		
FL #2	Explore the costs and benefits for participation in the NFIP's Community Rating System	X	X		X					X
FL #3	Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	X	X		X	X			X	X
FL #4	Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	X	X		X	X			X	
FL #5	Explore mitigation opportunities for the Canyon City bridge (bridge # 7)				X					
FL #6	Seek Silver Jackets assistance to investigate opportunities to prevent large infiltration of flood waters into the wastewater treatment facility			X						
WF #1	Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.		X							

Source: Northeast Oregon NHMP Steering Committees, updated 2013

Table 3-2 Northeast Oregon Action Items

Multi-Hazard Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Plan Goals 1	2	3	4
MH #1	High (Wallowa; La Grande)	Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties.	Interested City Managers and/or City Council; County Commissioners, Emergency Management	Relevant Public Works and Emergency Services / Emergency Management, Law Enforcement, Fire Department, Department of Homeland Security, County Roads Departments, ODOT, relevant private industries, OEM	Short Term	Deferred				X
MH #2	High (Wallowa)	Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	County/ City Planning Department	Department of Land Conservation and Development, Oregon Office of Emergency Management, Federal Emergency Management Agency	Short Term (Grant, Wallowa) Long Term (Baker, Union)	New Action Item				X
MH #3		Inform public officials about mitigation awareness and the Natural Hazards Mitigation Plan	County Steering Committee Convener	Counties and participating cities in Region 7	Short Term	Deferred			X	
MH #4		Develop and implement education and outreach programs to increase public awareness of the risk associated with natural hazards. Specifically target vulnerable populations	Emergency Services / Emergency Management; Baker City; City of La Grande, Relevant Public Health Department	Eastern Oregon Head Start, Chambers of Commerce, American Red Cross, Oregon Education Association, Families First, Grant and Harney County Casa, Oregon Rural Action, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA, Greater Prairie City Community Association, People Mover, Community Connections of Northeast Oregon	Ongoing (Baker, Union); Short Term (Grant, Wallowa)	Ongoing (Baker, Union); Deferred (Grant, Wallowa)	X		X	
MH #5		Increase the resilience of small businesses to natural hazards	Northeast Oregon Economic Development District, Grant County Economic Development	Northeast Oregon Counties' Chambers of Commerce, Regional Solutions Team, Eastern Oregon University, Greater Eastern Oregon Development Corporation, Oregon Rural Alliance, Union County Economic Development Corporation, Baker Enterprise Growth Initiative, Enterprise Hometown Improvement Group, Economic and Community Development Department Regional Development Officer, Oregon Trail Electric, Grant Resource Enhancement Team, Southeast Regional Alliance, Historic Baker Center, Baker County Economic Development, Malheur County Environmental Health	Short (Baker); Long Term (Grant, Union, Wallowa)	Deferred		X		
MH #6	High (Wallowa)	Enhance communication and response coordination between all of the incorporated areas in each county	Emergency Services / Emergency Management; Consolidated Dispatch Center	County Planning Departments, Local fire departments and fire districts, Bureau of Land Management, Oregon Department of Forestry, Oregon Department of Transportation, OSU Extension, Amateur Radio Emergency Services, OSP, FBI, Public Works, USFS, local irrigation districts	Ongoing	Ongoing				X
MH #7	High (Wallowa)	Develop a Memorandum of Understanding to establish a regional committee responsible for oversight and implementation of the regional plan, and to oversee reviewing and updating the NE Natural Hazards	County Steering Committee Conveners	Baker, Grant, Union, and Wallowa Counties, Oregon Partnership For Disaster Resilience, Oregon Emergency Management	Long Term	Deferred				X
MH #8	High (Grant, Wallowa)	Create a position for a Regional Hazards Mitigation Project Coordinator	County Steering Committee Conveners	Planning and Emergency Services / Emergency Management, Local Steering Committees, Oregon Natural Hazards Workgroup, Oregon Emergency Management	Long Term	Deferred			X	X
MH #9		Develop a warning and emergency evacuation protocol for vulnerable populations	Emergency Services / Emergency Management	Community Connections of Northeast Oregon, American Red Cross, People Mover, Assisted living facilities, Elks lodge, public libraries, National Organization on Disability	Short Term	Deferred				X
MH #10		Ensure that critical airport services are available in the event of an emergency. Critical elements include: adequate fuel systems, appropriate lighting, functioning weather services, ground-access to the airport, and safe runways/taxiway infrastructure	Grant County Regional Airport	Grant County, USFS, City of John Day, Oregon Trail Electric, Blue Mountain Hospital, St. Charles Hospital, Oregon Dept. of Aeronautics, FAA	Short Term	Ongoing	X			

Source: Northeast Oregon NHMP Steering Committees, updated 2013-

Table 3-2 Northeast Oregon Action Items (continued)

Multi-Hazard Action Items (cont'd	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Plan Goals 1	2	3	4
MH #11		Build partnerships with local jurisdictions to develop emergency management planning for Eastern Oregon University	Eastern Oregon University	Union County Emergency Services, La Grande Fire Department, La Grande Planning Department, Union County Planning Department, American Red Cross, Oregon Trail Electric Co-op, Internet Service Providers, Oregon Department of Transportation	Ongoing	Ongoing				X
MH #12	High (Union; La Grande)	Update City and County addresses within the County's GIS database	Union County Planning Department/GIS	City of La Grande, Union County Emergency Services, Union City, Community Connections	Long Term	Ongoing				X
MH #13		Improve Wallowa Mountain Loop road in relation to natural hazard events	County Road Department, United States Forest Service	City of Joseph, County Chamber, Wallowa Lake, ODOT	Long Term	New Action Item	X			
MH #14	High (Wallowa)	Continue to pursue a secondary emergency access route along the west bank of the Wallowa Lake (between Wallowa Lake and Lake Shore Drive)	Wallowa County Roads Department, Emergency Management	Wallowa County Public Works, Wallowa Lake Fire District, Wallowa Lake State Park, Oregon Department of Forestry, Oregon Department of Transportation, local fire departments and/or districts, private landowners, Oregon Parks and Recreation	Short Term	Deferred	X			
MH #15 (Halfway)		Complete and implement the Pine Creek Floodplain Management Plan	City of Halfway	Powder River Watershed Council	Long Term	In Process				X
MH #16 (La Grande)		Secure funding to filter water within the Beaver Creek Watershed, La Grande's backup water supply	City of La Grande Public Works	City of La Grande Planning Department, Union County Water Master, Oregon Water Resources Department	Long Term	Deferred	X			
MH #17 (Enterprise)	High (Enterprise)	Encourage ODOT to reclassify the Prairie Creek, Hwy 10 bridge near the Enterprise High School football field	Enterprise Public Works	ODOT	Long Term	New Action Item	X			
Drought Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Plan Goals 1**	**2**	**3**	**4**
DR #1		Identify incentive programs to increase water efficiency among agricultural water users	County Water Masters, Natural Resources Conservation Service	Relevant utility companies, county public works departments, ditch companies, landowners, irrigation districts, soil and water conservation districts, Wallowa Resources, fresh water trust, US Environmental Protection Agency's WAVE program,	Ongoing	Ongoing	X			X
DR #2	High (Baker City)	Identify incentive programs to Increase water efficiency among municipal water users	Participating Cities	Relevant utility companies, city public works departments, County, wastewater treatment facilities, Wallowa Lake County Service District, US Environmental Protection Agency's WAVE program	Ongoing	Ongoing	X			X
DR #3		Develop community drought emergency plans and policies	County Emergency Services / Emergency Management; Interested Cities	Water Resources Departments, County and City Governments, County and City Planning Departments, Public Works Departments, Enterprise, City of La Grande, Baker City, John Day, Halfway, Natural Resources Conservation Service, Wallowa Lake Service District, Baker County Cattleman's Association, Relevant Irrigation Districts, OSU Extension Office, US Department of Agriculture	Ongoing (Baker, Grant); Short Term (Wallowa)	Ongoing (Grant); Deferred (Baker, Wallowa)				X
DR #4	High (Baker, Baker City, Halfway)	Conduct an aquifer (groundwater) study for the Pine and Baker Valleys	Baker County Emergency Management, Powder River Watershed Council	Baker County Water Master, Baker County Planning Department, Baker County Public Works, Baker City, City of Halfway	Long Term	Deferred	X			
DR #5	High (Union, La Grande)	Conduct an aquifer (groundwater) study for the Grande Ronde Valley	Grande Ronde Model Watershed Council, Union County Commissioners	The City of La Grande, Union County Planning Department, Union County Public Works, Union County Water Master, Oregon Department of Water Resources, United States Geological Survey	Long Term	Deferred	X			

Source: Northeast Oregon NHMP Steering Committee, updated 2013

Table 3-2 Northeast Oregon Action Items (continued)

Earthquake Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Plan Goals 1	2	3	4
EQ #1		Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Emergency Management	Eastern Oregon University, County Public Works Departments, Region 7 Counties, Interested Cities, Business Oregon, Relevant utility companies, DOGAMI	Long Term	New Action Item	X			
EQ #2		Seismically retrofit The Unity Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	City of Unity, Emergency Management	County/City Public Works Departments, Unity Fire Department, Business Oregon DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #3		Seismically retrofit North Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #4		Seismically retrofit South Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #5		Seismically retrofit Baker High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #6		Seismically retrofit Pine Eagle High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #7		Seismically retrofit Brooklyn Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #8		Seismically retrofit Burnt River School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Burnt River 30J School District, Emergency Management	County Public Works Departments, City of Unity, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #9		Seismically retrofit the John Day Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	The City of John Day, Emergency Management	County Public Works Departments, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #10		Seismically retrofit Mount Vernon Middle School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	John Day SD 3, Emergency Management	County Public Works Departments, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #11		Seismically retrofit Prairie City School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Prairie City 4 School District, Emergency Management	County Public Works Departments, Prairie City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #12		Seismically retrofit Grant Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	John Day SD 3, Emergency Management	County Public Works Departments, Grant County, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #13		Seismically retrofit Humbolt Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	John Day SD 3, Emergency Management	County Public Works Departments, Canyon City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #14		Seismically retrofit Seneca Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	John Day SD 3, Emergency Management	County Public Works Departments, City of Seneca, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #15		Seismically retrofit Monument School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Monument SD 8, Emergency Management	County Public Works Departments, City of Monument, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #16		Seismically retrofit the Grande Ronde Hospital to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	The Grande Ronde Hospital, Emergency Management	County Public Works Departments, The City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			

Source: Northeast Oregon NHMP Steering Committee, updated 2013-

Table 3-2 Northeast Oregon Action Items (continued)

Earthquake Action Items (cont'd)	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Plan Goals 1	2	3	4
EQ #17		Seismically retrofit the La Grande City Police Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	City of La Grande, Emergency Management	County Public Works Departments, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #18		Seismically retrofit Willow Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	La Grande SD 1, Emergency Management	County Public Works Departments, City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #19		Seismically retrofit La Grande High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	La Grande SD 1, Emergency Management	County Public Works Departments, City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #20		Seismically retrofit Greenwood Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	La Grande SD 1, Emergency Management	County Public Works Departments, City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #21		Seismically retrofit Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Union SD 5, Emergency Management	County Public Works Departments, City of Union, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #22		Seismically retrofit Imbler High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Imbler SD 11, Emergency Management	County Public Works Departments, City of Imbler, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #23		Seismically retrofit Stella Mayfield Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Elgin SD 23, Emergency Management	County Public Works Departments, City of Elgin, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #24		Seismically retrofit Powder Valley School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	North Powder SD 8J, Emergency Management	County Public Works Departments, City of North Powder, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #25		Seismically retrofit Cove School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Cove SD 15, Emergency Management	County Public Works Departments, City of Cove, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #26		Seismically retrofit Elgin High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Elgin SD 23, Emergency Management	County Public Works Departments, City of Elgin, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #27		Seismically retrofit the Enterprise Fire Department and City Hall to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	City of Enterprise, Emergency Management	County Public Works Departments, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #28		Seismically retrofit Wallowa Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Wallowa SD 12	County Public Works Departments, City of Wallowa, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
Flood Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Plan Goals 1**	**2**	**3**	**4**
FL #1		Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	Relevant City and County Public Works Departments / Emergency Services and Emergency Management	County Roads Departments, Public Works Departments, County Planning Departments; City of John Day, City of La Grande, Baker City, City of Halfway, Silver Jackets, Relevant water treatment facilities, Federal Emergency Management Agency, Homeowner, Army Corps of Engineers, Oregon Department of Fish and Wildlife, Department of State Lands, ODOT	Ongoing	Ongoing (Baker) Deferred (Grant, Union, Wallowa)	X			

Source: Northeast Oregon NHMP Steering Committee, updated 2013

Table 3-2 Northeast Oregon Action Items (continued)

Flood Action Items (cont'd)	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Plan Goals 1	2	3	4
FL #2	High (Baker, Grant, Baker City, Enterprise)	Explore the costs and benefits for participation in the NFIP's Community Rating System	Interested Cities and Counties	County and city planning departments, county emergency services / emergency management, county public works, Silver Jackets, FEMA, DLCD	Short Term	Deferred	X	X		
FL #3	High (Baker, Grant, Wallowa; Baker City, John Day, Enterprise)	Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	Local flood plain managers, County Emergency Managers	City Planning Departments, Emergency Services / Emergency Management, NFIP Floodplain Coordinator (DLCD), insurers, realtors, FEMA, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA , Greater Prairie City Community Association, People Mover, Community Connections of NEOR (Any community organizations capable of distributing information), Blue Mountain Eagle, ACOE	Short Term	Deferred			X	X
FL #4	High (Baker, Grant, Wallowa; Baker City, John Day)	Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	Relevant City and County Public Works Departments, Emergency Management, City Managers, County Planning Departments	County Roads Departments, Public Works Departments, City of John Day, City of La Grande, Baker City, City of Halfway, Army Corps of Engineers, DOGAMI, DAS-GEO, elected officials	Long Term	New Action Item		X		
FL #5	High (Grant)	Explore mitigation opportunities for the Canyon City bridge (bridge # 7)	Grant County	ODOT, ACOE, Silver Jackets, John Day School District 3, Canyon City	Long Term	New Action Item	X			
FL #6 (Halfway)	High (Halfway)	Seek Silver Jackets assistance to investigate opportunities to prevent large infiltration of flood waters into the wastewater treatment facility	County Public Works Department	ACOE (Portland – regulatory) (Walla Walla --Structural), Silver Jackets, Baker County Road Department, Adjacent land owners, ODOT	Short Term	New Action Item				X
FL #7 (La Grande)		Incorporate recommended action items created in the Morgan Lake Study	City of La Grande Parks Director	The City of La Grande, Union County Emergency Management, Silver Jackets, USACE, FEMA,	Short Term	New Action Item	X			
Landslide Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Plan Goals 1**	**2**	**3**	**4**
LS #1		Identify, obtain, and evaluate detailed risk assessments in landslide prone areas and develop mitigation strategies to reduce the likelihood of a potential hazardous event.	County Public Works Department	County Planning Department, City of La Grande, ODOT, EOU, DOGAMI, USGS, irrigation district	Long Term	New Action Item	X			X
Severe Weather Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Plan Goals 1**	**2**	**3**	**4**
SW #1		Participate in the NOAA Storm Ready Program	Emergency Services / Emergency Management	County Public Works Departments, County Roads Departments, Interested Cities, NOAA, NWS (Pendleton or Boise), HAMM, Oregon Department of Transportation, local fire departments, American Red Cross, local radio stations, Eastern Oregon University, USGS	Short Term (Baker); Long Term (Grant, Union)	In Process (Baker); Deferred (Grant, Union); Complete (Wallowa)	X			
SW #2		Shorten spans and anchor poles on utility lines in high wind or heavy icing areas	NE Oregon Electric Cooperatives	County Emergency Management, County Public Works, Other relevant utility companies	Ongoing	New Action Item	X			
SW #3		Bury overhead power lines in winter storm and windstorm prone areas	NE Oregon Electric Cooperatives	County Emergency Management, County Public Works, Other relevant utility companies	Ongoing	New Action Item	X			

Source: Northeast Oregon NHMP Steering Committee, updated 2013

Table 3-2 Northeast Oregon Action Items (continued)

Volcanic Event Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Plan Goals 1	2	3	4
No Actions Identified for this hazard. This is a low concern for the region.										
Wildfire Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Plan Goals 1**	**2**	**3**	**4**
WF #1	High (Baker City)	Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.	County Steering Committee Convener, Emergency Management	County Emergency Services / Emergency Management, County Planning Departments, City of Baker City, City of Halfway, Local Public Safety Coordinating Council (LPSCC), Oregon Department of Forestry, Bureau of Land Management, local fire departments, OSU Extension Services, US Forest Service, Soil and Water Conservation Districts, Oregon Department of Fish and Wildlife; Homeowners in Wildland/Urban Interface zones; Hells Canyon Preservation Council	Ongoing	Ongoing	X			X

Source: Northeast Oregon NHMP Steering Committee, updated 2013

SECTION 4:
PLAN IMPLEMENTATION AND MAINTENANCE

The Plan Implementation and Maintenance section details the formal process that will ensure that the Northeast Oregon Multi-jurisdictional Natural Hazards Mitigation Plan (NHMP) remains an active and relevant document. The plan implementation and maintenance process includes a schedule for monitoring and evaluating the plan semi-annually, as well as producing an updated plan every five years. Finally, this section describes how the region will integrate public participation throughout the plan maintenance and implementation process.

Implementing the Plan

The success of the Northeast Oregon NHMP depends on how well the outlined action items are implemented. In an effort to ensure that the activities identified are implemented, the following steps will be taken. The plan will be formally adopted, a coordinating body will be assigned, a convener shall be designated, the identified activities will be prioritized and evaluated, and finally, the plan will be implemented through existing plans, programs, and policies.

Plan Adoption

The Northeast Oregon NHMP was developed and will be implemented through a collaborative process. After the Plan is locally reviewed and deemed complete, the county conveners will jointly submit it to the State Hazard Mitigation Officer (SHMO) at the Oregon Military Department – Office of Emergency Management (OEM). OEM submits the plan to the Federal Emergency Management Agency (FEMA--Region X) for review. This review addresses the federal criteria outlined in the FEMA Interim Final Rule 44 CFR Part 201. Upon acceptance by FEMA, the counties will adopt the plan via resolution. At that point the counties will gain eligibility for the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program funds, and Flood Mitigation Assistance program funds. Following adoption by the counties, the participating jurisdictions should convene local decision makers and adopt the Northeast Oregon NHMP.

Conveners

Regional Coordinator

The Action Item MH #8 proposes a position for a regional natural hazards mitigation coordinator to be created and have shared responsibilities among the four counties. This plan could be implemented or maintained through this regional coordinator position if filled. In lieu of a defined regional coordinator the plan will be implemented, maintained and updated by designated local conveners as listed below:

Jurisdiction	Convener
Baker County	Emergency Management Coordinator
Grant County	County Judge
Union County	Emergency Manager
Wallowa County	Planning Director

The local convener will assemble and facilitate the local Hazard Mitigation Coordinating Body (see below for more detail) meetings and will assign tasks such as updating and presenting the plan to the rest of the members of the committee. Plan implementation and evaluation will be a shared responsibility among all of the assigned Hazard Mitigation Coordinating body members. Jurisdiction specific information will be shared between counties via the regional coordinator if/ when that position is created. The convener's responsibilities include:

- Coordinate coordinating body meeting dates, times, locations, agendas, and member notification;
- Documenting the discussions and outcomes of committee meetings;
- Serving as a communication conduit between the coordinating body and the public/stakeholders;
- Identifying emergency management-related funding sources for natural hazard mitigation projects; and
- Utilizing the Risk Assessment as a tool for prioritizing proposed natural hazard risk reduction projects.

Coordinating Body

Each participating county will form a Hazard Coordinating Body for updating and implementing the NHMP. The following will act as the coordinating body for each of the Northeast Oregon counties:

Jurisdiction	Coordinating Body
Baker County	NHMP Steering Committee and other partners as needed
Grant County	NHMP Steering Committee and Communications Task Force
Union County	NHMP Steering Committee
Wallowa County	Fire Defense Board

Coordinating body responsibilities include:

- Attending future plan maintenance and plan update meetings (or designating a representative to serve in your place);
- Serving as the local evaluation committee for funding programs such as the Pre-Disaster Mitigation Grant Program, the Hazard Mitigation Grant Program funds, and Flood Mitigation Assistance program funds;
- Prioritizing and recommending funding for natural hazard risk reduction projects;
- Evaluating and updating the NHMP in accordance with the prescribed maintenance schedule;
- Developing and coordinating ad hoc and/or standing subcommittees as needed; and
- Coordinating public involvement activities.

Regional Hazard Mitigation Coordinating Body

Action Item MH #7 proposes the creation of a regional committee (regional hazard mitigation coordinating body) responsible for oversight and implementation of the regional plan, and to oversee reviewing and updating the Northeast Oregon NHMP. Responsibilities will include: maintaining and updating the plan; coordinating regional and local meetings; pursuing grant funding to finance mitigation projects; collecting an inventory of hazard dates, damages, and locations; developing a unified disaster plan and/or incorporating mitigation actions into existing documents; support local jurisdictions in adopting the regional natural hazards mitigation plan; work towards integrating regional GIS systems and building natural hazard databases; performing outreach, education and awareness related to natural hazards.+

Members

The following organizations were represented and served on the steering committee during the development of the Northeast Oregon NHMP:

Baker County

- Oregon Department of Geology and Mineral Industries
- Department of Land Conservation and Development
- United States Army Corps of Engineers (Walla Walla Office)
- United States Forest Service
- Baker County, Board of Commissioners
- Baker County, Emergency Management
- Baker County, Planning Department
- Baker County, Water Master
- Baker City, Fire Department
- Baker City, Planning Department
- Baker City, Police Department
- Baker City, Public Works Department
- City of Halfway, Mayor
- City of Halfway, Public Works Department

44 CFR 201.6(c)(1) – Documentation of the planning process used to develop the plan, including how it was prepared, who was involved in the process, and how the public was involved.

Grant County

- Oregon Department of Forestry
- Oregon Water Resources Department
- United States Army Corps of Engineers (Portland Office)
- Grant County, County Judge
- Grant County, Community Wildfire Protection Plan Coordinator
- Grant County Regional Airport

- Grant County, Road Department
- Grant County, Planning Department
- Town of Canyon City, Mayor
- City of John Day, City Manager
- City of John Day, Dispatch
- City of John Day, Fire Department
- City of John Day, Police Department
- City of John Day, Public Works
- Prairie City, Fire Department

Union County

- Union County, Center for Human Development
- Union County, Economic Development Corporation
- Union County, Emergency Management
- Union County, Planning Department
- Union County, Public Works Department
- Eastern Oregon University
- Grande Ronde Hospital
- City of La Grande, Economic Development
- City of La Grande, Fire Department
- City of La Grande, Planning Department
- City of Union, City Council

Wallowa County

- Oregon Department of Forestry
- Wallowa County, Board of Commissioners
- Wallowa County, Emergency Services
- Wallowa County, Planning Department
- Wallowa County, Road Department
- Wallowa County, Sheriff
- Wallowa Resources
- City of Enterprise, Administration

To make the coordination and review of the Northeast Oregon NHMP as broad and useful as possible, the coordinating body will engage additional stakeholders and other relevant hazard mitigation organizations and agencies to implement the identified action items. Specific organizations have been identified as either internal or external partners on the individual action item forms found in Appendix A.

Implementation through Existing Programs

The NHMP includes a range of action items that, when implemented, will reduce loss from hazard events in the region. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. The Northeast Oregon counties and the participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvement plans, mandated standards and building codes. To the extent possible, the Northeast Oregon counties, and participating cities, will work to incorporate the recommended mitigation action items into existing programs and procedures.

Many of the NHMP's recommendations are consistent with the goals and objectives of the participating cities' and county's existing plans and policies. Where possible, the Northeast Oregon counties, and participating cities should implement the NHMP's recommended actions through existing plans and policies. Plans and policies already in existence often have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs. Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

Examples of plans, programs or agencies that may be used to implement mitigation activities include:

- Comprehensive Land Use Plans
- Community Wildfire Protection Plans
- City and County Budgets
- Economic Development Action Plans

For additional examples of plans, programs or agencies that may be used to implement mitigation activities refer to list of plans in Appendix C, *Community Profile*.

Plan Maintenance

Plan maintenance is a critical component of the natural hazard mitigation plan. Proper maintenance of the plan ensures that this plan will maximize the participating counties' and cities' efforts to reduce the risks posed by natural hazards. This section was developed by the University of Oregon's Partnership for Disaster Resilience and includes a process to ensure that a regular review and update of the plan occurs. The coordinating body and local staff are responsible for implementing this process, in addition to maintaining and updating the plan through a series of meetings outlined in the maintenance schedule below.

Meetings

The committees will meet on a semi-annual (twice per year) basis to complete the tasks described below, with the exception of Wallowa County who indicated they would prefer to meet annually. The first meeting will occur in the late spring in coordination with the coordinating body. During the first meeting the committees will:

- Review existing action items to determine appropriateness for funding;
- Educate and train new members on the plan and mitigation in general;

- Identify issues that may not have been identified when the plan was developed; and
- Prioritize potential mitigation projects using the methodology described below.

The second meeting of the year will take place in early fall, following the wildfire season and in coordination with the coordinating body. During the second meeting the committees will:

- Review existing and new risk assessment data;
- Discuss methods for continued public involvement; and
- Document successes and lessons learned during the year.

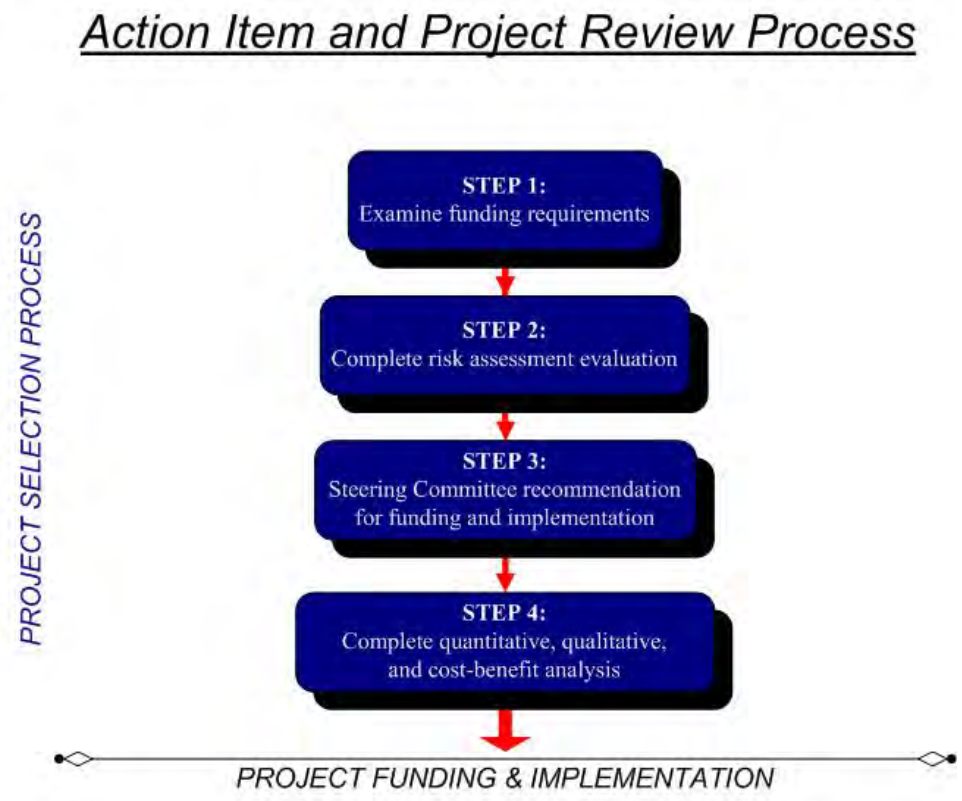
These meetings are an opportunity for the cities and special district to report back to the counties on progress that has been made towards their components of the NHMP.

The conveners will be responsible for documenting the outcome of the annual meetings in Appendix B. The process the coordinating bodies will use to prioritize mitigation projects is detailed in the section below. The plan's format allows the counties and participating jurisdictions to review and update sections when new data becomes available. New data can be easily incorporated, resulting in an NHMP that remains current and relevant to the participating jurisdictions.

Project Prioritization Process

The Disaster Mitigation Act of 2000 requires that jurisdictions identify a process for prioritizing potential actions. Potential mitigation activities often come from a variety of sources; therefore the project prioritization process needs to be flexible. Committee members, local government staff, other planning documents, or the risk assessment may identify projects. Figure 4-1 illustrates the project development and prioritization process.

Figure 4-1 Project Prioritization Process



Source: Community Service Center's Partnership for Disaster Resilience at the University of Oregon, 2008.

Step 1: Examine funding requirements

The first step in prioritizing the plan's action items is to determine which funding sources are open for application. Several funding sources may be appropriate for the counties' proposed mitigation projects. Examples of mitigation funding sources include but are not limited to: FEMA's Pre-Disaster Mitigation competitive grant program (PDM), Flood Mitigation Assistance (FMA) program, Hazard Mitigation Grant Program (HMGP), National Fire Plan (NFP), Community Development Block Grants (CDBG), local general funds, and private foundations, among others. Please see Appendix E- *Grant Programs* for a more comprehensive list of potential grant programs.

Because grant programs open and close on differing schedules, the coordinating body will examine upcoming funding streams' requirements to determine which mitigation activities would be eligible. The coordinating bodies may consult with the funding entity, Oregon Military Department – Office of Emergency Management (OEM), or other appropriate state or regional organizations about project eligibility requirements. This examination of funding sources and requirements will happen during the coordinating bodies' semi-annual plan maintenance meetings.

Step 2: Complete risk assessment evaluation

The second step in prioritizing the plan's action items is to examine which hazards the selected actions are associated with and where these hazards rank in terms of community risk. The

coordinating bodies will determine whether or not the plan's risk assessment supports the implementation of eligible mitigation activities. This determination will be based on the location of the potential activities, their proximity to known hazard areas, and whether community assets are at risk. The coordinating bodies will additionally consider whether the selected actions mitigate hazards that are likely to occur in the future, or are likely to result in severe / catastrophic damages.

Step 3: Committee Recommendation

Based on the steps above, the coordinating bodies will recommend which mitigation activities should be moved forward. If the coordinating body decides to move forward with an action, the coordinating organization designated on the action item form will be responsible for taking further action and, if applicable, documenting success upon project completion. The coordinating body will convene a meeting to review the issues surrounding grant applications and to share knowledge and/or resources. This process will afford greater coordination and less competition for limited funds.

Step 4: Complete quantitative and qualitative assessment, and economic analysis

The fourth step is to identify the costs and benefits associated with the selected natural hazard mitigation strategies, measures or projects. Two categories of analysis that are used in this step are: (1) benefit/cost analysis, and (2) cost-effectiveness analysis. Conducting benefit/cost analysis for a mitigation activity assists in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. Determining the economic feasibility of mitigating natural hazards provides decision makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects. Figure 4-2 shows decision criteria for selecting the appropriate method of analysis.

Figure 4-2 Benefit Cost Decision Criteria



Source: Oregon Partnership for Disaster Resilience (2010).

If the activity requires federal funding for a structural project, the Committee will use a Federal Emergency Management Agency-approved cost-benefit analysis tool to evaluate the appropriateness of the activity. A project must have a benefit/cost ratio of greater than one in order to be eligible for FEMA grant funding.

For non-federally funded or nonstructural projects, a qualitative assessment will be completed to determine the project's cost effectiveness. The committee will use a multivariable assessment technique called STAPLE/E to prioritize these actions. STAPLE/E stands for Social, Technical, Administrative, Political, Legal, Economic, and Environmental. Assessing projects based upon these seven variables can help define a project's qualitative cost effectiveness. The Oregon Partnership for Disaster Resilience at the University of Oregon's Community Service Center has tailored the STAPLE/E technique for use in natural hazard action item prioritization.

Continued Public Involvement & Participation

The participating jurisdictions are dedicated to involving the public directly in the continual reshaping and updating of the Northeast Oregon NHMP. Although members of the Coordinating body represent the public to some extent, the public will also have the opportunity to continue to provide feedback about the Plan.

To ensure that these opportunities will continue, the counties and participating jurisdictions will:

- Post copies of their plans on corresponding websites;

- Place articles in the local newspaper directing the public where to view and provide feedback; and
- Use existing newsletters such as schools and utility bills to inform the public where to view and provide feedback; and

In addition to the involvement activities listed above, the northeast Oregon counties will ensure continued public involvement by posting the Northeast Oregon NHMP on the counties' websites:

Jurisdiction	Website
Baker County	http://www.bakercounty.org/
Grant County	http://www.gcoregonlive2.com/
Union County	http://union-county.org/
Wallowa County	http://www.co.wallowa.or.us/

The Plan will also be archived and posted on the University of Oregon Libraries' Scholar's Bank Digital Archive (https://scholarsbank.uoregon.edu).

Five-Year Review of Plan

This plan will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000.The Northeast Oregon NHMP is due to be updated by **June 5, 2019**. The convener will be responsible for organizing the coordinating bodies to address plan update needs. The coordinating bodies will be responsible for updating any deficiencies found in the plan, and for ultimately meeting the Disaster Mitigation Act of 2000's plan update requirements.

The following 'toolkit' can assist the convener in determining which plan update activities can be discussed during regularly scheduled plan maintenance meetings, and which activities require additional meeting time and/or the formation of sub-committees.

Table 4-1 Natural Hazards Mitigation Plan Update Toolkit

Question	Yes	No	Plan Update Action
Is the planning process description still relevant?			Modify this section to include a description of the plan update process. Document how the planning team reviewed and analyzed each section of the plan, and whether each section was revised as part of the update process. (This toolkit will help you do that).
Do you have a public involvement strategy for the plan update process?			Decide how the public will be involved in the plan update process. Allow the public an opportunity to comment on the plan process and prior to plan approval.
Have public involvement activities taken place since the plan was adopted?			Document activities in the "planning process" section of the plan update
Are there new hazards that should be addressed?			Add new hazards to the risk assessment section
Have there been hazard events in the community since the plan was adopted?			Document hazard history in the risk assessment section
Have new studies or previous events identified changes in any hazard's location or extent?			Document changes in location and extent in the risk assessment section
Has vulnerability to any hazard changed?			Document changes in vulnerability in the risk assessment section
Have development patterns changed? Is there more development in hazard prone areas?			Document changes in vulnerability in the risk assessment section
Do future annexations include hazard prone areas?			Document changes in vulnerability in the risk assessment section
Are there new high risk populations?			Document changes in vulnerability in the risk assessment section
Are there completed mitigation actions that have decreased overall vulnerability?			Document changes in vulnerability in the risk assessment section
Did the plan document and/or address National Flood Insurance Program repetitive flood loss properties?			Document any changes to flood loss property status
Did the plan identify the number and type of existing and future buildings, infrastructure, and critical facilities in hazards areas?			1) Update existing data in risk assessment section, or 2) determine whether adequate data exists. If so, add information to plan. If not, describe why this could not be done at the time of the plan update
Did the plan identify data limitations?			If yes, the plan update must address them: either state how deficiencies were overcome or why they couldn't be addressed
Did the plan identify potential dollar losses for vulnerable structures?			1) Update existing data in risk assessment section, or 2) determine whether adequate data exists. If so, add information to plan. If not, describe why this could not be done at the time of the plan update
Are the plan goals still relevant?			Document any updates in the plan goal section
What is the status of each mitigation action?			Document whether each action is completed or pending. For those that remain pending explain why. For completed actions, provide a 'success' story.
Are there new actions that should be added?			Add new actions to the plan. Make sure that the mitigation plan includes actions that reduce the effects of hazards on both new and existing buildings.
Is there an action dealing with continued compliance with the National Flood Insurance Program?			If not, add this action to meet minimum NFIP planning requirements
Are changes to the action item prioritization, implementation, and/or administration processes needed?			Document these changes in the plan implementation and maintenance section
Do you need to make any changes to the plan maintenance schedule?			Document these changes in the plan implementation and maintenance section
Is mitigation being implemented through existing planning mechanisms (such as comprehensive plans, or capital improvement plans)?			If the community has not made progress on process of implementing mitigation into existing mechanisms, further refine the process and document in the plan.

Source: Oregon Partnership for Disaster Resilience (2010).

Volume II:
Hazard Annexes

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DROUGHT
HAZARD ANNEX

Causes and Characteristics of Drought

A drought is a period of drier than normal conditions that results in water-related problems.[1]Drought occurs in virtually every climatic zone, but its characteristics vary significantly from one region to another.[2] Drought is a temporary condition – it is seen in an interval of time, generally months or years, when moisture is consistently below normal.[3] It differs from aridity, which is restricted to low rainfall regions and is a permanent feature of climate.[4]

The National Drought Mitigation Center and the National Center for Atmospheric Research define drought by categorizing it according to the "type of drought." These types include the following:

Meteorological or Climatological Droughts

Meteorological droughts are defined in terms of the departure from a normal precipitation pattern and the duration of the event. These droughts are a slow-onset phenomenon that can take at least three months to develop and may last for several seasons or years.

Agricultural Droughts

Agricultural droughts link the various characteristics of meteorological drought to agricultural impacts. The focus is on precipitation shortages and soil-water deficits. Agricultural drought is largely the result of a deficit of soil moisture. A plant's demand for water is dependent on prevailing weather conditions, biological characteristics of the specific plant, its stage of growth, and the physical and biological properties of the soil.

Hydrological Droughts

Hydrological droughts refer to deficiencies in surface water and sub-surface water supplies. It is measured as stream flow, and as lake, reservoir, and ground water levels. Hydrological measurements are not the earliest indicators of drought. When precipitation is reduced or deficient over an extended period of time, the shortage will be reflected in declining surface and sub-surface water levels.

1Moreland, A. 1993. Open File Report 93-642. USGS.

2National Drought Mitigation Center. 2007. What is Drought? http://www.drought.unl.edu/whatis/what.htm, accessed May 28, 2010.

3 Oregon Weather Book

4National Drought Mitigation Center. 2006. What is Drought? Understanding and Defining Drought. http://www.drought.unl.edu/whatis/concept.htm, accessed May 28, 2010.

Drought is typically measured in terms of water availability in a defined geographical area. It is common to express drought with a numerical index that ranks severity. The Oregon Drought Severity Index is the most commonly used drought measurement in the state because it incorporates local conditions and mountain snowpack. The Oregon Drought Severity Index categorizes droughts as *mild*, *moderate*, *severe,* and *extreme*.

The Water Availability Committee utilizes the Surface Water Supply Index (SWSI) to derive the Oregon Drought Severity Index that is reported to the Drought Council.[5] The SWSI is an index of current water conditions throughout the state. The index utilizes parameters derived from snow, precipitation, reservoir, and streamflow data. The data is gathered each month from key stations in each basin. The lowest SWSI value, -4.1, indicates extreme drought conditions. The highest SWSI value, +4.1, indicates extreme wet conditions. The mid-point is 0.0, which indicates a normal water supply.[6]

Northeast Oregon Watershed Basins

The Water Resources Commission determines the policies and procedures for the use and control of the state's water resources.[7] The watershed basins are controlled and administered partially by basin programs which establish water management policies and objectives for the use and appropriation of the surface and ground water within each of the respective basins.[8] The Water Resources Commission has adopted programs for the Grande Ronde Basin, the Powder Basin, and the John Day Basin, which can be seen below in Figure DR-1.

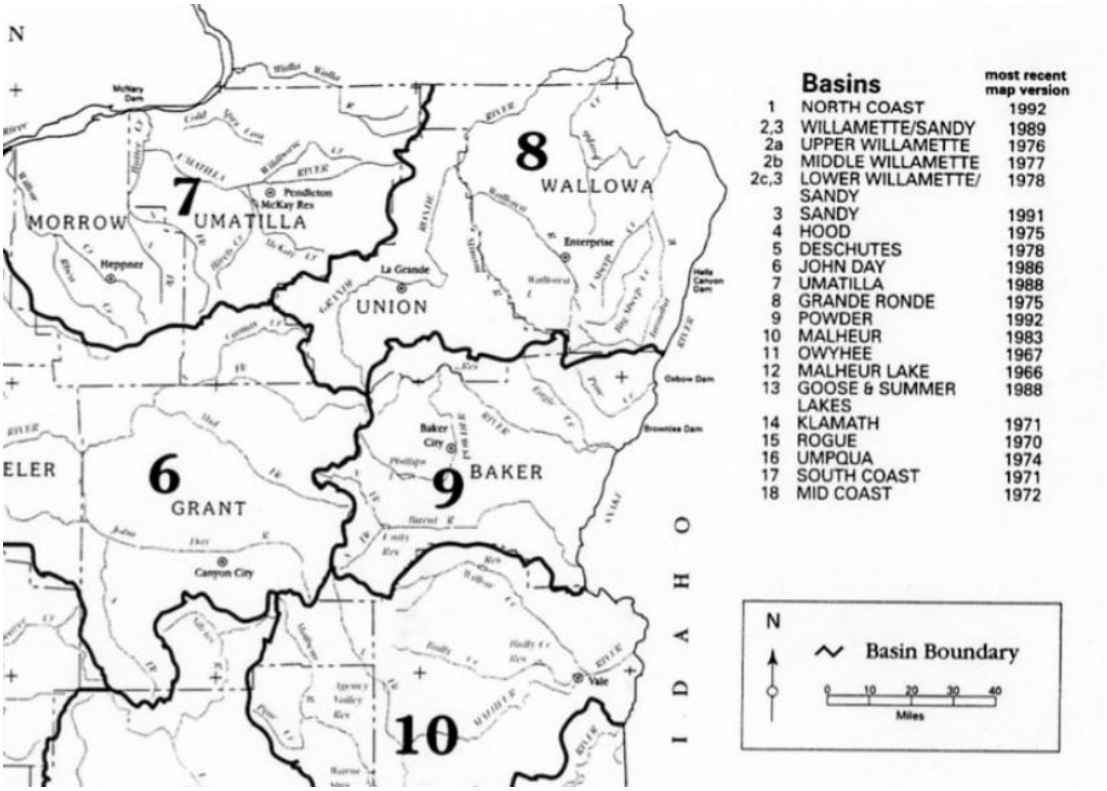
[5] Drought Annex to the State Emergency Operations Plan, September 2002

[6] Barry Norris, Administrator, Technical Services Division, Water Resources Department, Planning for Drought, 2001.

[7] Water Resources Department "Basin Programs" http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_690/690_500.html Accessed February 2014

[8] Ibid

Figure DR-1 Northeast Oregon Watershed Basins



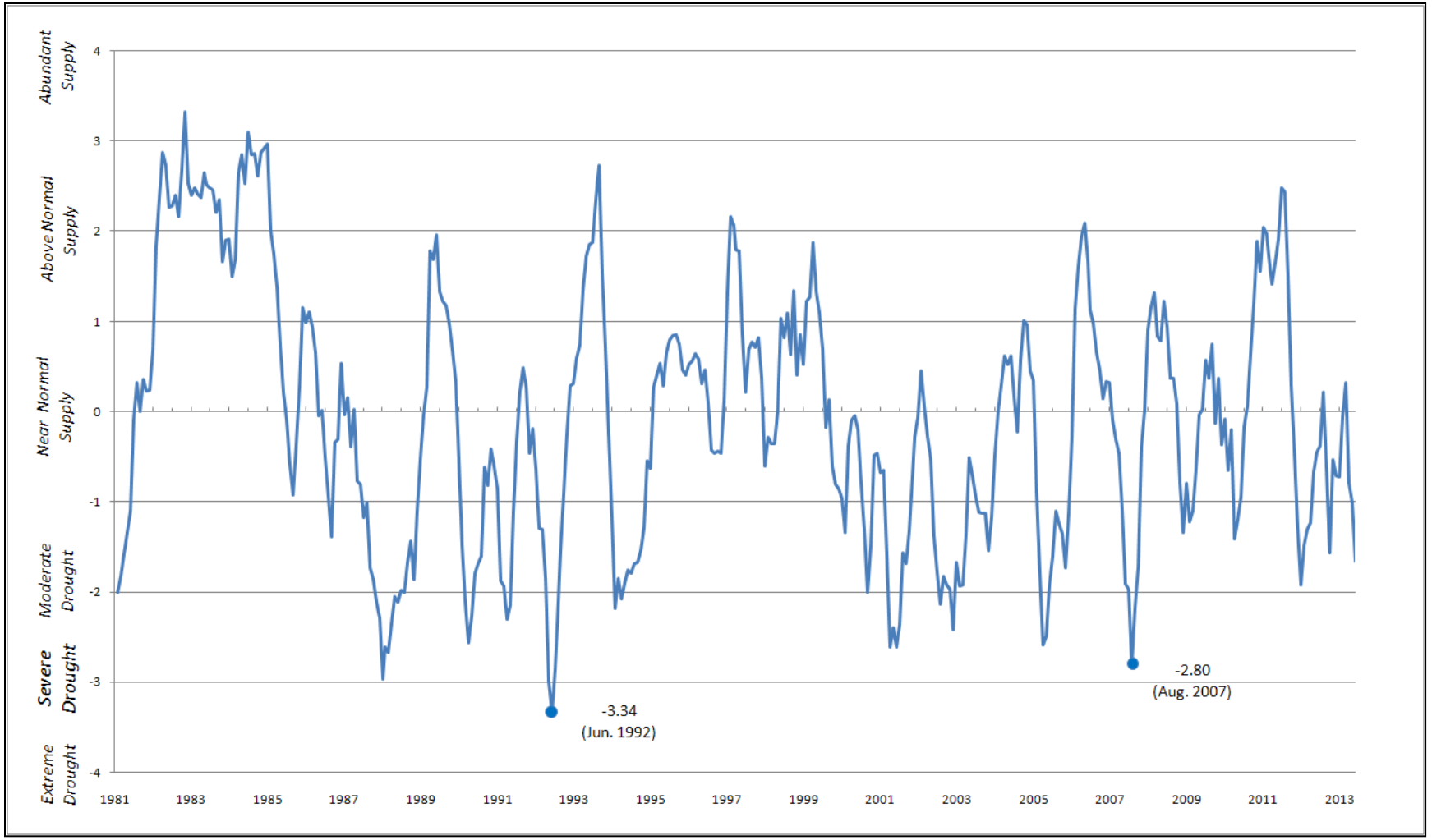
Source: Oregon Water Resources Department "Basin Programs"
http://www.oregon.gov/owrd/law/docs/law/690-500_map.pdf

Figure DR-2 below shows the history of SWSI values from February 1981 to September 2012 for the John Day Watershed Subbasin (Grant County region). The data shows that the periods of drought fluctuation including moderate drought occurring in the summer of 1988 (-2.07) and several periods of moderate drought including the recent summer of 2007 event. Oregon declared state drought declarations for Grant County in 2007, a periods when the region was below the *moderate* drought threshold and the lowest point over the last 20 years. In 2001, 2003, and 2005, Grant County was also below this threshold and was a contiguous county to other disaster declared counties.[9] The most remarkable drought was in 1992 where the subbasin reached a *severe* drought status.

The Grande Ronde Watershed Basin, Powder Watershed Basin, and Burnt Watershed Subbasins shown in Figure DR-3 represent Baker, Union, and Wallowa Counties and have similar trends and resemblance to DR-2 when overlaying DR-2's water supply index values. The region experienced state disaster declarations in 2001, 2003, and 2007 among all three counties – at these points the region was below *moderate* drought threshold, and below the *severe* threshold in 2001.

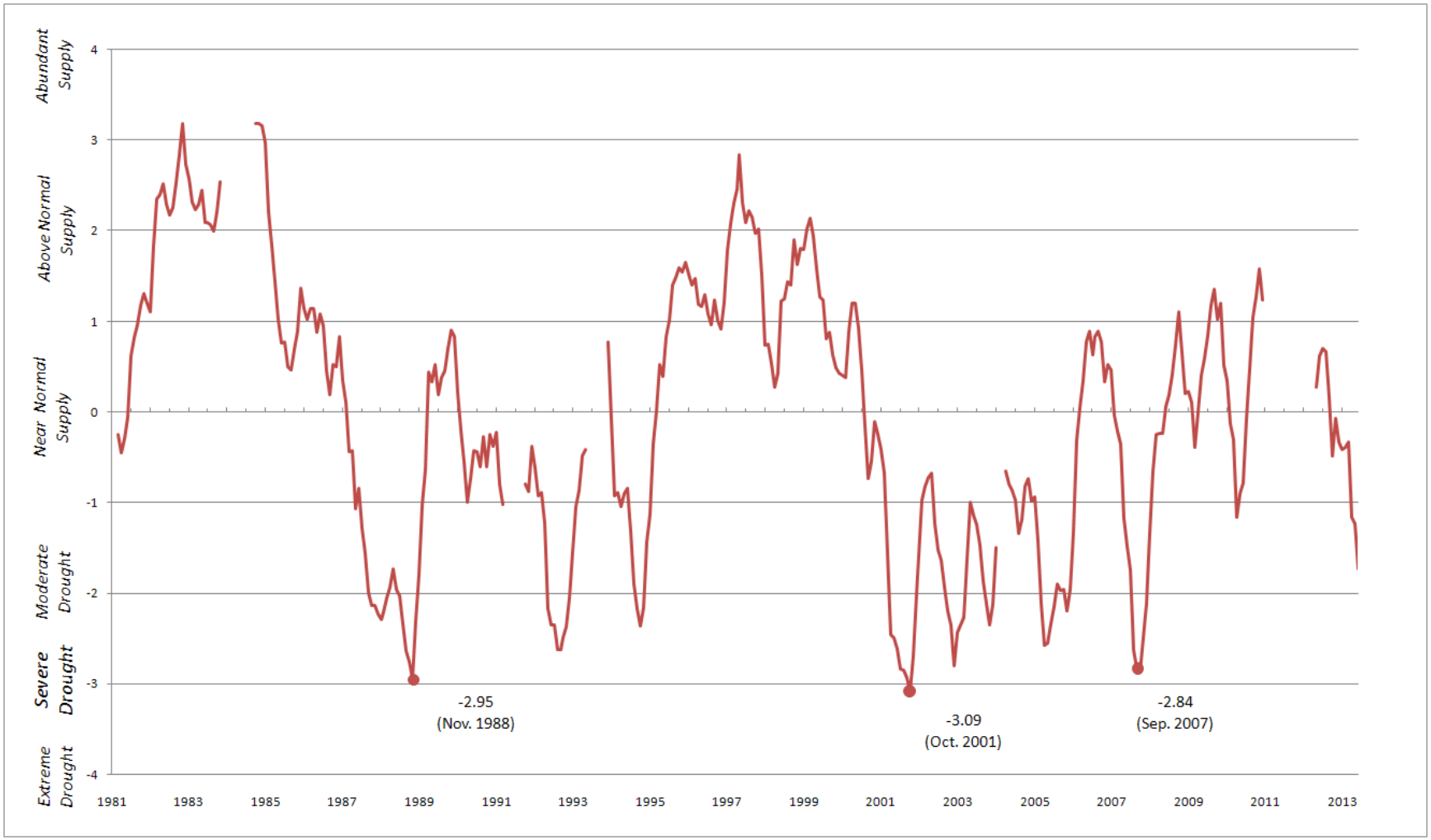
[9] Counties that are contiguous to declaration issued counties are also granted federal drought benefits

Figure DR-2 Upper John Day Subbasin-- Historic Surface Water Supply Index Values (1981-2013)



Source: USDA Natural Resources Conservation Service, Surface Water Supply Index, http://www.or.nrcs.usda.gov/snow/watersupply/swsi.html, accessed August, 2013.

Figure DR-3 Grande Ronde, Powder, and Burnt Subbasins-- Historic Surface Water Supply Index Values (1981-2013)



Source: USDA Natural Resources Conservation Service, Surface Water Supply Index, http://www.or.nrcs.usda.gov/snow/watersupply/swsi.html, accessed August, 2013.

History of Drought in the Northeast Region

Quantifying drought requires an objective criterion for defining the beginning and end of a drought period. The Palmer Drought Severity Index (PDSI) is effective at determining long-term drought (a matter of months) and is not as good with short-term forecasts (a matter of weeks). It uses zero as a base measure, and drought is shown in terms of negative numbers; for example, negative two (-2) is a moderate drought, negative three (-3) is a severe drought, and negative four (-4) and lower is an extreme drought.[10] The index ranges roughly from -6.0 and +6.0.[11]The PDSI index is measured cumulatively to accurately measure the intensity of the long term drought pattern, so the intensity of drought for the current month depends on the current weather patterns plus the cumulative patterns of the previous months.[12]

Drought is a normal, recurrent feature of climate, although many erroneously consider it a rare and random event. It is rare for drought not to occur somewhere in North America every year. The average recurrence interval for severe droughts in Oregon is somewhere between eight and 12 years. Climate Division 8 occupies all of Baker, Union, and Wallowa counties as well as portions of Grant and Umatilla counties.[13] It is an accurate representation of the four northeast counties despite not including all of Grant County and including a portion of Umatilla County.[14] A map of Climate Division 8 is shown below in Figure DR-3

10 NOAA "The Palmer Drought Severity Index" http://www.drought.noaa.gov/palmer.html

11 National Drought Mitigation Center, Drought Indices, "Palmer Drought Severity Index" http://www.civil.utah.edu/~cv5450/swsi/indices.htm

12 NOAA "U.S. Palmer Drought Indices" http://www.ncdc.noaa.gov/oa/climate/research/prelim/drought/palmer.html

13 Oregon Climate Services "Climate of Wallowa County" http://www.ocs.oregonstate.edu/county_climate/Wallowa_files/Wallowa.html, Accessed August 2013

14Climate Region 8 includes John Day, Canyon City, and Prairie City which are the three largest cities in Grant County

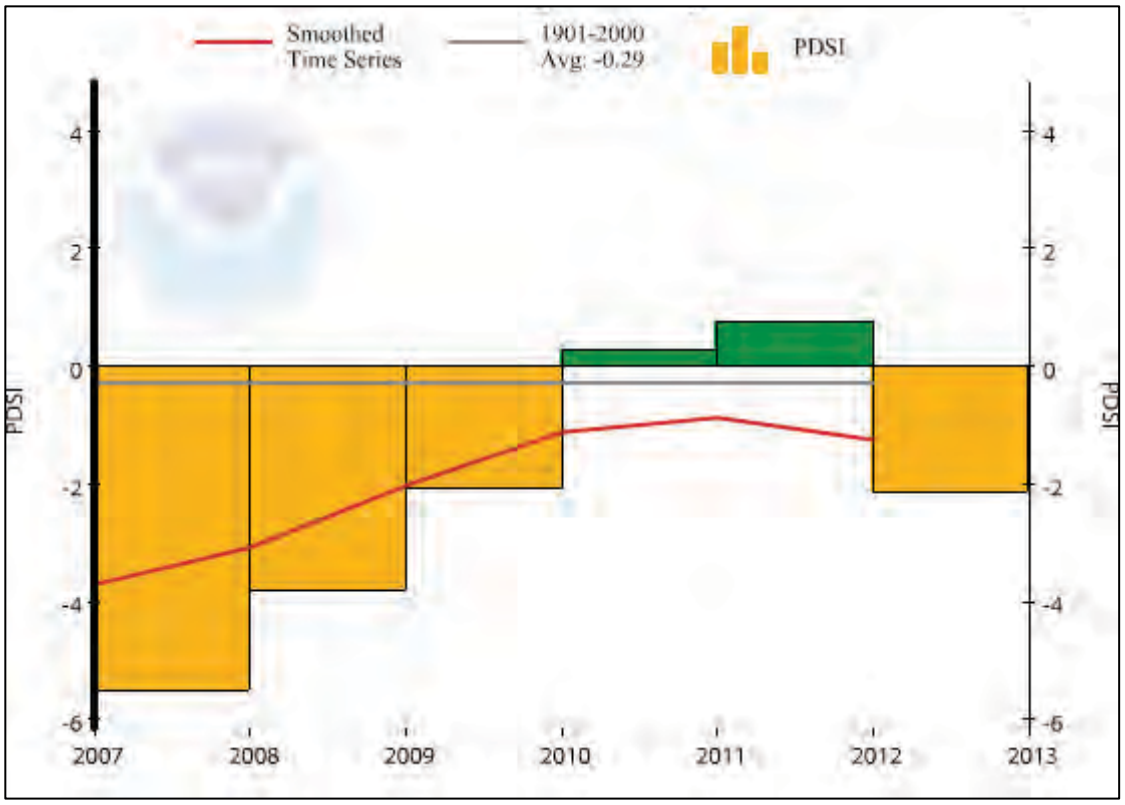
Figure DR-4 Map of Climatic Divisions



Source: National Oceanic and Atmospheric Administration, National Weather Service "Climate Divisions within Counties"

Figure DR-4 shows the Palmer Drought Severity Index ratings from 2007 to 2013 for Climate Division 8. The period from 2007-2013 is punctuated by a -5.5 exceptional intensity drought in 2007-2008. The Governor, during this period (2007-2008), declared drought emergencies for all four counties in the region. However, since 2008 there has been a general trend of less intense drought incidents shown in the smoothed time series line on Figure DR-4. However, 2013 was a dry year and Baker county was issued a declaration of drought emergency by the Governor.

Figure DR-5 – Palmer Drought Severity Index 5 Year Index (Climate Division 8)



Source: National Oceanic and Atmospheric Administration, National Climatic Data Center

Table DR-1 – Palmer Drought Severity Index: Five-Year Table (Climate Division 8)

2007	2008	2009	2010	2011	2012	Average
-5.50	-3.82	-2.09	0.28	0.77	-2.15	-2.09

Source: "The Palmer Drought Severity Index," http://www.noaa.gov

Periodically, the region experiences more significant drought conditions than what affects the rest of the state. This reflects the semi-arid climate of northeast Oregon. Table DR-2 shows state annual averages which are nearly one point higher (or less severe drought-wise) than the region over the last five year span.

Table DR-2 – Palmer Drought Severity Index: Five-Year Table (Oregon)

2007	2008	2009	2010	2011	2012	Average
-1.47	-1.53	-1.78	-1.29	-1.17	0.44	-1.13

Source: "The Palmer Drought Severity Index," http://www.noaa.gov

Some Oregon droughts were especially significant during the period of 1928 to 1994.The period from 1928 to 1941 was a prolonged drought that caused major problems for agriculture. The only area spared was the northern coast, which received abundant rains in 1930-33. The three Tillamook burns (1933, 1939, and 1945) were the most significant results of this very dry period.

During 1959-1962 stream flows were low throughout Eastern Oregon, but areas west of the Cascades had few problems. The peak year of the drought was 1992, when drought emergency was declared for all of Oregon. Forests throughout the state suffered from a lack of moisture. Fires were common and insect pests, which attacked the trees, flourished.

In 2001 and 2002 Oregon experienced drought conditions. These conditions were compounded by actions taken by the federal government in the Klamath Basin. State declaration of drought conditions were made in northeastern counties during 2001, 2002, 2003, 2005, 2007 and 2013. Federal declarations were made in Coos, Klamath, and Umatilla counties.[15] The federal USDA declarations provide accessibility to emergency loans for crop losses. Figure DR-4 on the following page displays all of the statewide, eastern Oregon, and northeast Oregon droughts since 1904.

[15]Note: When state or federal declarations are made contiguous counties are included even if they are not specifically mentioned as primary counties.

Table DR-3 History of Droughts

1904-1905	Statewide	A state-wide drought period of about 18 months
1917-1931	Statewide	A very dry period puncuated by brief wet spells in 1920-21 and 1927
1928-1941	Statewide	A significant drought affected all of Oregon from 1928 to 1941. The prolonged statewide drought created significant problems for the agricultural industry. Punctuated by a three-year intense drought period from 1938-1941.
1959-1964	Eastern Oregon	Streamflows were low throughout eastern Oregon.
1976-1981	Statewide	Low stream flows prevailed in Western Oregon during the period from 1976-81, but the worst year, by far, was 1976-77, the single driest year of the century.
1985-1994	Statewide	A dry period lasting from 1985 to 1994 caused significant problems statewide. The peak year was 1992, when the state declared a drought emergency. Malheur Lake declined in area over a six-year period from 175,000 acres to 400 acres (this was following abnormally large snow accumulations in the years preceeding the drought period which increased the size of the lake).
1999	Baker, Grant, Union, and Wallowa	Baker, Grant, Union and Wallowa Counties were declared disaster areas by the Department of Agriculture due to drought. Approximately one-third of the wheat crop in those areas was lost due to weather.
2001	Baker, Union, and Wallowa	Baker, Union, and Wallowa Counties were issued declarations of a local drought emergencies
2002	Grant County	Grant County was issued a declaration of a local drought emergency
2003	Baker, Union, and Wallowa	Baker, Union, and Wallowa Counties were issued declarations of a local drought emergencies
2005	Baker and Wallowa	Baker and Wallowa Counties were issued declarations of a local drought emergencies
2007	Baker, Grant, Union, and Wallowa	Baker, Grant, Union and Wallowa Counties were issued a declaration of local drought emergencies
2013	Baker County	Baker County was issued a declaration of a local drought emergency

Sources: Oregon State Natural Hazard Mitigation Plan 2012; George and Ray Hatton, 1999, The Oregon Weather Book; Oregon Government Website "Executive Orders" http://www.oregon.gov/gov/Pages/exec_orders.aspx Accessed September 2013

Risk Assessment

How are Hazards Identified?

The extent of the drought depends upon the degree of moisture deficiency, and the duration and size of the affected area. Typically, droughts occur as regional events and often affect more than one city and county. In severe droughts, environmental and economic consequences can be significant.

Hazard Risk Analysis

The participating Steering Committees, during this update, completed jurisdiction specific hazard risk analyses, based upon the previous plan's analyses. Each hazard analysis, developed from a Federal Emergency Management Agency (FEMA) tool that has been refined by the Oregon Military Department – Office of Emergency Management (OEM), addresses and weights (shown as percent within parentheses) probability (29%), vulnerability (21%), maximum threat (42%) and the history (8%) of each natural hazard and attributes a final hazard analysis score. The methodology produces scores that range from 24 to 240. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation. The method provides the jurisdiction with a relative ranking from which to prioritize mitigation strategies, but does not predict the occurrence of a particular hazard (for more information on all scores see Volume I, Section 2 of this NHMP). Provided below are brief descriptions of each category:

Probability is the likelihood of future occurrence within a specified period of time.
LOW = one incident likely within 75 to 100 years scores between 1 and 3 points
MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points
HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Vulnerability includes the percentage of population and property likely to be affected under an "average" occurrence of the hazard.
LOW = less than 1% affected scores between 1 and 3 points
MEDIUM = between 1 and 10% affected scores between 4 and 7 points
HIGH = more than 10% affected scores between 8 and 10 points

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.
LOW – score at 1 to 3 points based on… < 5% affected
MEDIUM – score at 4 to 7 points based on… 5 - 25% affected
HIGH – score at 8 to 10 points based on… > 25% affected

History is the record of previous occurrences.
LOW – score at 1 to 3 points based on… 0 - 1 event past 100 years
MEDIUM – score at 4 to 7 points based on… 2 - 3 events past100 years
HIGH – score at 8 to 10 points based on… 4 or more events past100 years

The hazard risk analysis ratings, as determined by each participating Steering Committee, are shown in the following table. Within the table the probability and vulnerability scores are shown in **bold** if they are higher than in 2008, in normal text if the same or if not ranked

in 2008, and with (parentheses) if they are lower than in 2008. Areas that were not rated in 2008 are denoted with an asterisk (*).

Table DR-4 Drought Hazard Risk Analysis

	Total Threat Score	Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	240	# 1	High	High	High	High
Baker City	240	#1	High	High	High	High
Halfway	90	#7	(Moderate)	(Moderate)	Low	Moderate
Grant	240	# 1	High	High	High	High
John Day	169	#5	High*	Low*	High	Low
Union	131	# 7	High	**Moderate**	Low	High
La Grande	191	#4	High	Low	High	High
Wallowa	195	# 3	High	(Moderate)	Moderate	High
Enterprise	50	#8	Moderate	Low	Low	Low

Source: County and City Steering Committee Meetings (2013)

Additionally, each of the county Steering Committees completed a "Relative Risk Assessment" that ranks "severity of impact" and "relative risk" for each hazard. For more information on these scores see Volume I, Section 2 of this NHMP. For additional information on participating city ratings see Volume III of this NHMP.

Probability Assessment

Oregon's drought history reveals many short-term and a few long-term events. The average recurrence interval for severe droughts in Oregon is somewhere between 8-12 years.

Vulnerability Assessment

Droughts have obvious effects on lake and river levels, which cause harm to wildlife, farmers and ranchers. Its effect on forest is less obvious and can have a tremendous impact. During extended periods of drought trees are weakened by water shortages and tree pests proliferate. Wildfires also often coincide with droughts. The severity of a drought occurrence poses a risk for agricultural and timber losses, property damage, and disruption of water supplies and availability in urban and rural areas. Factors used to assess drought risk include agricultural practices, such as crop types and varieties grown, soil types, topography, and water storage capacity. The Steering Committees considered water availability as a key determinant in what is vulnerable to a drought.[16] As such, the 2013 Grant County Steering Committee determined that Monument and Ritter are more vulnerable to drought.

[16]Water availability and precipitation are not always correlated; drought conditions affect regions differently than others due to available water supplies.

Community Hazard Issues

What is susceptible to damage during a hazard event?

Drought is frequently an "incremental" hazard, meaning both the onset and end are often difficult to determine. Also, its effects may accumulate slowly over a considerable period of time and may linger for years after the termination of the event. Dust storms are a common occurrence during simultaneous high wind events and drought periods.

Droughts are not just a summer-time phenomenon; winter droughts can have a profound impact on agriculture, particularly east of the Cascade Mountains. Also, below average snowfall in higher elevations has a far-reaching effect, especially in terms of hydro-electric power, irrigation, recreational opportunities and a variety of industrial uses.

Drought can affect all segments of a jurisdiction's population, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.). Water-dependent activities, such as agriculture and ranging, are particularly vulnerable to droughts. Each of the Steering Committees considered drought both an economic hazard (that is affecting jobs) and an agricultural hazard. Discussions with community members in the Northeast County during the hazard identification process indicated that drought conditions have a negative impact on cattle ranching, specifically those not dependent on irrigation. Droughts do not impact the communities as much in terms of restricted food availability.

Domestic water-users within the cities may be subject to stringent conservation measures (e.g., rationing) and could be faced with significant increases in electricity rates. Baker City institutes water conservation as discussed within their Water Curtailment Plan (2013).[17] In Baker County, Monument and Ritter are considered more vulnerable to drought; Izee is also generally drier.[18] In Wallowa County, the most vulnerable area to drought is north of Enterprise who generally won't get any rain in the event of a drought.[19]

The Region has been impacted numerous times by precipitation shortfalls/drought conditions. Seasonal irrigation water from mountain snow packs fizzles out towards the end of August. It is common to find municipal water systems imposing some type of water rationing during dry years. More specifics about the precipitation distribution can be found in the Community Profile in Appendix C. Location of reservoirs helps mitigate the impact of a drought -- water availability is not always correlated to the amount of precipitation.

Aquifer capacity is a notable concern for two of the watershed subbasin's in the region. Specifically the Baker and Powder Valleys and the Grande Ronde Valley are concerned with their capacity. Resultantly there are two action items to conduct an aquifer study for these subbasins. Within the Grande Ronde valley, the City of La Grande is concerned about aquifer capacities, should growth continue. The amount of water within the Grande Ronde Valley is currently unknown.

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[17] Baker City. "Water Curtailment Plan." 2013. Note: this plan was just completed upon the completion of the 2013 NHMP, specifics of the plan are currently unavailable.
[18] Baker County Natural Hazards Mitigation Plan Update Steering Committee, June 26, 2013.
[19] Wallowa County Natural Hazards Mitigation Plan Update Steering Committee, July 10, 2013.

Facilities affected by drought conditions include communications facilities, hospitals, and correctional facilities that are subject to power failures. Storage systems for potable water, sewage treatment facilities, water storage for firefighting, and hydroelectric generating plants also are vulnerable. Low water also means reduced hydroelectric production especially as the habitat benefits of water compete with other beneficial uses.

There also are environmental consequences. A prolonged drought in forests promotes an increase of insect pests, which in turn, damage trees already weakened by a lack of water. A moisture-deficient forest constitutes a significant fire hazard (see the Wildfire summary). Discussions with community members during the hazard identification process indicate that while drought may limit the growth of fuel for wildfires, it does provide ideal conditions for wildfires to occur. Drought significantly increases the probability for lightning-caused wildfires to occur, and provides ideal conditions for the rapid spread of wildfire. In addition, drought and water scarcity add another dimension of stress to species listed pursuant to the Endangered Species Act (ESA) of 1973.

Existing Hazard Mitigation Activities

Drought Council

The Drought Council is responsible for assessing the impact of drought conditions and making recommendations to the Governor's senior advisors. The Drought Council is, in turn, advised by a subcommittee of technical people, including the county water masters who monitor conditions throughout the state and report these conditions monthly. It is known as the Water Availability Committee. In this manner the Drought Council keeps up-to-date on water conditions.

Natural Resources and Conservation Service

The Natural Resource and Conservation Service (NRCS) has service center locations in Baker City, John Day, Monument, La Grande, and Enterprise. The NRCS is involved in "Conservation Implementation Strategies" which includes specifically detailed problems and solutions that NRCS, local partners, and landowners are proposing to solve.[20] Strategies include the Lower Powder River Watershed Irrigation Improvement project (Baker County), the Catherine Creek Irrigation Efficiency Project (Union County), and the Prairie Creek Irrigation Efficiency Project (Wallowa County).[21]

[20] Natural Resources Conservation Services Oregon "Conservation Implementation Strategy" http://www.nrcs.usda.gov/wps/portal/nrcs/detail/or/home/?cid=nrcs142p2_044377 Accessed September 2013

[21] Ibid

Outreach

Baker, Grant, and Union Counties havea district water master, who communicates with the public during drought season about responsible water management best practices.[22]

The Counties participates in the Firewise program. Developed by the National Fire Protection Association, the Firewise program features templates to help communities to reduce risk and protect property from the dangers of wildland fires. Along with an interactive, resource rich website full of free materials, the program offers training throughout the nation on utilizing their program.

Drought Mitigation Action Items

The following actions have been identified by the Baker County, Baker City, Halfway, Grant County, John Day, Union County, La Grande, Wallowa County, and Enterprise Steering Committees, and are recommended for mitigating the potential effects of drought in the various identified jurisdictions. Below you will find a brief description, title, of the action item, see the full action item worksheet in Appendix A or within the city addendum for a full description of the action item.

Table DR-5 Drought Mitigation Action Items

Action Item	Priority	Proposed Action Title	Action Item Form Page Number	Affected Jurisdictions								
				Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
DR #1		Identify incentive programs to increase water efficiency among agricultural water users	A-25	X			X		X		X	
DR #2	High (Baker City)	Identify incentive programs to Increase water efficiency among municipal water users	A-27	X	X	X	X	X	X	X	X	X
DR #3		Develop community drought emergency plans and policies	A-29	X			X	X	X	X	X	X
DR #4	High (Baker, Baker City, Halfway)	Conduct an aquifer (groundwater) study for the Pine and Baker Valleys	A-31	X	X	X						
DR #5	High (Union, La Grande)	Conduct an aquifer (groundwater) study for the Grande Ronde Valley	A-33						X	X		

[22]Water Resources Department: Oregon Water Resources Field Offices "Water master Offices" http://www.oregon.gov/owrd/pages/offices.aspx; Wallowa County currently receives support from the District 6 office in La Grande.

EARTHQUAKE HAZARD ANNEX

Causes and Characteristics of Earthquake

Earthquakes occur in Oregon everyday; every few years an earthquake is large enough for people to feel; and every few decades there is an earthquake that causes damage. Each year, the Pacific Northwest Seismic Network locates more than 1,000 earthquakes greater than magnitude 1.0 in Washington and Oregon. Of these, approximately two dozen are large enough to feel. These noticeable events offer a subtle reminder that the Pacific Northwest is an earthquake-prone region.

Seismic hazards pose a real and serious threat to many communities in Oregon, including Northeast Oregon, requiring local governments, planners, and engineers to consider their community's safety. Currently, no reliable scientific means exists to predict earthquakes. Identifying seismic-prone locations, adopting strong policies and implementing measures, and using other mitigation techniques are essential to reducing risk from seismic hazards in Northeast Oregon.[1]

Oregon and the Pacific Northwest in general are susceptible to earthquakes from three sources: 1) shallow crustal fault –slippage events within the North American Plate; 2) deep intra-plate events within the subducting Juan de Fuca Plate; and 3) the off-shore Cascadian Subduction Zone.[2]

Northeast Oregon contains high mountains and broad inter-mountain valleys. Although there is abundant evidence of crustal faulting, seismic activity is low when compared with other areas of the state. There are a few identified faults in the region that have been active in the last 20,000 years. The region has been shaken historically by crustal earthquakes and prehistorically by subduction zone earthquakes centered outside the area. All considered, there is good reason to believe that the most devastating future earthquakes would probably originate along shallow crustal faults in the region.

Baker County has the most recorded seismic activity in the region. Earthquake activity occurs in the vicinity of Hells Canyon, an area with a complex geologic history. Several significant earthquakes have occurred in the region; the 1913 Hells Canyon, the 1927 and 1942 Pine Valley - Cuddy Mountain, the 1965 John Day (M4.4), and the 1965 and 1966 Halfway (M4.3 and 4.2).[3]

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[1] Interagency Hazard Mitigation Team. 2012. Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

[2] Planning for Natural Hazards: Oregon Technical Resource Guide, Community Planning Workshop, (July 2000), p. 8-8.

[3] University of Washington. List of Magnitude 4.0 or Larger Earthquakes in Washington and Oregon 1872-2002; and Wong and Bott, November 1995. A look Back at Oregon's Earthquake History, 1841-1994, *Oregon Geology.*

Crustal Fault Earthquakes

These are the most common earthquakes and occur at relatively shallow depths of 6-12 miles below the surface.[4] When crustal faults slip, they can produce earthquakes of magnitudes up to 7.0. Although most crustal fault earthquakes are smaller than 4.0 and generally create little or no damage, some of them can cause extensive damage. Earthquakes related to volcanic activity can also affect the region.

Deep Intraplate Earthquakes

Occurring at depths from 18 to 60 miles below the earth's surface in the subducting oceanic crust, deep intraplate earthquakes can reach magnitude 7.5.[5]This type of earthquake is more common in the Puget Sound; in Oregon these earthquakes occur at lower rates and none have occurred at a damaging magnitude.[6]The February 28, 2001 earthquake in Washington State was a deep intraplate earthquake. It produced a rolling motion that was felt from Vancouver, British Columbia to Coos Bay, Oregon and east to Salt Lake City, Utah.[7]

Subduction Zone Earthquakes

The Pacific Northwest is located at a convergent continental plate boundary, where the Juan de Fuca and North American tectonic plates meet. The two plates are converging at a rate of about 1.5 inches per year.[8] This boundary is called the Cascadia Subduction Zone (CSZ, see Figure EQ-1). It extends from British Columbia to northern California. Earthquakes are caused by the abrupt release of this slowly accumulated stress.

[4] Madin, Ian P. and Zhenming Wang, Relative Earthquake Hazard Maps Report, DOGAMI, 1999.

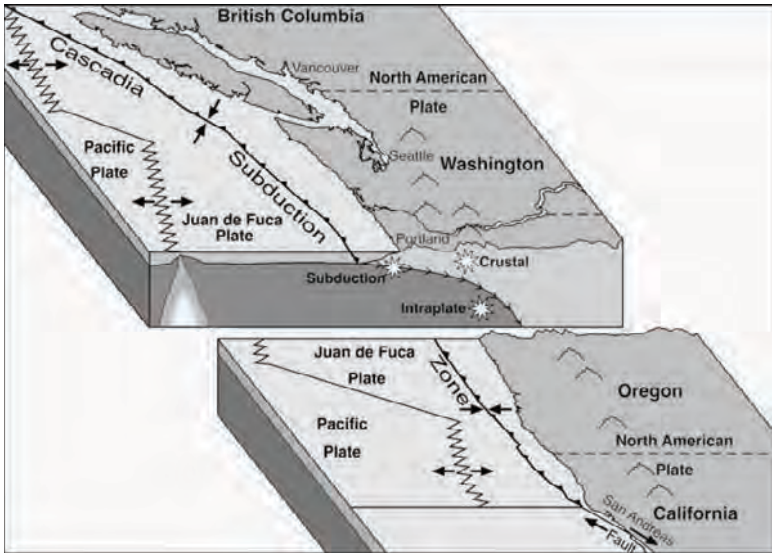
[5] Planning for Natural Hazards: Oregon Technical Resource Guide, Community Planning Workshop, (July 2000), p. 8-8.

[6] Interagency Hazard Mitigation Team. 2012. Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

[7]Hill, Richard. "Geo Watch Warning Quake Shook Portland 40 Years Ago." The Oregonian. October 30, 2002.

[8]Interagency Hazard Mitigation Team. 2012. Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

Figure EQ-1 Cascadia Subduction Zone



Source: Shoreland Solutions. Chronic Coastal Natural Hazards Model Overlay Zone. Salem, OR: Oregon Department of Land Conservation and Development (1998) Technical Guide-3.

Although there have been no large recorded earthquakes along the offshore Cascadia Subduction Zone, similar subduction zones worldwide do produce "great" earthquakes with magnitudes of 8 or larger. They occur because the oceanic crust "sticks" as it is being pushed beneath the continent, rather than sliding smoothly. Over hundreds of years, large stresses build which are released suddenly in great earthquakes. Such earthquakes typically have a minute or more of strong ground shaking, and are quickly followed by numerous large aftershocks.

Subduction zones similar to the Cascadia Subduction Zone have produced earthquakes with magnitudes of 8.0 or larger. Historic subduction zone earthquakes include the 1960 Chile earthquake (magnitude 9.5), the 1964 southern Alaska earthquakes (magnitude 9.2), the 2004 Indian Ocean earthquake (magnitude 9.0) and the 2011 Tohoku earthquake (magnitude 9.0).

Geologic evidence shows that the Cascadia Subduction Zone has also generated great earthquakes, and that the most recent one was about 300 years ago.[9] Large earthquakes also occur at the southern end of the Cascadia Subduction Zone (in northern California near the Oregon border) where it meets the San Andreas Fault system.

While all three types of earthquakes have the potential to cause major damage, subduction zone earthquakes pose the greatest danger. A major CSZ event could generate an earthquake with a magnitude of 9.0 or greater resulting in devastating damage and loss of life. Such earthquakes may cause great damage to the coastal area of Oregon as well as inland areas in western Oregon. Northeast Oregon is unlikely to be directly affected by a subduction zone earthquake; however, the county could be affected as populations of refugees flee eastward, and as streams of commerce are interrupted.

[9]Interagency Hazard Mitigation Team. 2012. Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

It is estimated that shaking from a large subduction zone earthquake could last up to five minutes.[10]The specific hazards associated with an earthquake are explained below:

Ground Shaking

Ground shaking is the motion felt on the earth's surface caused by seismic waves generated by the earthquake. Ground shaking is the primary cause of earthquake damage. The strength of ground shaking depends on the magnitude of the earthquake, the type of fault that is slipping, and distance from the epicenter (where the earthquake originates). Buildings on poorly consolidated and thick soils will typically see more damage than buildings on consolidated soils and bedrock.

> *"Due to the amount of faulting in the area, [the 1999 Klamath Falls earthquake] is just business as usual for such a geologically active region. Historic evidence, combined with geologic evidence for large numbers of earthquakes in the prehistoric past, suggest that one or more earthquakes capable of damage (magnitude 4 – 6) hit south-central Oregon every few decades, so it pays to be prepared."*
>
> James Roddey, DOGAMI

Ground Shaking Amplification

Ground shaking amplification refers to the soils and soft sedimentary rocks near the surface that can modify ground shaking from an earthquake. Such factors can increase or decrease the amplification (i.e., strength) as well as the frequency of the shaking. The thickness of the geologic materials and their physical properties determine how much amplification will occur. Ground motion amplification increases the risk for buildings and structures built on soft and unconsolidated soils.

Surface Faulting

Surface faulting are planes or surfaces in Earth materials along which failure occurs. Such faults can be found deep within the earth or on the surface. Earthquakes occurring from deep lying faults usually create only ground shaking.

Liquefaction and Subsidence

Liquefaction occurs when ground shaking causes wet, granular soils to change from a solid state into a liquid state. This results in the loss of soil strength and the soil's ability to support weight. When the ground can no longer support buildings and structures (subsidence), buildings and their occupants are at risk.

The severity of an earthquake is dependent upon a number of factors including: 1) the distance from the earthquake's source (or epicenter); 2) the ability of the soil and rock to conduct the earthquake's seismic energy; 3) the degree (i.e., angle) of slope materials; 4) the composition of slope materials; 5) the magnitude of the earthquake; and 6) the type of earthquake.

[10]Planning for Natural Hazards: Oregon Technical Resource Guide, Community Planning Workshop, (July 2000), p. 8-9.

Earthquake-Induced Landslides and Rockfalls

Earthquake-induced landslides are secondary hazards that occur from ground shaking and can destroy roads, buildings, utilities and critical facilities necessary to recovery efforts after an earthquake. These areas often have a higher risk of landslides and rockfalls triggered by earthquakes.

The severity of an earthquake is dependent upon a number of factors including: 1) the distance from the earthquake's source (or epicenter); 2) the ability of the soil and rock to conduct the earthquake's seismic energy; 3) the degree (i.e., angle) of slope materials; 4) the composition of slope materials; 5) the magnitude of the earthquake; and 6) the type of earthquake.

History of Earthquakes in Northeast Oregon



Image of damage from the 2001 Nisqually earthquake near Seattle

All of Oregon west of the Cascades is at risk from the three earthquake types and associated hazards. East of the Cascades the earthquake hazard is predominately of the crustal type. The amount of earthquake damage at any place will depend on its distance from the epicenter, local soil conditions, and types of construction. Due to Oregon's relatively short written history and the infrequent occurrence of severe earthquakes, few Oregon earthquakes have been recorded in writing. Moreover, in the past century, there have been no reported damage or injuries in the Northeast Region due to earthquakes. However, several significant earthquake events have occurred in southeastern Washington in the past 150 years. Details concerning these events are highlighted below.

The Northeast Oregon region has been historically shaken by crustal and intraplate earthquakes centered on the area. Table EQ-1 shows selected earthquakes in the region from 1971-2013.

Northeast Oregon Earthquake History

Historically there have been few earthquakes in Northeast Oregon, and even fewer earthquakes that have caused structural damage to buildings. In the last 42 years, the region around Northeast Oregon has been affected by several earthquakes of estimated magnitudes of three and greater. Table EQ-1 shows the location of selected Northeast Oregon region earthquakes since 1900. This data relies on the Pacific Northwest Seismic Networks database. Among the three earthquakes whose magnitudes exceeded four, none of them had epicenters in any of the Northeast Oregon counties. For more regional earthquakes see tables EQ-2 and EQ-3.

Table EQ-1 Earthquakes Greater than 4.0 (1900 to present)

Date	Location	Magnitude	Comments
October, 1913	Hells Canyon	6.0	
April, 1927	Pine Valley-Cuddy Mountain	5.0	
June, 1942	Pine Valley-Cuddy Mountain	5.0	Minor Damage
August 1, 1965	John Day	4.4	
November, 1965	Halfway	4.3	
December, 1966	Halfway	4.2	

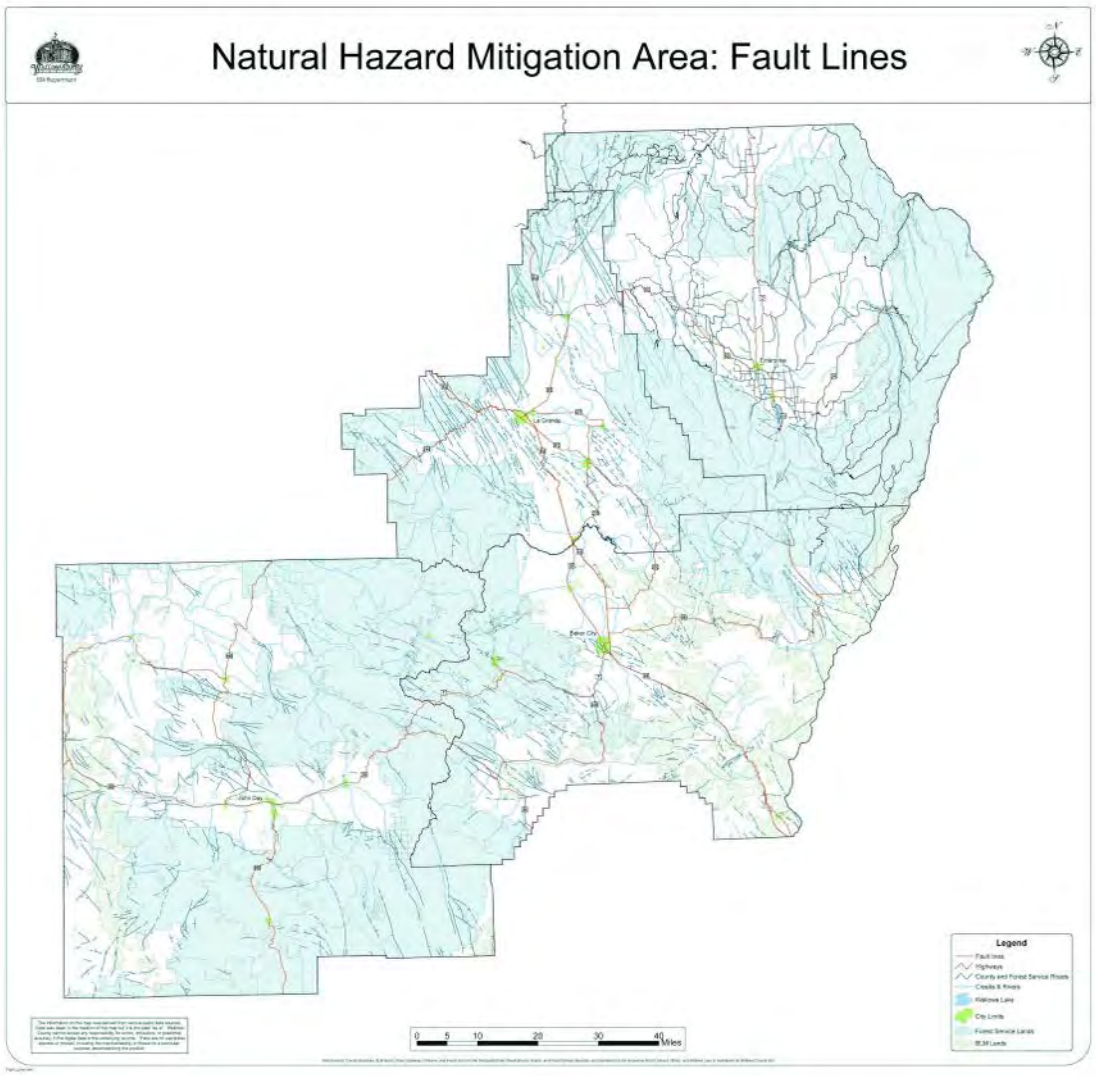
Source: University of Washington. List of Magnitude 4.0 or Larger Earthquakes in Washington and Oregon 1872-2002; and Wong and Bott, November 1995. A look Back at Oregon's Earthquake History, 1841-1994, *Oregon Geology.*

Table EQ-2 Earthquakes Greater than 3.0 (1991-2013)

Magnitude	Date	Location
3.3	9/20/91	11.3 mi ESE from Christmas Valley, OR
3.1	10/16/93	27.3 mi ESE from John Day, OR
3.1	4/1/98	10.8 mi SSW from Prineville, OR
3.0	4/27/99	14.6 mi ESE from Christmas Valley, OR
3.0	4/28/99	15.4 mi ESE from Christmas Valley, OR
3.8	4/28/99	15.8 mi ESE from Christmas Valley, OR
3.1	2/28/03	2.2 mi NNW from Millican, OR
3.0	6/24/04	11.0 mi SSE from Lakeview, OR
3.2	6/26/04	9.7 mi SSE from Lakeview, OR
3.0	6/27/04	9.5 mi SE from Lakeview, OR
3.2	6/27/04	9.8 mi SSE from Lakeview, OR
3.9	6/27/04	8.7 mi SE from Lakeview, OR
4.4	6/30/04	9.6 mi SE from Lakeview, OR
3.2	7/4/04	10.4 mi SSE from Lakeview, OR
3.3	7/13/04	9.2 mi SSE from Lakeview, OR
4.3	7/22/04	8.9 mi SE from Lakeview, OR
3.1	7/22/04	9.6 mi SE from Lakeview, OR
3.0	9/1/04	10.2 mi SE from Lakeview, OR
3.5	10/7/04	10.1 mi SSE from Lakeview, OR
3.1	10/29/04	9.3 mi SSE from Lakeview, OR
3.5	11/16/04	9.7 mi SSE from Lakeview, OR
3.4	8/12/05	24.6 mi S from Adel, OR
3.1	4/19/07	45.6 mi ENE from Christmas Valley, OR
3.1	5/30/07	7.4 mi SE from Lakeview, OR

Source: Pacific Northwest Seismic Network "Earthquake Map" http://www.pnsn.org/earthquakes/recent*taken from latitude coordinates: 43.921-46.031; longitude coordinates: -119.649—116.486*

Figure EQ-1 Fault lines in Northeast Oregon



Source: Wallowa County Planning Department, GIS

Oregon's Earthquake History

The Pacific Northwest has experienced major earthquakes in 1949 (magnitude 7.1), 1962 (magnitude 5.2), and 2001 (magnitude 6.8). Table EQ-2 shows the location of selected Pacific Northwest earthquakes.

Table EQ-3 Earthquake History in Pacific Northwest

Date	Location	Magnitude	Comments
Approximate years: 1400 BCE, 1050, BCE 600 BCE 400, 750, 900	Offshore, Cascadia subduction zone	Probably 8.0-9.0	Researchers Brian Atwater and Eileen Hemphill-Haley have dated earthquakes and tsunamis at Willapa Bay, Washington; these are the midpoints of the age ranges for these six events.
January 26, 1700	Offshore, Cascadia Subduction zone	Approximately 9.0	Generated a tsunami that struck Oregon, Washington and Japan; destroyed Native American villages along the coast.
November 23, 1873	Oregon/California border, near Brookings	6.8	Felt as far away as Portland and San Francisco; may have been an intraplate event because of lack of aftershocks.
March, 1893	Umatilla	VI-VII (Modified Mercalli Intensity)	Damage unknown
July 15, 1936	Milton-Freewater	6.4	Two foreshocks and many aftershocks felt; $100,000 damage (in 1936 dollars).
April 13, 1949	Olympia, Washington	7.1	Eight deaths and $25 million damage (in 1949 dollars); cracked plaster, other minor damage in northwest Oregon.
January, 1951	Hermiston	V (Modified Mercalli Intensity)	Damage unknown
November 5, 1962	Portland/Vancouver	5.5	Shaking lasted up to 30 seconds; chimneys cracked, windows broke, furniture moved.
1968	Adel	5.1	Swarm lasted May through July, decreasing in intensity; increased flow at a hot spring was reported.
April 12, 1976	Near Maupin	4.8	Sounds described as distant thunder, sonic booms, and strong wind.
April 25, 1992	Cape Mendocino, California	7.0	Subduction earthquake at the triple-junction of the Cascadia subduction zone and the San Andreas and Mendocino faults.
March 25, 1993	Scotts Mill	5.6	On Mount Angel-Gates Creek fault; $30 million damage, including Molalla High School and Mount Angel church.
September 20, 1993	Klamath Falls	5.9 and 6.0	Two deaths, $10 million damage, including county courthouse; rockfalls induced by ground motion.

Source: Ivan Wong and Jacqueline D.J. Bolt, November 1995, A Look Back at Oregon's Earthquake History, 1841-1994, Oregon Geology, pp. 125-139 and Niewendorp, C.A., Neuhaus, M.E., 2003. Map of Selected Earthquakes for Oregon, 1841 through 2002. Oregon Department of Geology and Mineral Industries Open File Report 03-02

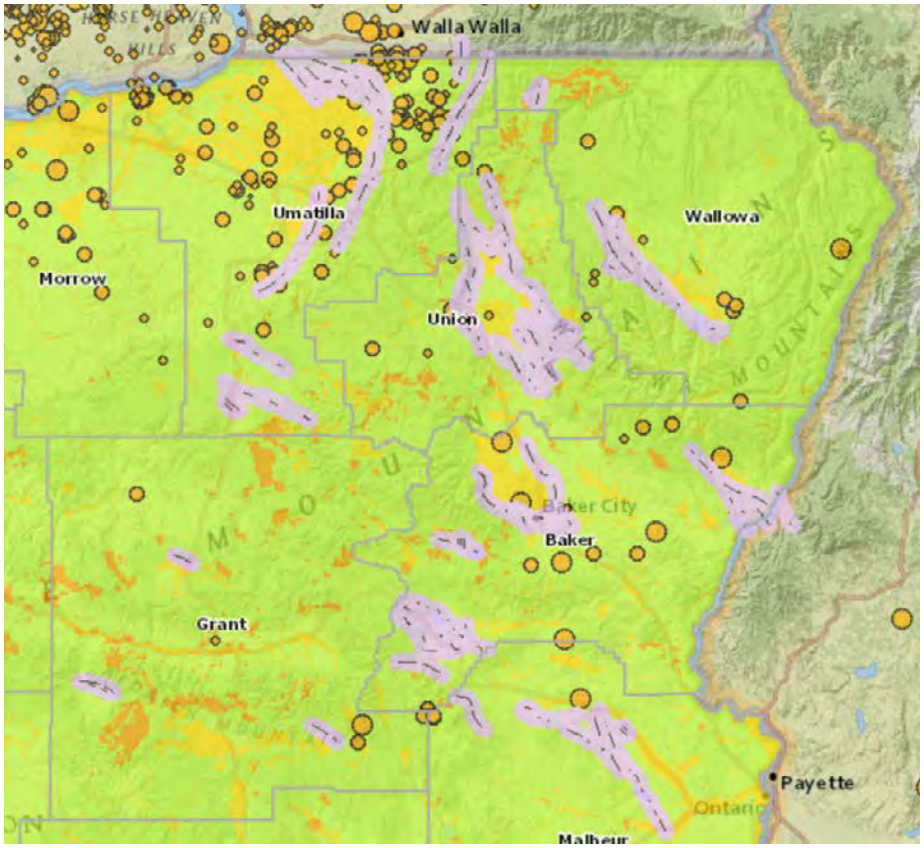
Risk Assessment

How are Hazards Identified?

The Oregon Department of Geology and Mineral Industries (DOGAMI), in partnership with other state and federal agencies, has undertaken a rigorous program in Oregon to identify seismic hazards, including active fault identification, bedrock shaking, tsunami inundation

zones, ground motion amplification, liquefaction, and earthquake induced landslides. DOGAMI has published a number of seismic hazard maps that are available for Oregon communities to use. The maps show liquefaction, ground motion amplification, landslide susceptibility, and relative earthquake hazards. OPDR used the DOGAMI Statewide Geohazards Viewer to present visual maps of recent earthquake activity (Figure EQ-3), ground shaking (Figure EQ-4) and soft soils (Figure EQ-5). The legend for the DOGAMI Statewide Geohazards Viewer that provides the explanation of the content of Figures EQ-3 through EQ-5 is provided as Figure EQ-6. The extent of the damage to structures and injury and death to people will depend upon the type of earthquake, proximity to the epicenter and the magnitude and duration of the event. As the maps indicate the predominant risks for the region, in terms of concentration of population and assets are the City of La Grande and Baker City, which lie near the Grande Ronde Valley Fault Zone and Baker Valley Faults respectively. The yellow color represents that the area would experience a strong expected shaking.

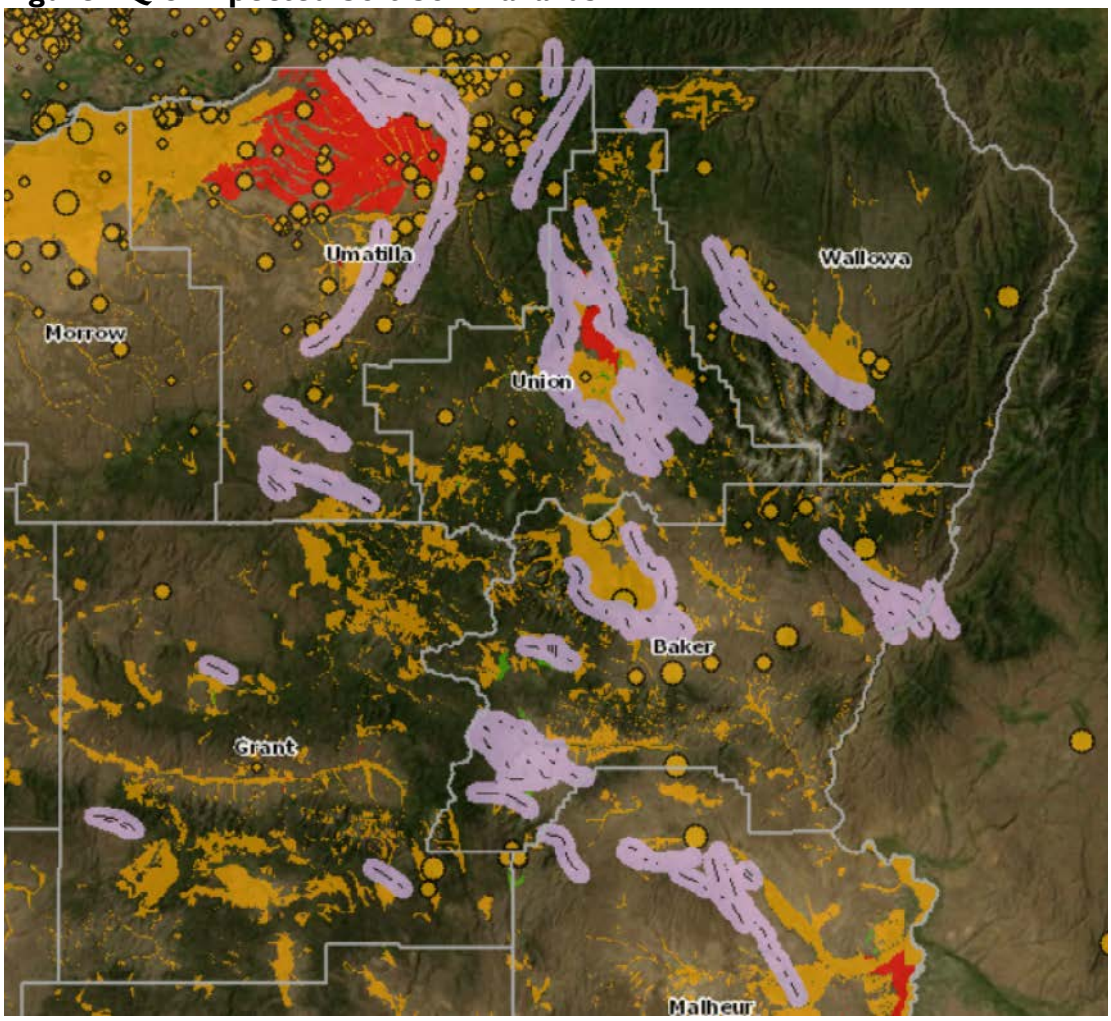
Figure EQ-4 Expected Shaking



Source:DOGAMI Hazard Viewer

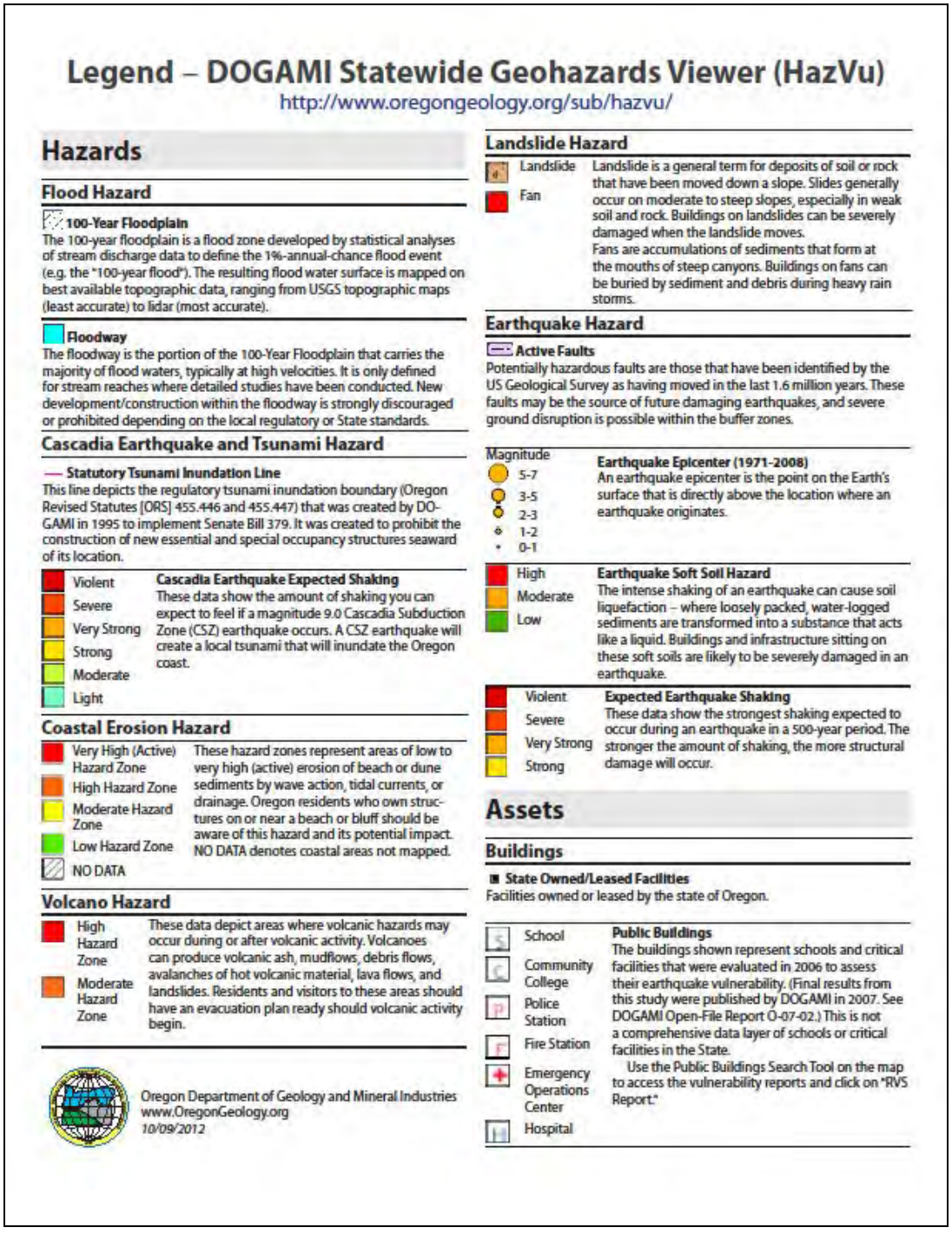
Figure EQ-5 indicates the expected soft soil hazards. The red color near La Grande indicates a high likelihood of soil liquefaction under the appropriate earthquake.

Figure EQ-5 Expected Soft Soil Hazards



Source: DOGAMI Hazard Viewer

Figure EQ-6 DOGAMI HAZVU Legend



Source: DOGAMI - HazVu, http://www.oregongeology.org/sub/hazvu/hazvu-legend-descr.pdf

Community Earthquake Issues

Earthquake damage occurs because humans have built structures that cannot withstand severe shaking. Buildings, airports, schools, and lifelines (highways, phone lines, gas, water, etc.) suffer damage in earthquakes and can ultimately result in death or injury to humans.

Death and Injury

Death and injury can occur both inside and outside of buildings due to falling equipment, furniture, debris, and structural materials. Likewise, downed power lines or broken water and gas lines endanger human life. Death and injury are highest in the afternoon when damage occurs to commercial and residential buildings and during the evening hours in residential settings.[11]

Building and Home Damage

Wood structures tend to withstand earthquakes better than structures made of brick or unreinforced masonry buildings.[12] Building construction and design play a vital role in the survival of a structure during earthquakes. Damage can be quite severe if structures are not designed with seismic reinforcements or if structures are located atop soils that liquefy or amplify shaking. Whole buildings can collapse or be displaced.

Bridge Damage

All bridges can sustain damage during earthquakes, leaving them unsafe for use. More rarely, some bridges have failed completely due to strong ground motion. Bridges are a vital transportation link – damage to them can make some areas inaccessible.

Because bridges vary in size, materials, siting, and design, earthquakes will affect each bridge differently. Bridges built before the mid 1970's often do not have proper seismic reinforcements. These bridges have a significantly higher risk of suffering structural damage during a moderate to large earthquake. Bridges built in the 1980's and after are more likely to have the structural components necessary to withstand a large earthquake.[13]

2001 Nisqually Earthquake

A 6.8 magnitude earthquake centered southwest of Seattle struck on February 28, 2001, followed by a mild aftershock the next morning, and caused more than $1 billion worth of damage. Despite this significant loss, the region escaped with relatively little damage for two reasons: the depth of the quake center and preparations by its residents. Washington initiated a retrofitting program in 1990 to strengthen bridges, while regional building codes mandated new structures withstand certain amounts of movement. Likewise, historic buildings have been voluntarily retrofitted with earthquake-protection reinforcements.

Source: "Luck and planning reduced Seattle quake damage", CNN Report, March 1, 2001

[11] Planning for Natural Hazards: Oregon Technical Resource Guide, Community Planning Workshop, and (July 2000).

[12] Wolfe, Myer, et al. Land Use Planning for Earthquake Hazard Mitigation: A Handbook for Planners, Special Publication 14, Natural Hazards Research and Applications Information Center.

[13] University of Washington website: www.geophys.washington.edu/SEIS/PNSN/INFO_GENERAL/faq.html#3.

Damage to Lifelines

Lifelines are the connections between communities and critical services. They include water and gas lines, transportation systems, electricity, and communication networks. Ground shaking and amplification can cause pipes to break open, power lines to fall, roads and railways to crack or move, and radio or telephone communication to cease. Disruption to transportation makes it especially difficult to bring in supplies or services. All lifelines need to be usable after an earthquake to allow for rescue, recovery, and rebuilding efforts and to relay important information to the public.

Disruption of Critical Facilities

Critical facilities are police stations, fire stations, hospitals, and shelters. These are facilities that provide services to the community and need to be functional after an earthquake event. The earthquake effects outlined above can all cause emergency response to be disrupted after a significant event.[14]

Economic Loss: Equipment and Inventory Damage, Lost Income

Seismic activity can cause great loss to businesses, either a large-scale corporation or a small retail shop. Losses not only result in rebuilding cost, but fragile inventory and equipment can be destroyed. When a company is forced to stop production for just a day, business loss can be tremendous. Residents, businesses, and industry all suffer temporary loss of income when their source of finances are damaged or disrupted.

Fire

Downed power lines or broken gas mains can trigger fires. When fire stations suffer building or lifeline damage, quick response to quench fires is less likely.

Debris

After damage occurs to a variety of structures, much time is spent cleaning up brick, glass, wood, steel or concrete building elements, office and home contents, and other materials.

Hazard Risk Analysis

The participating Steering Committees, during this update, completed jurisdiction specific hazard risk analyses, based upon the previous plan's analyses. Each hazard analysis, developed from a Federal Emergency Management Agency (FEMA) tool that has been refined by the Oregon Military Department – Office of Emergency Management (OEM), addresses and weights (shown as percent within parentheses) probability (29%), vulnerability (21%), maximum threat (42%) and the history (8%) of each natural hazard and attributes a final hazard analysis score. The methodology produces scores that range from 24 to 240. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation. The method provides the jurisdiction with a relative ranking from which to prioritize mitigation strategies, but does not predict the occurrence of a particular

[14]Earthquake Damage in Oregon: Preliminary Estimates of Future Earthquake Losses.

hazard (for more information on all scores see Volume I, Section 2 of this NHMP). Provided below are brief descriptions of each category:

Probability is the likelihood of future occurrence within a specified period of time.
LOW = one incident likely within 75 to 100 years scores between 1 and 3 points
MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points
HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Vulnerability includes the percentage of population and property likely to be affected under an "average" occurrence of the hazard.
LOW = less than 1% affected scores between 1 and 3 points
MEDIUM = between 1 and 10% affected scores between 4 and 7 points
HIGH = more than 10% affected scores between 8 and 10 points

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.
LOW – score at 1 to 3 points based on… < 5% affected
MEDIUM – score at 4 to 7 points based on… 5 - 25% affected
HIGH – score at 8 to 10 points based on… > 25% affected

History is the record of previous occurrences.
LOW – score at 1 to 3 points based on… 0 - 1 event past 100 years
MEDIUM – score at 4 to 7 points based on… 2 - 3 events past100 years
HIGH – score at 8 to 10 points based on… 4 or more events past100 years

The hazard risk analysis ratings, as determined by each participating Steering Committee, are shown in the following table. Within the table the probability and vulnerability scores are shown in **bold** if they are higher than in 2008, in normal text if the same or if not ranked in 2008, and with (parentheses) if they are lower than in 2008. Areas that were not rated in 2008 are denoted with an asterisk (*).

Table EQ-4 Crustal Earthquake Hazard Risk Analysis

	Total Threat Score	Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	149	#6	Low	**High**	High	Low
Baker City	149	#7	Low	**High**	High	Low
Halfway	170	#3	Low	**High**	High	High
Grant	125	#8	(Low)	**Moderate**	High	Low
John Day	163	#7	(Low)	**High**	High	Low
Union	168	#6	Low	**High**	High	Low
La Grande	166	#6	Low	High	High	Low
Wallowa	109	#7	(Low)	(Low)	High	Low
Enterprise	128	#5	Low	Moderate	High	Low

Source: County and City Steering Committee Meetings (2013)

Additionally, each of the county Steering Committees completed a "Relative Risk Assessment" that ranks "severity of impact" and "relative risk" for each hazard. For more information on these scores see Volume I, Section 2 of this NHMP. For additional information on participating city ratings see Volume III of this NHMP.

Probability of Future Occurrence

Establishing a probability for crustal earthquakes is difficult. There have been three earthquakes above magnitude 4 near the Northeast Oregon region (but predominately in non-populated areas, and none whose epicenter was in a Northeast Oregon county). Oregon's seismic record for Northeast Oregon is short and the number of earthquakes above a magnitude 4 centered in the Northeast Oregon region is small. Therefore, any kind of prediction would be questionable. Earthquakes generated by volcanic activity in Oregon's Cascade Range are possible, but likewise unpredictable.

Vulnerability Assessment

The effects of earthquakes span a large area. The degree to which earthquakes are felt, however, and the damages associated with them may vary. At risk from earthquake damage are unreinforced masonry buildings, bridges built before earthquake standards were incorporated into building codes, sewer, water, and natural gas pipelines, petroleum pipelines, and other critical facilities and private property located within the county. The areas that are particularly vulnerable to potential earthquakes in the county have been identified as those with soft, alluvial sediments and lands along stream channels, which appear in an around the city of La Grande(see Figure EQ-5 for more information).

Earthquake damage to roads and bridges can be particularly serious by hampering or cutting off the movement of people and goods and disrupting the provision of emergency response services. Such effects in turn can produce serious impacts on the local and regional economy by disconnecting people from work, home, food, school and needed commercial, medical and social services. A major earthquake can separate businesses and other employers from their employees, customers, and suppliers thereby further hurting the economy. The City of Enterprise is susceptible to being isolated given that Highway 82 is the only major transportation routes connecting the cities with the rest of the state. Similarly, the Halfway/Richland area could be cut off from the state in the event of a Highway 86 closure, as was seen in the Hole in the Wall landslide. Should an earthquake damage a major transportation routes, several communities in Northeast Oregon could find themselves isolated. Lastly, following an earthquake event, the cleanup of debris can be a huge challenge for the communities.

Region 7 is highly vulnerable to earthquake hazards due to earthquake induced landslides and ground shaking. Transportation corridors, such as I-84, to areas with the greatest damages (west of the Cascades) would be heavily traveled with relief supplies, equipment and personnel moving in one direction and evacuees in the other

Traffic in and out of Grant County must traverse gorges and mountain passes. These areas will likely be rendered impassible by small to moderately sized events. Since Grant County relies on overland transportation for all of its food and supplies, earthquakes pose a major risk for Grant County residents.

The John Day Police Department, 9-1-1 Center, and City Hall are all part of one building on Main St, John Day. If all three were damaged or affected by an emergency event, the city may suffer in its ability to respond and recover to an event.

Cascadia Subduction Zone Hazard

The communities of Baker County and Baker City ranked the Cascadia Subduction Zone hazard in addition to the crustal earthquake hazard. New research from Oregon State University suggests that the Cascadia Subduction Zone Earthquake has at least four segments that sometimes rupture independently of one another. Magnitude-9 ruptures affecting the entire subduction zone have occurred 19 times in the past 10,000 years. Over that time, shorter segments have ruptured farther south in Oregon and Northern California, producing magnitude-8 quakes. As such, the risks of a subduction zone quake may differ from north to south. Quakes originating in the northern portion of the CSZ tend to rupture the full length of the subduction zone. In southern Oregon and Northern California, quakes along the subduction zone appear to strike more frequently.[15]

The Baker County Steering Committee determined that the history of Cascadia earthquake events is **Low**, considering one or fewer major events occurred over the last 100 years. This hazard was unranked in the 2008 Baker County Hazard Analysis. The Baker City Steering Committee determined that the history of Cascadia earthquake events is also **Low.** This hazard was unranked in the 2008 Baker City Hazard Analysis.

Paleoseismic studies along the Oregon coast indicate that the state has experienced seven Cascadia Subduction Zone (CSZ) events possibly as large as M9 in the last 3,500 years. These events are estimated to have an average recurrence interval between 500 and 600 years, although the time interval between individual events ranges from 150 to 1,000 years. The last CSZ event occurred approximately 300 years ago. Scientists estimate the chance in the next 50 years of a great subduction zone earthquake is between 10 and 20 percent, assuming that the recurrence is on the order of 400 +/- 200 years.[16] (Oregon Geology, Volume 64, No. 1, Spring 2002)

The Baker County Steering Committee rated the probability of a Cascadia earthquake event occurring as **Moderate**, meaning that it is estimated Baker County will be affected by a damaging Cascadia earthquake within a 35-75 year period. Baker City also rated the probability as **Moderate**.

Baker County and Baker City considered the vulnerability to a Cascadia earthquake event through displacement of population and through indirect economic impacts.

The Baker County Steering Committee determined that the vulnerability to the Cascadia earthquake event is **Moderate**, considering that between 1-10% of population and property could be impacted. The Baker City Steering Committee also determined that the city's vulnerability to a Cascadia earthquake event is **Moderate**.

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[15]Rojas-Burke, Joe. "Predicting the next Northwest mega-quake still a struggle for geologists." The Oregonian. April 20, 2010.

[16]Oregon Geology, Volume 64, No. 1, Spring 2002

The Baker County Steering Committee determined that the maximum threat of a Cascadia earthquake event is **Low**, considering that less than 5% of population and property could be impacted under a worst-case scenario. The Baker City Steering Committee also determined that the maximum threat of a Cascadia earthquake event is **Low**.

Building Collapse Potential

In 2007, DOGAMI completed a rapid visual screening (RVS) of educational and emergency facilities in communities across Oregon, as directed by the Oregon Legislature in Senate Bill 2 (2005). RVS is a technique used by the Federal Emergency Management Agency (FEMA), known as FEMA 154, to identify, inventory, and rank buildings that are potentially vulnerable to seismic events. DOGAMI surveyed 33 sites in Baker County; 46 sites in Grant County; 54 sites in Union County; and 25 sites in Wallowa County. DOGAMI scored each building with a 'low,' 'moderate,' 'high,' or 'very high' potential of collapse in the event of an earthquake. It is important to note that these rankings represent a probability of collapse based on limited observed and analytical data and are therefore approximate rankings.[17]To fully assess a building's potential of collapse, a more detailed engineering study completed by a qualified professional is required, but the RVS study can help to prioritize which buildings to retrofit. The following tables: EQ-3 through EQ-6 represent the sites that received either scores of 'high' or 'very high.' There are 11 of these sites in Baker County, 14 in Grant County, 16 in Union County, and 6 in Wallowa County. The X's on the following tables indicate the number of buildings on each site that fall into that collapse score categories.

Table EQ-5 Baker County DOGAMI Building Collapse Potential Scores

Facility	Collapse Potential Level			
	Low (< 1%)	Moderate (>1%)	High (>10%)	Very High (100%)
Baker High School (6 Buildings)		XXXX		XX
Baker Middle School (2 Buildings)			XX	
Brooklyn Elementary School (1 Building)				X
Haines Elementary School (1 Building)			X	
North Baker Elementary School (2 Buildings)			X	X
South Baker Elemetary School (2 Buildings)		X		X
Burnt River School (3 Buildings)	X	X		X
Halfway Elementary School (2 Buildings)	X		X	
Pine Eagle High School (2 Buildings)		X		X
Sumpter Fire Department (1 Building)			X	
Unity Fire Department (1 Building)				X

Source: DOGAMI 2007. Open File Report 0-07-02. Statewide Seismic Needs Assessment Using Rapid Visual Assessment.

[17]State of Oregon Department of Geologic and Mineral Industries, "Implementation of 2005 Senate Bill 2 Relating to Public Safety, Seismic Safety and Seismic Rehabilitation of Public Building", May 22, 2007, Open File Report 0-07-02.

Table EQ-6 Grant County DOGAMI Building Collapse Potential Scores

Facility	Collapse Potential Level			
	Low (< 1%)	Moderate (>1%)	High (>10%)	Very High (100%)
Dayville School (3 Buildings)	XX		X	
Grant Union High School (5 Buidlings)		X		XXXX
Humbolt Elementary school (3 Buildings)	XX			X
Mount Vernon Middle School (5 Buildings)	X		XX	XX
Seneca Elementary School (3 Buildings)			X	XX
Long Creek School (3 Buildings)			XXX	
Monument School (4 Buildings)	X		XX	X
Prairie City School (7 Buildings)	XX		X	XXXX
Oregon State Police (1 Building)			X	
John Day Police Department (1 Building)			X	
Long Creek Fire Department (2 Buildings)			XX	
John Day Fire Department (2 Buildings)				XX
Prairie City FD and Police (1 Building)			X	
Seneca Volunteer FD (1 Building)				X

Source: DOGAMI 2007. Open File Report 0-07-02. Statewide Seismic Needs Assessment Using Rapid Visual Assessment.

Table EQ-7 Union County DOGAMI Building Collapse Potential Scores

Facility	Collapse Potential Level			
	Low (< 1%)	Moderate (>1%)	High (>10%)	Very High (100%)
Cove School (6 Buildings)	XX		X	XXX
Elgin High School (2 Buildings)				XX
Stella Mayfield Elementary (3 Buildings)			X	XX
Imbler High School (4 Buildings)			X	XXX
Central Elementary (1 Buildings)			X	
Greenwood Elementary (2 Buildings)				XX
Island City Elementary (2 Buildings)		X	X	
La Grande High School (5 Buildings)	X		X	XXX
La Grande Middle School (2 Buildings)		X	X	
Willow Elementary School (3 Buildings)			X	XX
Powder Valley School (4 Buildings)			XX	XX
Union Elementary School		X	XX	
Union High School (2 Buildings)			X	X
Union City Police Dept (1 Building)			X	
Grande Ronde Hospital (4 Buildings)		X		XXX
La Grande 9-1-1 Center (1 Building)				X

Source: DOGAMI 2007. Open File Report 0-07-02. Statewide Seismic Needs Assessment Using Rapid Visual Assessment.

Table EQ-8 Wallowa County DOGAMI Building Collapse Potential Scores

Facility	Collapse Potential Level			
	Low (< 1%)	Moderate (>1%)	High (>10%)	Very High (100%)
Enterprise High School (5 Buildings)			XXXXX	
Joseph High School (2 Buildings)	X		X	
Wallowa Elementary School (5 Buildings)	X		XX	XX
Lostine VFD (1 Building)			X	
Enterprise Fire Department (1 Building)				X
Wallowa EOC (1 Building)			X	

Source: DOGAMI 2007. Open File Report 0-07-02. Statewide Seismic Needs Assessment Using Rapid Visual Assessment.

Of the sites evaluated by DOGAMI using RVS, 45 buildings have high (greater than 10% chance) collapse potential; and52 buildings have very high (100% chance) collapse potential. The sites that had buildings with a score of very high were given independent action items that can be found in the Earthquake Mitigation Action Items Section.

Existing Hazard Mitigation Activities

Mitigation through either regulatory or non-regulatory, voluntary strategies allow communities to gain cooperation, educate the public and provide solutions to ensure safety in the event of an earthquake.[18]

Individual Preparedness

At an individual level, preparedness for an earthquake is minimal as perception and awareness of earthquake hazards are low.[19] Strapping down heavy furniture, water heaters and expensive personal property as well as having earthquake insurance, is a step towards earthquake mitigation.

Earthquake Awareness Month

April is Earthquake Awareness Month. Oregon Military Department – Office of Emergency Management coordinates activities such as earthquake drills and encourages individuals to strap down computers, heavy furniture and bookshelves in homes and offices.

School Education

Schools conduct earthquake drills regularly throughout Oregon and teach students how to respond when an earthquake event occurs.

[18] Planning for Natural Hazards: Oregon Technical Resource Guide, Community Planning Workshop, (July 2000), p. 8-20.

[19] Darienzo, Mark, Oregon Military Department – Office of Emergency Management, Personal Interview, (February 22, 2001).

Building Codes

The Oregon State Building Codes Division adopts statewide standards for building construction that are administered by the state, cities and counties throughout Oregon. The codes apply to new construction and to the alteration of, or addition to, existing structures. Within these standards are six levels of design and engineering specifications that are applied to areas according to the expected degree of ground motion and site conditions that a given area could experience during an earthquake. The Structural Code requires a site-specific seismic hazard report for projects including critical facilities such as hospitals, fire and police stations, emergency response facilities, and special occupancy structures, such as large schools and prisons.

The seismic hazard report required by the Structural Code for essential facilities and special occupancy structures considers factors such as the seismic zone, soil characteristics including amplification and liquefaction potential, any known faults, and potential landslides. The findings of the seismic hazard report must be considered in the design of the building. The Dwelling Code incorporates prescriptive requirements for foundation reinforcement and framing connections based on the applicable seismic zone for the area. The cost of these requirements is rarely more than a small percentage of the overall cost for a new building.

Requirements for existing buildings vary depending on the type and size of the alteration and whether there is a change in the use of the building that is considered more hazardous. Oregon State Building Codes recognize the difficulty of meeting new construction standards in existing buildings and allow some exception to the general seismic standards. Upgrading existing buildings to resist earthquake forces is more expensive than meeting code requirements for new construction. The state code only requires seismic upgrades when there is significant structural alteration to the building or where there is a change in use that puts building occupants and the community at greater risk.

Local building officials are responsible for enforcing these codes. Although there is no statewide building code for substandard structures, local communities have the option of adopting a local building code to mitigate hazards in existing buildings. Oregon Revised Statutes allow municipalities to create local programs to require seismic retrofitting of existing buildings within their communities. The building codes do not regulate public utilities or facilities constructed in public right-of-way, such as bridges.

Earthquake Mitigation Action Items

The following actions have been identified by the Baker County, Baker City, Halfway, Grant County, John Day, Union County, La Grande, Wallowa County, and Enterprise Steering Committees, and are recommended for mitigating the potential effects of earthquake in the various identified jurisdictions. Below you will find a brief description, title, of the action item, see the full action item worksheet in Appendix A or within the city addendum for a full description of the action item.

Table EQ-9 Earthquake Mitigation Action Items

Action Item	Priority	Proposed Action Title	Action Item Form Page Number	Affected Jurisdictions								
				Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
EQ #1		Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	A-35	X	X	X	X	X	X	X	X	X
EQ #2		Seismically retrofit The Unity Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-37	X								
EQ #3		Seismically retrofit North Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-39	X	X							
EQ #4		Seismically retrofit South Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-41	X	X							
EQ #5		Seismically retrofit Baker High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural	A-43	X	X							
EQ #6		Seismically retrofit Pine Eagle High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-45	X	X							
EQ #7		Seismically retrofit Brooklyn Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit	A-47	X	X							
EQ #8		Seismically retrofit Burnt River School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	A-49	X								
EQ #9		Seismically retrofit the John Day Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	A-51				X	X				
EQ #10		Seismically retrofit Mount Vernon Middle School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-53				X					
EQ #11		Seismically retrofit Prairie City School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit	A-55				X					
EQ #12		Seismically retrofit Grant Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-57				X					
EQ #13		Seismically retrofit Humbolt Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-59				X					
EQ #14		Seismically retrofit Seneca Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-61				X					
EQ #15		Seismically retrofit Monument School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural	A-63				X					
EQ #16		Seismically retrofit the Grande Ronde Hospital to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-65						X	X		
EQ #17		Seismically retrofit the La Grande City Police Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	A-67						X	X		

Table EQ-9 Earthquake Mitigation Action Items (continued)

Action Item	Priority	Proposed Action Title	Action Item Form Page Number	Affected Jurisdictions								
				Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
EQ #18		Seismically retrofit Willow Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	A-69						X	X		
EQ #19		Seismically retrofit La Grande High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-71						X	X		
EQ #20		Seismically retrofit Greenwood Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-73						X	X		
EQ #21		Seismically retrofit Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit	A-75						X			
EQ #22		Seismically retrofit Imbler High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural	A-77						X			
EQ #23		Seismically retrofit Stella Mayfield Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-	A-79						X			
EQ #24		Seismically retrofit Powder Valley School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit	A-81						X			
EQ #25		Seismically retrofit Cove School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	A-83						X			
EQ #26		Seismically retrofit Elgin High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	A-85						X			
EQ #27		Seismically retrofit the Enterprise Fire Department and City Hall to reduce the building's vulnerability to seismic hazards. Consider both structural and	A-87								X	X
EQ #28		Seismically retrofit Wallowa Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit	A-89								X	

FLOOD HAZARD ANNEX

Causes and Characteristics of Flood

Flooding results when rain and snowmelt creates water flow that exceed the carrying capacity of rivers, streams, channels, ditches, and other watercourses. In Oregon, flooding is most common from October through April when storms from the Pacific Ocean bring intense rainfall. Most of Oregon's most destructive natural disasters have been floods.[1] Flooding can be aggravated when rain is accompanied by snowmelt and frozen ground; the spring cycle of melting snow is the most common source of flood in the region.

Anticipating and planning for flood events is an important activity for Northeast Oregon. Federal programs provide insurance and funding to communities engaging in flood hazard mitigation. The Federal Emergency Management Association (FEMA) manages the National Flood Insurance Program (NFIP) and the Hazard Mitigation Grant Program (HMGP). The NFIP provides flood insurance and pays claims to policyholders who have suffered losses from floods. The HMGP provides grants to help mitigate flood hazards through activities such as elevating structures or relocating or removing them from flood hazard areas. These programs provide grant money to owners of properties who have suffered losses from floods, and in some cases, suffered losses from other natural hazard events.

The most damaging floods have occurred during the winter months, when warm rains from tropical latitudes melt mountain snow packs. Such conditions were especially noteworthy in February 1957, February 1963, December 1964 and January 1965. Somewhat lesser flooding has been associated with ice jams, normal spring run-off, and summer thunderstorms. Heavily vegetated stream banks, low stream gradients (e.g. Grande Ronde Valley), and breeched dikes have contributed to past flooding at considerable economic cost. Northeast Oregon counties also have experienced flooding associated with low bridge clearances, over-topped irrigation ditches, and natural stream constrictions

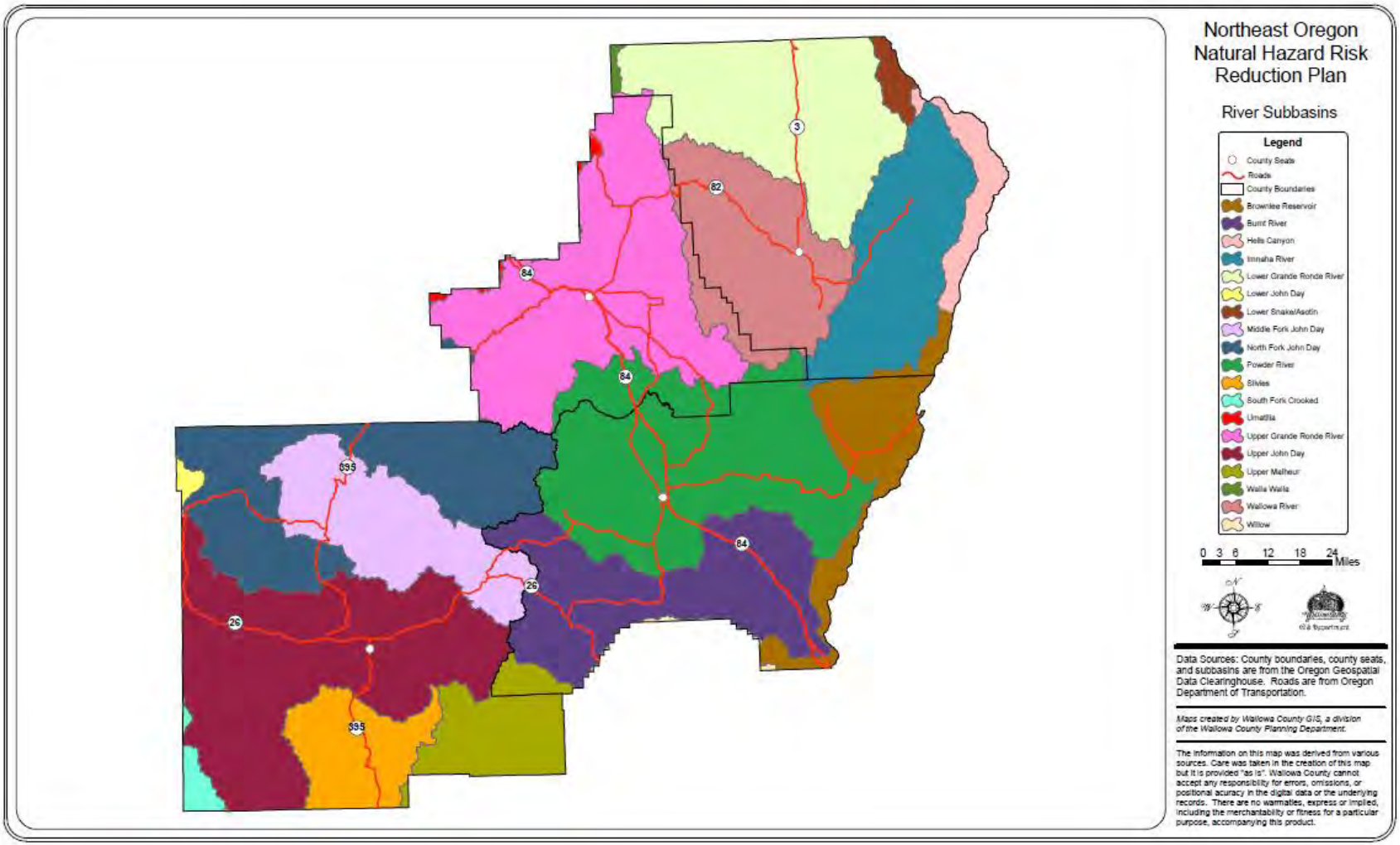
The principal types of floods that occur in Northeast Oregon include:

Riverine Flooding

Riverine floods occur when water levels in rivers and streams overflow their banks. Most communities located along such water bodies have the potential to experience this type of flooding after spring rains, heavy thunderstorms or rapid runoff from snow melt. Riverine floods can be slow or fast rising, but usually develop over a period of days. The danger of riverine flooding occurs mainly during the winter months, with the onset of persistent, heavy rainfall, and during the spring, with melting of snow. Figure FL-1 on the next page shows the river subbasins in Northeast Oregon, which are the sources of riverine flooding.

[1] Taylor, George H. and Chris Hannan. The Oregon Weather Book. Corvallis, OR: Oregon State University Press. 1999

Figure FL-1 Map of Northeast Oregon River Subbasins



Source: Wallowa County Planning Department, GIS. County boundaries, county seats, and subbasins are from Oregon Geospatial Clearinghouse, Roads are from ODOT.

Local Flash Floods

Summer thunderstorms are common throughout the region. During these events, normally dry gulches can quickly become raging torrents -- a flash flood. Flash floods are most common to Eastern Oregon and pose a real threat to the Northeast Oregon Counties.[2] This is because summer temperatures are much higher east of the Cascades and thunderstorms are common during the summer months. Although flash flooding occurs throughout Oregon, local geology in the region can increase the impact of this hazard. Bedrock, composed mostly of igneous rocks, is exposed at the surface throughout much of the region. Consequently, runoff is increased significantly. Lower elevations surrounded by mountains in the Region, such as Baker City or Unity receive barely 10 inches of precipitation annually.[3] This is enough precipitation, however, to make flood events an annual occurrence. These flash floods typically occur in isolated areas, such as in canyons and other natural drainages. Flash flood events can also be caused by rapid spring snowmelt.

Shallow Area Floods

These floods are a special type of riverine flooding. FEMA defines a shallow area flood hazard as an area that is inundated bya 100-year flood with a flood depth between one to three feet. Such areas are generally flooded by low velocity sheet flows of water.



Flooding near John Day/Canyon City damaged the Grant-Union High School in 2010

Snowmelt Flooding

Flooding throughout the region is most commonly linked to the spring cycle of melting snow. The weather pattern that produces these floods occurs during the winter months and has come to be associated with La Nina events, a three to seven year cycle of cool, wet weather. In brief, cool, moist weather conditions are followed by a system of warm, moist air from tropical latitudes. The intense warm air associated with this system quickly melts foothill and mountain snow. Above-freezing temperatures may occur well above pass levels (4,000-5,000 feet). Such conditions were especially noteworthy with low bridge clearances which have particularly damaged Northeast Oregon areasa as seen in the recent flooding of the Grant-Union High School. The recent 2011 flooding in Pine Valley was also the result of snowmelt flooding.

[2] Ibid
[3] Oregon Climate Services "The Climate of Oregon Climate Zone 8 Northeast Area," 1983 http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/5911/SR%20no.%20920_OCR.pdf?sequence=1 Accessed May 2013

Terms Related To Flooding

Floodplain

A floodplain is land adjacent to a river, stream, lake, estuary or other water body that is subject to flooding. These areas, if left undisturbed, act to store excess floodwater. The floodplain is made up of two areas: the flood fringe and the floodway:

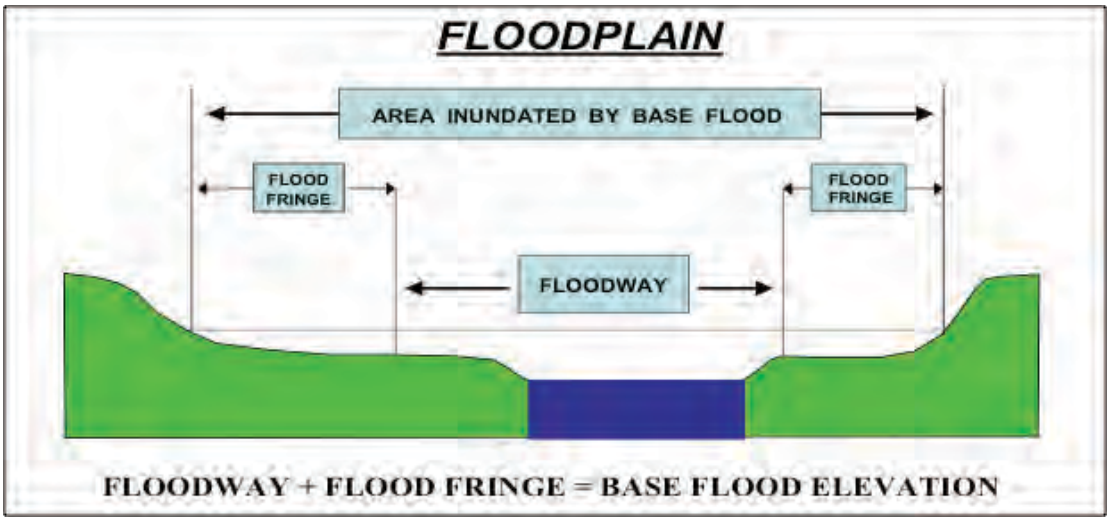
Floodway

The floodway is the portion of the floodplain that is closer to the river or stream. For National Flood Insurance Program (NFIP) and regulatory purposes, floodways are defined as the channel of a river or stream, and the over-bank areas adjacent to the channel. Unlike floodplains, floodways do not reflect a recognizable geologic feature. The floodway carries the bulk of the floodwater downstream and is usually the area where water velocities and forces are the greatest. NFIP regulations require that the floodway be kept open and free from development or other structures, so that flood flows are not obstructed or diverted onto other properties. The NFIP floodway definition is "the channel of a river or other watercourse and adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one foot (See Figures FL-3 and FL-4)." Floodways are not mapped for all rivers and streams but are typically mapped in developed areas.

The Flood Fringe

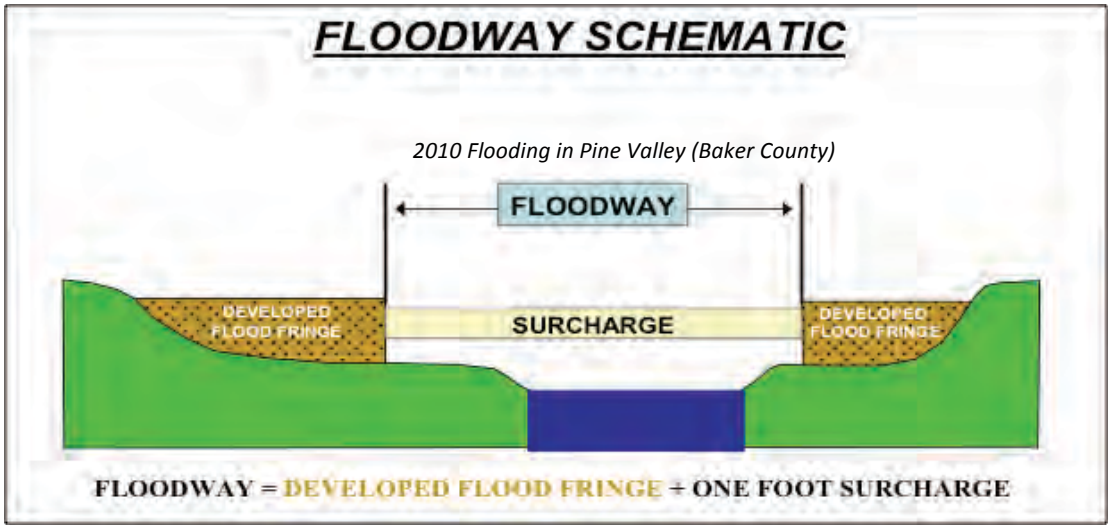
The flood fringe refers to the outer portions of the floodplain, beginning at the edge of the floodway and continuing outward. This is the area where development is most likely to occur, and where precautions to protect life and property need to be taken (See Figure FL-3).

Figure FL-3 Floodplain Schematic



Source: Department of Land Conservation and Development

Figure FL-4 Floodway Schematic



Source: Department of Land Conservation and Development

Factors that Affect Flooding in Northeast Oregon

Precipitation



The northeast region's precipitation is well distributed year round with annually low levels -- approximately16 inches per year.[4] Mountainous regions, such as the top of Wallowa Mountains may exceed 100 inches of precipitation per year, primarily in the form of snow.[5]Locations surrounded by mountains, such as Baker City and Unity, receive barely 10 inches per year.[6]This is in sharp contrast to the 37 to 50 inches normally seen in other parts of the Pacific Northwest. Low levels of precipitation are due in part by the rain shadow effect caused by the Cascade Mountains. Summer precipitation is very low, increasing the risk of wildfire and requiring irrigation for crops.

There are large seasonal variations in temperature ranging from high temperatures of 80 to 90 degrees F from June to September to average highs of low teens in the winter months. In most winters, there are frequent and severe winter storms characterized by temperature, wind velocity, ground saturation, and snow pack. Winter storms can slow or halt traffic, damage power lines, and kill livestock.

[4]The Oregon Climate Service, NOAA Climate Stations. "1971-2000 Climate of Baker County", "1971-2000 Climate of Grant County","1971-2000 Climate of Union County", "1971-2000 Climate of Wallowa County."
[5]The Oregon Climate Service, NOAA Climate Stations."Climate of Wallowa County"
[6] Oregon Climate Services "The Climate of Oregon Climate Zone 8 Northeast Area," 1983

Geography

The Northeast Region encompasses approximately 12,808 square miles.[7] The Blue Mountain area of northeastern Oregon is quite distinct from the rest of the state in landform and climate. The region is bordered by the Snake River to east and the Columbia River to the north. Columbia River Basalt lava flows formed the high plateaus of the region; the two major mountain ranges are the Blue and Wallowa Ranges. Major rivers include the John Day, Grand Ronde, and the Snake.[8]

Location of Development

When development is located in the floodplain, it may cause floodwaters to rise higher than before the development was located in the hazard areas. This is particularly true if the development is located within the floodway. When structures or fill are placed in the floodplain, water is displaced. Development raises the base- flood elevation by forcing the river to compensate for the flow space obstructed by the inserted structures. Over time, when structures or materials are added to the floodplain and no fill is removed to compensate, serious problems can arise. The County Comprehensive Plans minimizes most development in the floodway; only under certain circumstances does it allow development in the floodplain.

Displacement of a few inches of water can mean the difference between no structural damage occurring in a given flood event and the inundation of many homes, businesses, and other facilities. Careful attention must be paid to development that occurs within the floodplain and floodway of a river system to ensure that structures are prepared to withstand base flood events.

Federal agencies own approximately 51.5% of the land in Baker County, comprising a total of 1,016,511 acres. The Baker County Natural Resources Plan references its land ownership: approximately one third of Baker is owned by the US Forest Service[9](USFS), 18.5% is owned by the Bureau of Land Management (BLM) and approximately 0.5% of Baker County, is managed by the State of Oregon.[10]The remaining 48% of the land in the county is privately owned. Land use in Baker County is predominately dedicated to agriculture and timber, as well as mining, and wilderness areas.[11] These natural resources also play an important part in Baker County's economy.[12]

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7 Oregon Blue Book, County Government, http://bluebook.state.or.us/local/counties/counties.htm; Baker 3,089 sq. mi., Grant 4,528 sq. mi., Union 2,038 sq. mi., 3,153 sq. mi; Accessed May 2013

8 Loy, W.G., ed. 2001. Atlas of Oregon, 2nd Edition. Eugene: University of Oregon Press.

9 652,265 acres. USFS Northeast Oregon Land Zone Realty Specialist

10 10,067 Acres; Baker County Assessors Office; to read more visit the Baker County Natural Resource Plan: http://www.bakercounty.org/natural_resources/docs/NRPlan_FINAL_12222010.pdf

11 Baker County Natural Resource Plan http://www.bakercounty.org/natural_resources/docs/NRPlan_FINAL_12222010.pdf; 1,129,662 acres could be used for agricultural production

12 For more information about the role of natural resources on Baker County's economy visit the Baker County Economic Vulnerability Section of the Community Profile

Grant County spans approximately 4,528 square miles.[13] A large percentage of this land is owned by government agencies, approximately 62%.[14] Nearly 90 percent of the County is dedicated to forest or farm land,[15] making them the almost exclusive use of land. Grant County is therefore dependent on natural resources economically, regarded as a "total dependence" in Grant County's Comprehensive Land Use Plan.[16]

Union County spans approximately 2,038 square miles.[17] Of this land 52% is private and 47.5% is federally owned.[18] The federally owned land is almost exclusively dedicated to United States Forest Service, which owns 47% of the total land.[19] The Union County Comprehensive Plan requires more specifically addressed flood regulation zoning ordinances in La Grande, areas along Willow Creek in the city limits of Summerville, additional lands near the Grande Ronde River, and small stream side hill runoff areas around the perimeter of the valley.[20] The Comprehensive Plan also mentions the potential for landslide in the county and that "future development should be particularly cautious of the basalt formations that have thick layers of tuff interbedded within."[21]

Wallowa County is approximately 3,153 square miles.[22]Approximately 60% of the land area is publicly owned, of which land is administered by various federal, state, and local agencies.[23] The Wallowa County Comprehensive Plan has recommendatory provisions for flood prone areas and claims that the "present flood plain maps are inadequate in detail to be used for zoning or other regulatory purposes."[24]

The ownership of land is summarized in table FL-1 below.

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13 Oregon Blue Book "Grant County" http://bluebook.state.or.us/local/counties/counties12.htm Accessed May 2013

14 Total land management in acres: Private lands 1,111,279; BLM: 171,481; NPS: 6,688; USFS: 1,578,714; Grant County: 800; Baker County: 5; Hood River County: 14,064; ODFW: 29,076. Grant County CWPP 2013 "Grant County Profile"

15 Grant County Comprehensive Land Use Plan 1996

16 Ibid; Goal IX: Economic Element, the Comprehensive Plan calls for diversifying economically. For more information about the role of natural resources on Grant County's economy visit the Grant County Economic Vulnerability Section of the Community Profile

17 Oregon Blue Book "Union County" http://bluebook.state.or.us/local/counties/counties31.htm Accessed May 2013

18 Reid, Rebecca L., Oregon: A Statistical Overview: 2002, Southern Oregon Regional Services Institute, Southern Oregon Regional Services Institute, Southern Oregon University. Ashland, Oregon, May 2002.

19 Ibid

20 Union County Comprehensive Plan "Flood Hazards" 1979

21 Ibid "Landslide Hazards"

22 Oregon Blue Book "Wallowa County" http://bluebook.state.or.us/local/counties/counties32.htm Accessed May 2013

23 Wallowa County Community Wildfire Protection "Wallowa County Profile and Fire History" Plan 2006

24 Wallowa County Comprehensive Plan "VII: Areas Subject to Natural Disasters and Hazards" 1995

Table FL-1 Land Ownership by County

	Baker	Grant	Union	Wallowa
Total Land Area	3,089	4,258	2,038	3,153
Private	48.0%	38.0%	52.0%	40.0%
Bureau of Land Management	18.5%	-	-	-
US Forest Service	33.0%	-	47.0%	-
State of Oregon	0.5%	-	-	-
Other Government Agencies	-	62.0%	1.0%	60.0%

Source: see location of development section above.

Surface Permeability

In urbanized areas, increased pavement leads to an increase in volume and velocity of runoff after a rainfall event, exacerbating potential flood hazards. Storm water systems collect and concentrate rainwater and then rapidly deliver it into the local waterway. Traditional storm water systems are a benefit to urban areas, by quickly removing captured rainwater. However, they can be detrimental to areas downstream because they cause increased stream flows due to the rapid influx of captured storm water into the waterway. It is very important to evaluate storm water systems in conjunction with development in the floodplain to prevent unnecessary flooding to downstream properties. Frozen ground is another contributor to rapid runoff in the urban and rural environment.

Table FL-2 shows the locations of the principal flood sources that affect Northeast Oregon. There are many small streams and tributaries in Northeast Oregon as well. These streams become inundated with excess flow from heavy rains and snow runoff.

Table FL-2 Principal Flood Sources

Baker County	Grant County	Union County	Wallowa County
Powder River	North Fork John Day River	Grande Ronde River	Wallowa River
Old Settler's Slough	South Fork John Day River	Catherine Creek	Minam River
Pine Creek	Middle Fork John Day River	North Powder River	Lostine River
Eagle Creek	Canyon Creek	Taylor Creek	Imnaha River
Mill Creek		Fresno Creek	Hurricane Creek
Marble Creek		Clark Creek	Prairie Creek
Stices Gulch		Indian Creek	
Snake River		Wolf Creek	
Burnt River			

Sources: FEMA, Baker County Flood Insurance Study (FIS), 06/03/88; FEMA, Grant County Flood Insurance Study (FIS) 05/18/82; FEMA, Union County Flood Insurance Study (FIS), 04/03/96; FEMA, Wallowa County Flood Insurance Study (FIS), 02/17/88.

History of Floods in Northeast Oregon

The table below shows the history of major flood events within Northeast Oregon

Table FL-3 Flooding History in Northeast Oregon

Date	Location	Description	Type of Flood
1894	NE Oregon	Widespread flooding	Not recorded
1910	NE Oregon	Widespread flooding	Not recorded
1917	NE ORegon	Widespread flooding	Not recorded
1932	NE Oregon	Widespread flooding	Not recorded
1935	NE Oregon	Widespread flooding	Not recorded
May, 1948	Columbia Basin/ NE Oregon	Unusually large snow melt produced widespread flooding	Snow melt

Source: Taylor, George and Raymond Hatton, 1999, the Oregon Weather Book pp 96-103; and FEMA, Baker County Flood Insurance Study (FIS), 06/03/88; FEMA, Grant County Flood Insurance Study (FIS) 05/18/82; FEMA, Union County Flood Insurance Study (FIS), 04/03/96; FEMA, Wallowa County Flood Insurance Study (FIS), 02/17/88.

Table FL-3 Flooding History in Northeast Oregon (continued)

Date	Location	Description	Type of Flood
Dec. 1955- Jan. 1956	Snake and Columbia basins	Warm rain melted snow. Runoff on frozen ground	Rain on snow (ROS)
Dec. 1964	Entire State	Widespread, very destructive flooding, warm rain, melted snow; runoff on frozen ground	ROS
Jan., 1974	Much of state	Warm rain / melted snow / runoff on frozen ground	ROS
Feb., 1986	Enire State	Warm rain / melted snow / runoff on frozen ground	ROS
June, 1986	Wallowa County	Severe thunderstorm / rain and hail / flash flooding	Thunderstorm
May, 1991	Union and Baker Counties	Warm rain / melted snow; considerable damage to cropland and highways. A number of bridges were destroyed	ROS
May, 1998	Eastern and Central Oregon	Persistent rains; widespread damage	ROS
June, 2010	Northeast Oregon	Flooding occurred on Little Creek, Mile Creek, Imnaha River, John Day River, Wallowa River, and Grande Ronde River. Flood damage to city of Union from Little Creek. Flood damage also occurred in Baker County (Upper Pine Valley) due to Clear Creek.	Heavy Rain/ ROS
January, 2011	Wallowa County	Minor damage to homes in the Troy area.	ROS
January, 2011	Grant County	Mount Vernon and John Day sustained minor flooding	ROS
May, 2011	Baker City	Powder River in and around Baker City flooded. Minor flooding experienced.	ROS
May, 2011	Grant County	Canyon City, John Day, Prairie City, and Mount Vernon were flooded along with other areas along the John Day River. Grant Union High School and several basements in Canyon City were flooded	ROS
April, 2012	Wallowa County	Flooding along the Imnaha River	ROS

Source: FEMA, Oregon Severe Storms/ Floodinghttps://home.fema.gov/news/event.fema?id=672; National Climate Data Center Storm events Database http://www.ncdc.noaa.gov/stormevents

Risk Assessment

How are Hazards Identified?

Northeast Oregon's flood hazards are identified through its FEMA issued Flood Insurance Rate Maps (FIRM), in conjunction with their Flood Insurance Studies (FIS). Flood records are often not well documented, particularly in unincorporated areas because their floodplains are sparsely developed.[25] Flooding is usually caused by heavy rainfall and snowmelt when soil is near saturation. The Northeast Oregon Flood Insurance Rate Maps (FIRMs), like much of eastern Oregon are not modernized.

Repetitive Flood Loss in Northeast Oregon

Repetitive flood loss properties (those which have experienced multiple flood insurance claims) have been identified as high priority hazard projects by the NFIP. Nationwide, 40% of all flood insurance claims are paid on just two-percent of insured properties. In Oregon, repetitive loss properties represent about one-percent of all insured properties, and account for about 14% of all claims paid (19% of the dollar amounts paid).[26]

Flood Insurance Details

The table below shows that as of June 2013, Baker County (including the cities of Baker City, Halfway, and Sumpter) has 130 National Flood Insurance Program (NFIP) policies in force, three total paid claims and zero repetitive loss buildings. There has been a recent Community Assistance Visits (CAVs) for Baker County and Baker City in 2011. The county has no repetitive flood loss properties and is not a member of the Community Rating System (CRS). The table below shows that none of the cities have repetitive flood loss properties nor currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 16 non-residential structures with flood insurance policies.

[25]Baker County Flood Insurance Study NFIP, 6/3/89; Grant County FIS NFIP, 5/18/1982; Union County FIS NFIP, 4/3/1996; Wallowa County FIS, NFIP 2/17/88

[26]State Natural Hazards Mitigation Plan 3-FL-9

Table FL-4 Baker County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Baker County	-	173	123	153	0	4	16
Baker County*	6/3/88	43	29	38	0	0	5
Baker City	6/3/88	125	91	111	0	4	10
Green Horn	Not Mapped	NA	NA	NA	NA	NA	NA
Haines	6/3/88	0	0	0	0	0	0
Halfway	6/3/88	3	3	2	0	0	1
Huntington	6/3/98	0	0	0	0	0	0
Sumpter	6/3/98	2	0	2	0	0	0

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage Claims	Repetitive Loss Buildings	Total Paid Amount	CRS Class Rating	LAST CAV
Baker County	$22,549,700	3	0	0	$29,769	-	$111,424
Baker County*	$6,709,100	1	0	0	$4,278	NP	10/12/11
Baker City	$15,336,600	2	0	0	$25,491	NP	10/12/01
Green Horn	NA	NA	NA	NA	NA	NP	NA
Haines	$0	0	0	0	$0	NP	7/1/91
Halfway	$324,000	0	0	0	$0	NP	NA
Huntington	$0	0	0	0	$0	NP	NA
Sumpter	$180,000	0	0	0	$0	NP	NA

Source: Information compiled by Department of Land Conservation and Development

The table below shows that as of June 2013, Grant County (including the cities of Canyon City, Dayville, John Day, Long Creek, Mt. Vernon, and Prairie City) has 106 National Flood Insurance Program (NFIP) policies in force, seven total paid claims and one repetitive loss buildings. The repetitive flood loss claim in John Day resulted in $16,643 in payments over two losses. There has been a recent Community Assistance Visits (CAVs) in the last 15 years. The county The county has one repetitive flood loss property and is not a member of the Community Rating System (CRS). The table below shows that the only city with repetitive flood loss properties is John Day and none of the cities currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 19 non-residential structures with flood insurance policies.

The Community Repetitive Loss record for Grant County identifies one repetitive loss building (which is not currently insured) and two total repetitive loss claims totaling $16,644. The repetitive loss building is located within the City of John Day. There are no repetitive loss buildings within any other city in the county. The one identified repetitive flood loss (RFL) property is a single-family residential building located in Zone A03 of the existing FIRM. The property is located on NW Bridge Street, between NW 7th Avenue and NW 5th Avenue.

Table FL-5 Grant County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Grant County	-	106	72	81	3	3	19
Grant County*	5/18/82	27	16	23	0	1	3
Canyon City	9/18/87	11	10	10	0	0	1
Dayville	9/24/84	1	0	1	0	0	0
Granite	Not Mapped	NA	NA	NA	NA	NA	NA
John Day	2/23/82	48	31	31	2	2	13
Long Creek	9/24/84	1	1	1	0	0	0
Monument	9/24/84	0	0	0	0	0	0
Mt. Vernon	9/18/87	16	12	13	1	0	2
Prairie City	2/17/88	2	2	2	0	0	0
Seneca	9/24/84	0	0	0	0	0	0

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage Claims	Repetitive Loss Buildings	Total Paid Amount	CRS Class Rating	LAST CAV
Grant County	$11,498,400	7	1	1		-	-
Grant County*	$2,919,400	0	0	0	$0	NP	6/29/94
Canyon City	$1,231,800	0	0	0	$0	NP	7/1/89
Dayville	$113,000	0	0	0	$0	NP	NA
Granite	NA	NA	NA	NA	NA	NA	NA
John Day	$5,678,800	7	1	1	$51,094	NP	6/14/93
Long Creek	$25,000	0	0	0	$0	NP	NA
Monument	$0	0	0	0	$0	NP	NA
Mt. Vernon	$1,185,400	0	0	0	$0	NP	6/14/93
Prairie City	$345,000	0	0	0	$0	NP	7/1/89
Seneca	$0	0	0	0	$0	NP	NA

Source: Information compiled by Department of Land Conservation and Development

The table below shows that as of June 2013, Union County (including the cities of Cove, Elgin, Island City, La Grande, Summerville, and Union) has 193 National Flood Insurance Program (NFIP) policies in force, 13 total paid claims and one repetitive loss building. There has been a recent Community Assistance Visits (CAVs) for Union County, La Grande, and Union in 2004. The county has one repetitive flood loss property and is not a member of the Community Rating System (CRS). The table below shows that none of the cities have repetitive flood loss properties nor currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 28 non-residential structures with flood insurance policies.

The Community Repetitive Loss record for Grant County identifies one repetitive loss building (which is currently insured) and four total repetitive loss claims totaling $17,526. The repetitive loss building is located in Union County. There are no repetitive loss buildings within any city in the county. The one identified repetitive flood loss (RFL) property is a single-family residential building located in Zone C of the existing FIRM. The property is located on N College Street, between Willowdale Lane and E Bryan Street.

Table FL-6 Union County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Union County	-	193	128	150	9	6	28
Union County*	4/3/96	50	30	35	0	0	15
Cove	never mapped	NA	NA	NA	NA	NA	NA
Elgin	11/15/78	9	7	7	0	0	2
Island City	9/30/87	8	6	6	1	0	1
La Grande	4/3/96	78	56	58	8	6	6
North Powder	6/29/78	0	0	0	0	0	0
Summerville	1/15/80	2	1	2	0	0	0
Union	12/15/78	46	28	42	0	0	4

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage	Repetitive Loss	Total Paid Amount	CRS Class Rating	LAST CAV
Union County	$33,963,000	13	0	0	$91,174	-	-
Union County*	$8,765,000	5	0	1*	$33,921	NP	4/29/04
Cove	NA	NA	NA	NA	NA	NA	NA
Elgin	$1,593,000	0	0	0	$0	NP	9/17/92
Island City	$1,539,800	0	0	0	$0	NP	9/17/92
La Grande	$14,452,300	4	0	0	$38,334	NP	4/29/04
North Powder	$0	0	0	0	$0	NP	7/1/91
Summerville	$245,000	0	0	0	$0	NP	NA
Union	$7,367,900	4	0	0	$18,919	NP	4/28/04

Source: Information compiled by Department of Land Conservation and Development

The table below shows that as of June 2013, Wallowa County (including the cities of Enterprise, Joseph, Lostine, and Wallowa) has 109 National Flood Insurance Program (NFIP) policies in force, three total paid claims and zero repetitive loss buildings. There has been a recent Community Assistance Visits (CAVs) for Enterprise in 2011. The county has no repetitive flood loss properties and is not a member of the Community Rating System (CRS). The table below shows that none of the cities have repetitive flood loss properties nor currently participate in the CRS. The table displays the number of policies by building type and shows that the majority of residential structures that have flood insurance policies are single-family homes and that there are 19 non-residential structures with flood insurance policies.

Table FL-7 Wallowa County Flood Insurance Detail

Jurisdiction	Current FIRM Map	Policies	Pre-FIRM	Policies by Building Type			
				Single Family	2 to 4 Family	Other Residential	Non-Residential
Wallowa County	-	109	74	85	3	2	19
Wallowa County*	2/17/88	32	20	29	0	0	3
Enterprise	2/17/88	68	48	49	3	2	14
Joseph	2/17/88	3	2	3	0	0	0
Lostine	2/17/88	1	0	1	0	0	0
Wallowa	2/17/88	5	4	3	0	0	2

Jurisdiction	Insurance in Force	Total Paid Claims	Substantial Damage Claims	Repetitive Loss Buildings	Total Paid Amount	CRS Rating Class	LAST CAV
Wallowa County	$19,693,700	3	0	0	$16,288	-	-
Wallowa County*	$7,652,000	2	0	0	$15,788	NP	11/4/98
Enterprise	$10,674,500	0	0	0	$0	NP	9/11/11
Joseph	$630,000	0	0	0	$0	NP	11/4/98
Lostine	$350,000	0	0	0	$0	NP	NA
Wallowa	$387,200	1	0	0	$500	NP	12/14/99

Source: Information compiled by Department of Land Conservation and Development

Hazard Risk Analysis

The participating Steering Committees, during this update, completed jurisdiction specific hazard risk analyses, based upon the previous plan's analyses. Each hazard analysis, developed from a Federal Emergency Management Agency (FEMA) tool that has been refined by the Oregon Military Department – Office of Emergency Management (OEM), addresses and weights (shown as percent within parentheses) probability (29%), vulnerability (21%), maximum threat (42%) and the history (8%) of each natural hazard and attributes a final hazard analysis score. The methodology produces scores that range from 24 to 240. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation. The method provides the jurisdiction with a relative ranking from which to prioritize mitigation strategies, but does not predict the occurrence of a particular hazard (for more information on all scores see Volume I, Section 2 of this NHMP). Provided below are brief descriptions of each category:

Probability is the likelihood of future occurrence within a specified period of time.
LOW = one incident likely within 75 to 100 years scores between 1 and 3 points
MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points
HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Vulnerability includes the percentage of population and property likely to be affected under an "average" occurrence of the hazard.
LOW = less than 1% affected scores between 1 and 3 points
MEDIUM = between 1 and 10% affected scores between 4 and 7 points
HIGH = more than 10% affected scores between 8 and 10 points

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.
LOW – score at 1 to 3 points based on… < 5% affected
MEDIUM – score at 4 to 7 points based on… 5 - 25% affected
HIGH – score at 8 to 10 points based on… > 25% affected

History is the record of previous occurrences.
LOW – score at 1 to 3 points based on… 0 - 1 event past 100 years
MEDIUM – score at 4 to 7 points based on… 2 - 3 events past100 years
HIGH – score at 8 to 10 points based on… 4 or more events past100 years

The hazard risk analysis ratings, as determined by each participating Steering Committee, are shown in the following table. Within the table the probability and vulnerability scores are shown in **bold** if they are higher than in 2008, in normal text if the same or if not ranked in 2008, and with (parentheses) if they are lower than in 2008. Areas that were not rated in 2008 are denoted with an asterisk (*).

Table FL-8 Flood Hazard Risk Analysis

	Total Threat Score	Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	155	#5	High	Moderate	Moderate	High
Baker City	210	#4	**High**	Moderate	High	Moderate
Halfway	240	#1	High	High	High	High
Grant	240	#1	High	High	High	High
John Day	235	#1	High	High	High	High
Union	225	#2	High	High	High	High
La Grande	228	#2	High	High	High	High
Wallowa	187	#5	High	(Moderate)	High	High
Enterprise	226	#1	High	High	High	High

Source: County and City Steering Committee Meetings (2013)

Additionally, each of the county Steering Committees completed a "Relative Risk Assessment" that ranks "severity of impact" and "relative risk" for each hazard. For more information on these scores see Volume I, Section 2 of this NHMP. For additional information on participating city ratings see Volume III of this NHMP.

Probability of Future Occurrence

The probability of an occurrence has been assessed by FEMA and is displayed on the Federal Insurance Rate Maps (FIRM). The Federal Emergency Management Agency (FEMA) has mapped the 10, 50, 100, and 500-year floodplains in the Region 8 counties. This corresponds to a 10%, 2%, 1% and 0.2% chance of a certain magnitude flood in any given year. In addition, FEMA has mapped the 100-year floodplain (i.e., 1% flood) in the incorporated cities. The 100-year flood is the benchmark upon which the National Flood Insurance Program (NFIP) is based. Some of the maps are old and could be outdated.

One of the main aspects of the probability of a future occurrence is its reliance on historic climate trends in order to predict future climate trends. Many counties in eastern Oregon are experiencing more frequent and intense rainfall and rapid snowmelt than is historically the norm and many climate predictions see this trend continuing into the future. Temperatures in the Pacific Northwest region increased in the 20th Century by about 1.5

degrees Fahrenheit and are projected to increasingly rise by an average of 0.2 degrees to 1.0 degrees Fahrenheit per decade.[27]

Flash flooding in Grant County occurs about every four years. Spring flooding occurs regularly each year.

Vulnerability Assessment

The Northeast Oregon County Steering Committees identified a number of community assets that are vulnerable to flooding events, especially critical facilities and critical infrastructure. For instance, the Grant County stated that their County Sheriff's Office and jail are located near the river which could cause harm in the case of a flood. The Wallowa County Steering Committee indicated that there is a new home in Wallowa City for severely mentally ill close to the Wallowa River and it could be affected by flood events

Existing Hazard Mitigation Activities

There are numerous programs currently under way in Northeast Oregon designed to mitigate the effects of flooding. These programs range from federally funded national programs to individual projects by landowners. This section outlines the major mitigation activities underway in Northeast Oregon.

Federal Programs

The National Flood Insurance Program (NFIP)

The NFIP is a federal program administered by the Federal Emergency Management Agency (FEMA). The function of the NFIP is to provide flood insurance to homes and businesses located in floodplains at a reasonable cost, and to encourage the location of new development away from the floodplain. The program maps flood risk areas, and requires local implementation to reduce the risk, primarily through restricting new development in floodplains. The maps are known as Flood Insurance Rate Maps (FIRM). Baker County's FIRMs have not been updated since 1988; Union County's in 1996;[28] Grant County's in 1982; and Wallowa County's in 1988, and the maps may not reflect current flood patterns. The lack of accurate maps prevents the county from making sound planning decisions in regards to flood management.

Community Rating System (CRS)

Another program under the NFIP is the Community Rating System (CRS). This voluntary program recognizes and rewards efforts that go beyond the minimum standards of the NFIP. This recognition is in the form of reduced flood insurance premiums for communities that adopt such standards. CRS encourages voluntary community activities that reduce flood losses, facilitate accurate insurance rating, and promote flood insurance awareness.

None of the Northeast Oregon counties or cities currently participate in the Community Rating System. Participation in the CRS would allow the jurisdictions to reduce individual

[27] Climate Impacts Group, "Climate Change,"http://cses.washington.edu/cig/pnwc/cc.shtml#anchor6 Accessed February 2013

[28] The Union County revision in 1996 was a minor revision and not a complete update.

homeowners flood insurance premium rates for policy holders to reflect the reduced flood risk resulting from the county's flood hazard mitigation actions.[29] For CRS participating communities, flood insurance premium rates are discounted in increments of 5%; i.e., a Class 1 community would receive a 45% premium discount, while a Class 9 community would receive a 5% discount.[30] The table below illustrates how the CRS point system is broken down.

Table FL-9 Summary of Points and Insurance Rate Discounts under CRS

Credit Points	Class	Premium Reductions
0-499	10	0%
500-999	9	5%
1000-1499	8	10%
1500-1999	7	15%
2000-2499	6	20%
2500-2999	5	25%
3000-3499	4	30%
3500-3999	3	35%
4000-4599	2	40%
4500+	1	45%

Source: FEMA, National Flood Insurance Program, http://www.fema.gov/national-flood-insurance-program

State Programs

State Land Use Planning Goals

There are 19 statewide planning goals that guide land use in the State of Oregon. One goal in particular focuses on land use planning and natural hazards:

Goal 7: Areas Subject to Natural Disasters and Hazards, requires local governments to identify hazards and adopt appropriate safeguards for land use and development.[31] This goal is currently under review. In the wake of 1996 flood events, the governor directed state agencies to mitigate natural hazards. The Community Service Center at the University of Oregon conducted a review of Goal 7 and identified gaps in information. New information on hazards needed to be incorporated into local policies and there was no consistent evaluation of risk to people and property being conducted in the state. The Goal 7 revision also updated the list of hazards and terminology. The DLCD conducted eleven workshops across the state to get comments on proposed changes. Revisions to Goal 7 were adopted September 28, 2001 (effective June 1, 2002). Goal 7 revisions advocate the continuous incorporation of hazard information in local land use plans and policies.

[29]Federal Emergency Management Agency Community Status Report Book - Oregon: Communities Participating in the National Flood Program. 2010
[30]Ibid.
[31]Hazard Mitigation Workshop, Department of Geology and Mineral Industries, Salem, Oregon, (May 1, 2001).

Baker County's Comprehensive Plan relies on the Flood Plain Ordinance and per their Goal 7 Chapter: "Judgments for flood hazard are based upon staff and Commissioner's knowledge of local flood patterns and frequency, newspaper accounts of past flooding, information available from Baker Valley Irrigation District, and when and where available, flood elevation from [the Flood Insurance Administration]."[32]

Grant County's Comprehensive Plan has policies relevant to flood hazards in their Goal 7 Chapter:[33]

1. Development within an identified Flood Hazard Zone shall only be permitted in compliance with applicable flood plain regulations
2. Prevent new development from increasing flood hazards or create new ones;
3. Limit uses that will require dams, dikes, or levies for protection
4. Structures shall not be permitted in identified floodways.
5. Require flood-proof construction in areas subject to inundation;
6. Consider potential effects of high ground water in development approval.

Union County's Comprehensive Plan says the following about flood in their Goal 7 Chapter: "Recent flood hazard area studies have identified the 100 and 500 year flood plains adjacent to or within five County communities – Union, Cove, Elgin, North Powder, and Island City… Regulation within these areas is (or will be) more specifically addressed in the respective area zoning ordinances."[34]

Wallowa County's Comprehensive Plan has policies relevant to flood hazards in their Goal 7 Chapter:[35]

1. That developments not be planned nor located in areas likely subject to major damage or that could result in loss of life.
2. That flood proofing construction of utilities and structures be utilized in areas of likely inundation.
3. That flood-plains be used primarily for non-structural and non-residential purposes, e.g. recreation or agricultural operations which will not suffer major damage by periodic inundation.
4. That the National Flood Insurance Program and amendments thereto be used as the guide for future development in flood-plain areas.

Silver Jackets

The Silver Jackets program is a joint state-federal-local flood mitigation subcommittee, which is tied to a national USACE initiative. Halfway also has an action item to coordinate with the state and to contribute to the program (FL #7). Oregon Silver Jackets Program provides a forum where State of Oregon and Federal agencies (DLCD and USACE are co-leads), combine efforts to help local, state and Tribal agencies find solutions to flood plain related issues, as are found in this NHMP. Through Oregon's Silver Jackets Program, all State and Federal agencies collectively communicate, coordinate, cooperate and collaborate their

[32]Baker County Comprehensive Plan 1993
[33]Grant County Comprehensive Plan 1996
[34]Union County Comprehensive Plan 2003
[35]Wallowa County Comprehensive Plan 2003

authorities and funds to solve flood plain mitigation. Silver Jackets optimizes utilization of Oregon and Federal assistance by leveraging local/Tribal resources with their authorities and capabilities. Projects often include obtaining data/information, talent and funding, while reducing duplication among agencies.

Objectives of this subcommittee include:

- Facilitate strategic life-cycle flood risk reduction,
- Create or supplement a continuous mechanism to collaboratively solve state-prioritized issues and implement or recommend those solutions,
- Improve processes, identifying and resolving gaps and counteractive programs,
- Leverage and optimize resources,
- Improve and increase flood risk communication and present a unified interagency message, and
- Establish close relationships to facilitate integrated post-disaster recovery solutions.

The State of Oregon established "Silver Jackets", as a subcommittee to the IHMT, with the primary intents of strengthening interagency relationships and cooperation, optimizing resources, and improving risk communication and messaging.

County and City Programs

Zoning Ordinance–Floodplain Standards

Community participation in the NFIP requires the adoption and enforcement of a local floodplain management ordinance that controls development in the floodplain. Baker County, Baker City, Halfway, Grant County, John Day, Union County, La Grande, Wallowa County, and Enterprise participate in the NFIP. Communities participating in the NFIP may adopt regulations that are more stringent than those contained in 44 CFR 60.3, but not less stringent.[36]

Flood plain zoning ordinances that comply with NFIP requirements are provided in the participating jurisdictions. They identify the types of uses allowed in the floodplain and floodway; and outline the compliance procedures and restrictions imposed on each use. They also describe construction performance standards and specifications for flood hazard protection.

Floodplain Development

To minimize damage to structures during flood events the land development ordinances for each county have requirements for flood hazards.

FEMA Flood Maps

The flood maps are known as Flood Insurance Rate Maps (FIRM). Baker County's FIRMs have not been updated since 1988; Union County's in 1996;[37] Grant County's in 1982; and

[36] FEMA, Region 10. Floodplain Management: a Local Administrator's Guide to the National Flood Insurance Program.

[37] The Union County revision in 1996 was a minor revision and not a complete update.

Wallowa County's in 1988, and the maps may not reflect current flood patterns. The lack of accurate maps prevents the county from making sound planning decisions in regards to flood management.

Flood Mitigation Action Items

The following actions have been identified by the Baker County, Baker City, Halfway, Grant County, John Day, Union County, La Grande, Wallowa County, and Enterprise Steering Committees, and are recommended for mitigating the potential effects of flood in the various identified jurisdictions. Below you will find a brief description, title, of the action item, see the full action item worksheet in Appendix A or within the city addendum for a full description of the action item.

Table FL-10 Flood Mitigation Action Items

Action Item	Priority	Proposed Action Title	Action Item Form Page Number	Affected Jurisdictions								
				Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
FL #1		Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	A-91	X	X	X	X	X	X	X	X	X
FL #2	High (Baker, Grant, Baker City, Enterprise)	Explore the costs and benefits for participation in the NFIP's Community Rating System	A-93	X	X	X	X	X	X	X	X	X
FL #3	High (Baker, Grant, Wallowa; Baker City, John Day, Enterprise)	Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	A-95	X	X	X	X	X	X	X	X	X
FL #4	High (Baker, Grant, Wallowa; Baker City, John Day)	Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	A-97	X	X	X	X	X	X	X	X	X
FL #5	High (Grant)	Explore mitigation opportunities for the Canyon City bridge	A-99				X					
FL #6 (Halfway)	High (Halfway)	Seek Silver Jackets assistance to investigate opportunities to prevent large infiltration of flood waters into the wastewater treatment facility	HA-38			X						
FL #7 (La Grande)		Incorporate recommended action items created in the Morgan Lake Study	LG-41							X		

Landslide Hazard Annex

Causes and Characteristics of Landslides

Landslides are a geologic hazard in almost every state in America. Nationally, landslides cause 25 to 50 deaths each year.[1]In Oregon, economic losses due to landslides for a typical year are estimated to be over $10 million.[2] In years with heavy storms, such as in 1996, losses can be an order of magnitude higher and exceed $100 million.[3] In Oregon, a significant number of locations are at risk to dangerous landslides. While not all landslides result in private property damage, many landslides impact transportation corridors, fuel and energy conduits, and communication facilities.[4] Increasing population in Oregon and the resultant growth in home ownership has caused the siting of more development in or near landslide areas. Often these areas are highly desirable owing to their location along the coast, rivers, and on hillsides.

Landslides are fairly common, naturally occurring events in various parts of Oregon. In simplest terms, a landslide is any detached mass of soil, rock, or debris that falls, slides or flows down a slope or a stream channel. Landslides are classified according to the type and rate of movement and the type of materials that are transported.

In understanding a landslide, two forces are at work: 1) the driving forces that cause the material to move down slope, and 2) the friction forces and strength of materials that act to retard the movement and stabilize the slope. When the driving forces exceed the resisting forces, a landslide occurs.

Landslides can be broken down into two categories: (1) rapidly moving; and (2) slow moving, in addition to “on-site” or “off-site” hazards. Rapidly moving landslides are typically “off-site” (debris flows and earth flows) and present the greatest risk to human life, and persons living in or traveling through areas prone to rapidly moving landslides are at increased risk of serious injury. Rapidly moving landslides have also caused most of the recent landslide-related injuries and deaths in Oregon. Slow moving landslides tend to be “on-site” (slumps, earthflows, and block slides) and can cause significant property damage, but are less likely to result in serious human injuries.

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[1] Mileti, Dennis. 1999. Disasters by Design: A Reassessment of Natural Hazards in the United States. Washington D.C.: Joseph Henry Press.

[2] Wang, Yumei, Renee D. Summers, R. Jon Hofmeister, and Oregon Department of Geology and Mineral Industries. 2002. “Open-File Report O-02-05: Landslide Loss Estimation Pilot Project in Oregon.” http://www.oregon.gov/LCD/docs/rulemaking/012308/item_1_Kehoe_att_b.pdf, accessed February 14, 2010

[3] Ibid.

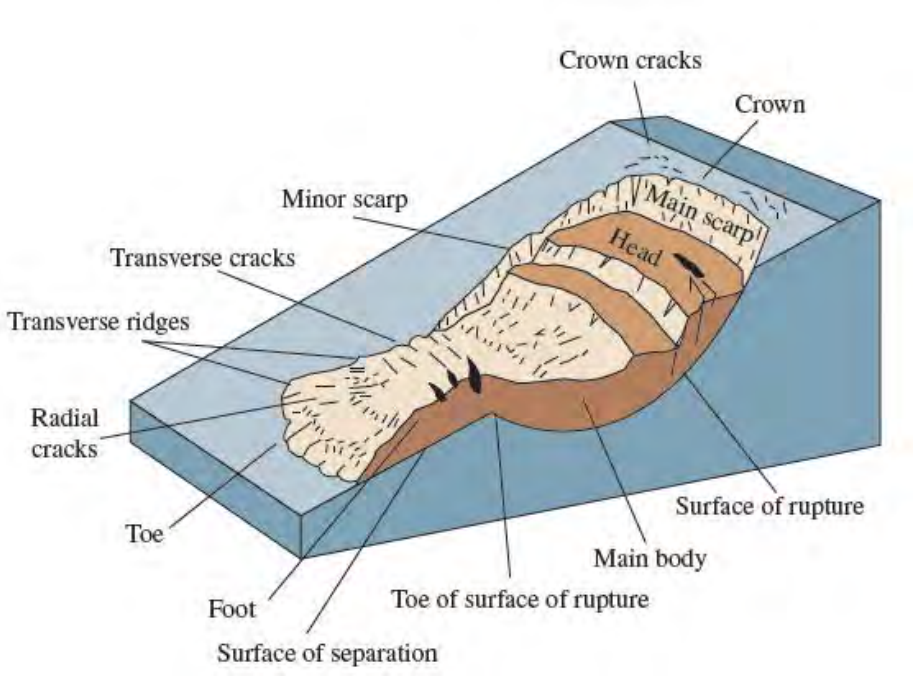
[4] USGS Landslide Program Brochure, National Landslide Information Center, United States Geologic Survey.

Types of Landslides

Landslides are downhill or lateral movements of rock, debris, or soil mass. The size of a landslide usually depends on the geology and the landslide triggering mechanism. Landslides initiated by rainfall tend to be smaller, while those initiated by earthquakes may be very large. Slides associated with volcanic eruptions can include as much as one cubic mile of material.

Landslides vary greatly in the volumes of rock and soil involved, the length, width, and depth of the area affected, frequency of occurrence, and speed of movement. Some characteristics that determine the type of landslide are slope of the hillside, moisture content, and the nature of the underlying materials. Landslides are given different names depending on the type of failure and their composition and characteristics. Types of landslides include slides, rock falls, and flows. Figure LS-1 depicts major landslide features and Figure LS-2 illustrates different types of landslides.

Figure LS-1 Landslide Features



Source: USGS. Landslide Factsheet. http://pubs.usgs.gov/fs/2004/3072/. 2004

Slides

Slides move in contact with the underlying surface. These movements include rotational slides where sliding material moves along a curved surface and translational slides where movement occurs along a flat surface. These slides are generally slow moving and can be deep. Slow-moving landslides can occur on relatively gentle slopes and can cause significant

property damage, but are far less likely to result in serious injuries than rapidly moving landslides.[5]

Erosion

Erosion occurs when ditches or culverts beneath hillside roads become blocked with debris. If the ditches are blocked, run-off from the slopes is inhibited during periods of precipitation. This causes the run-off water to collect in soil, and in some cases, cause a slide. Usually the slides are small (100 – 1,000 cubic yards), but they can be quite large.

Rock Falls

Rock falls occur when blocks of material come loose on steep slopes. Weathering, erosion, or excavations, such as those along highways, can cause falls where the road has been cut through bedrock. They are fast moving with the materials free falling or bouncing down the slope. In falls, material is detached from a steep slope or cliff. The volume of material involved is generally small, but large boulders or blocks of rock can cause significant damage. Rock falls have the potential to break off power poles located on hillsides.[6]

Flows

Plastic or liquid movements in which land mass (e.g. soil and rock) breaks up and flows during movement. Earthquakes often trigger flows.[7] Debris flows normally occur when a landslide moves down slope as a semi-fluid mass scouring, or partially scouring soils from the slope along its path. Flows are typically rapidly moving and also tend to increase in volume as they scour out the channel.[8] Flows often occur during heavy rainfall, can occur on gentle slopes, and can move rapidly for large distances.

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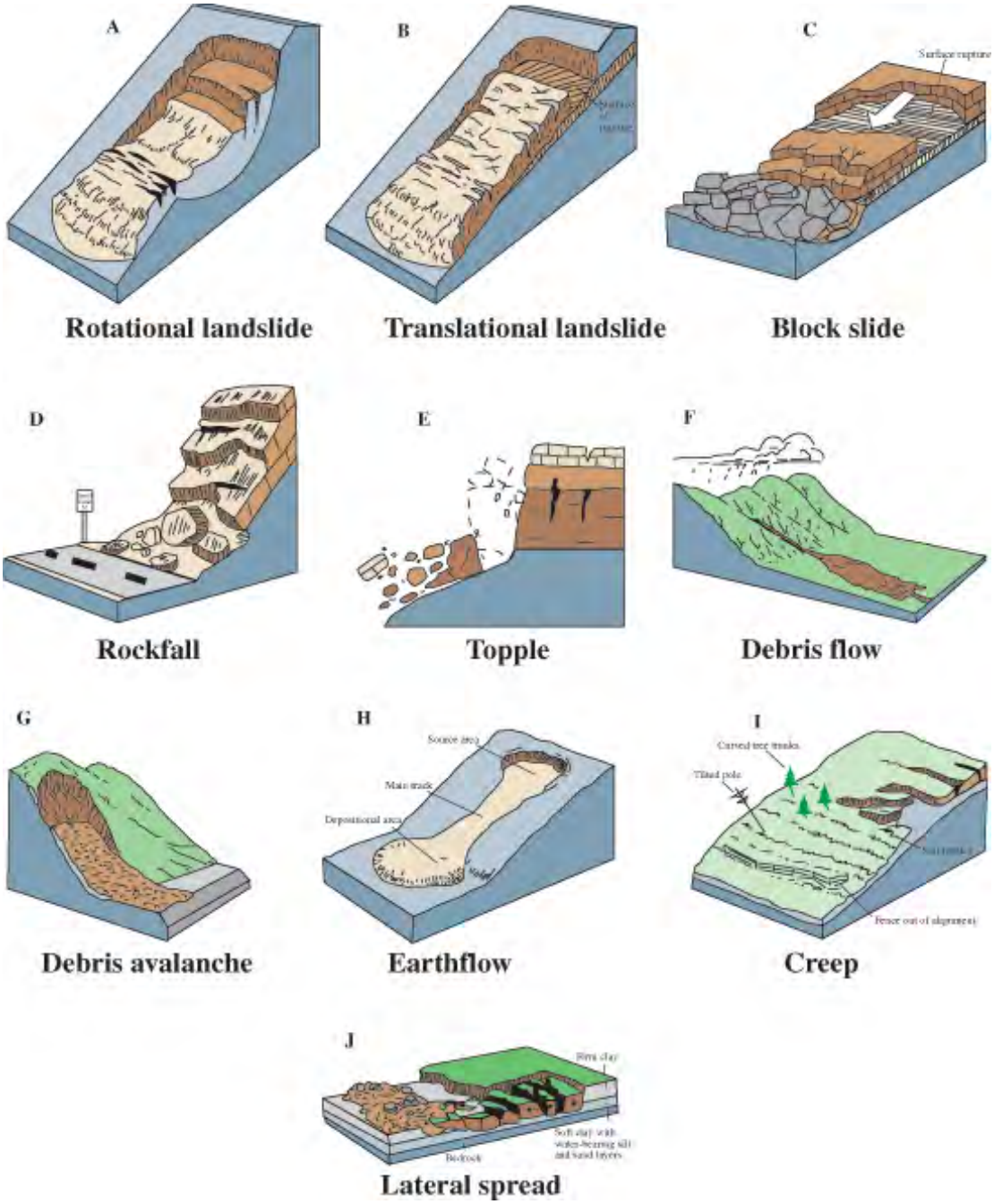
[5]Interagency Hazard Mitigation Team. 2000. State Hazard Mitigation Plan. Oregon State Police – Office of Emergency Management.

[6]Eichorn, Ernie. Field Representative, Chemawa District, Bonneville Power Authority. Personal Interview. 10 November 2004.

[7]Robert Olson Associates. June 1999. Metro Regional Hazard Mitigation Policy and Planning Guide. Portland, OR: Metro.

[8] Ibid.

Figure LS-2 Landslide Types



Source: USGS. Landslide Factsheet. http://pubs.usgs.gov/fs/2004/3072/. 2004.

Conditions Affecting Landslides

Natural conditions and human activities can both play a role in causing landslides. Certain geologic formations are more susceptible to landslides than others. Locations with steep slopes are at the greatest risk of slides. However, the incidence of landslides and their impact on people and property can be accelerated by development. Developers who are

uninformed about geologic conditions and processes may create conditions that can increase the risk of or even trigger landslides.

There are four principal factors that affect or increase the likelihood of landslides:

- Natural conditions and processes including the geology of the site, rainfall, wave and water action, seismic tremors and earthquakes and volcanic activity.
- Excavation and grading on sloping ground for homes, roads and other structures.
- Drainage and groundwater alterations that are natural or human-caused can trigger landslides. Human activities that may cause slides include broken or leaking water or sewer lines, water retention facilities, irrigation and stream alterations, ineffective storm water management and excess runoff due to increased impervious surfaces.
- Change or removal of vegetation on very steep slopes due to timber harvesting, land clearing and wildfire.

History of Landslides in Oregon

In recent events, particularly noteworthy landslides accompanied storms in 1964, 1982, 1966, 1996, and 2005. Most of Oregon's landslide damage has been associated with severe winter storms where landslide losses can exceed $100 million in direct damage such as the February 1996 event. More winter storm induced landslides occurred in Oregon during November 1996. Intense rainfall on recently past logged land as well as previously unlogged areas triggered over 9,500 landslides and debris flows that resulted directly or indirectly in eight fatalities Highways were closed and a number of homes were lost. The fatalities and losses resulting from the 1996 landslide events brought about the passage of Oregon Senate Bill 12, which set site development standards, authorized the mapping of areas subject to rapidly moving landslides and the development of model landslide (steep slope) ordinances.

Annual average maintenance and repair costs for landslides in Oregon are over $10 million.[9]Heavier than normal rains caused thousands of landslides throughout Oregon of which roughly 9,500 were identified and added to a database. Some of these slides were the reactivation of ancient and historically active landslides and some were new failures.

Risk Assessment

How are Hazards Identified?

Geologic and geographic factors are important in identifying landslide-prone areas. Stream channels, for example, have major influences on landslides, due to undercutting of slopes by stream erosion and long-term hillside processes.

The Oregon Department of Forestry (ODF) Storm Impacts Study conducted after the 1996-97 landslide events found that the highest probability for the initiation of shallow, rapidly

[9] Wang and Chaker, 2004. Geological Hazards Study for the Columbia River Transportation Corridor. Oregon Department of Geology and Mineral Industries Open File Report OFR 0-4-08

moving landslides was on slopes of 70 to 80 percent steepness. A moderate hazard of shallow rapid landslide initiation can exist on slopes between 50 and 70 percent.[10]

In general, areas at risk to landslides have steep slopes (25 percent or greater,) or a history of nearby landslides. In otherwise gently sloped areas, landslides can occur along steep river and creek banks, and along ocean bluff faces. At natural slopes under 30 percent, most landslides are related to excavation and drainage practices, or the reactivation of preexisting landslides.[11]

The severity or extent of landslides is typically a function of geology and the landslide triggering mechanism. Rainfall initiated landslides tend to be smaller, and earthquake induced landslides may be very large. Even small slides can cause property damage, result in injuries, or take lives.

The Department of Land Conservation and Development (DLCD) requires local government to address geologically unstable areas as part of their comprehensive plans throughout Statewide Land Use Planning Goal 7 (Areas Subject to Natural Hazards). Goal 7 envisions a process whereby new hazard inventory information generated by federal and state agencies is first reviewed by DLCD. DLCD then notifies the County of the new information, and the County has three years to respond to the information by evaluating the risk, obtaining citizen input, and adopting or amending implementation measures to address the risk.

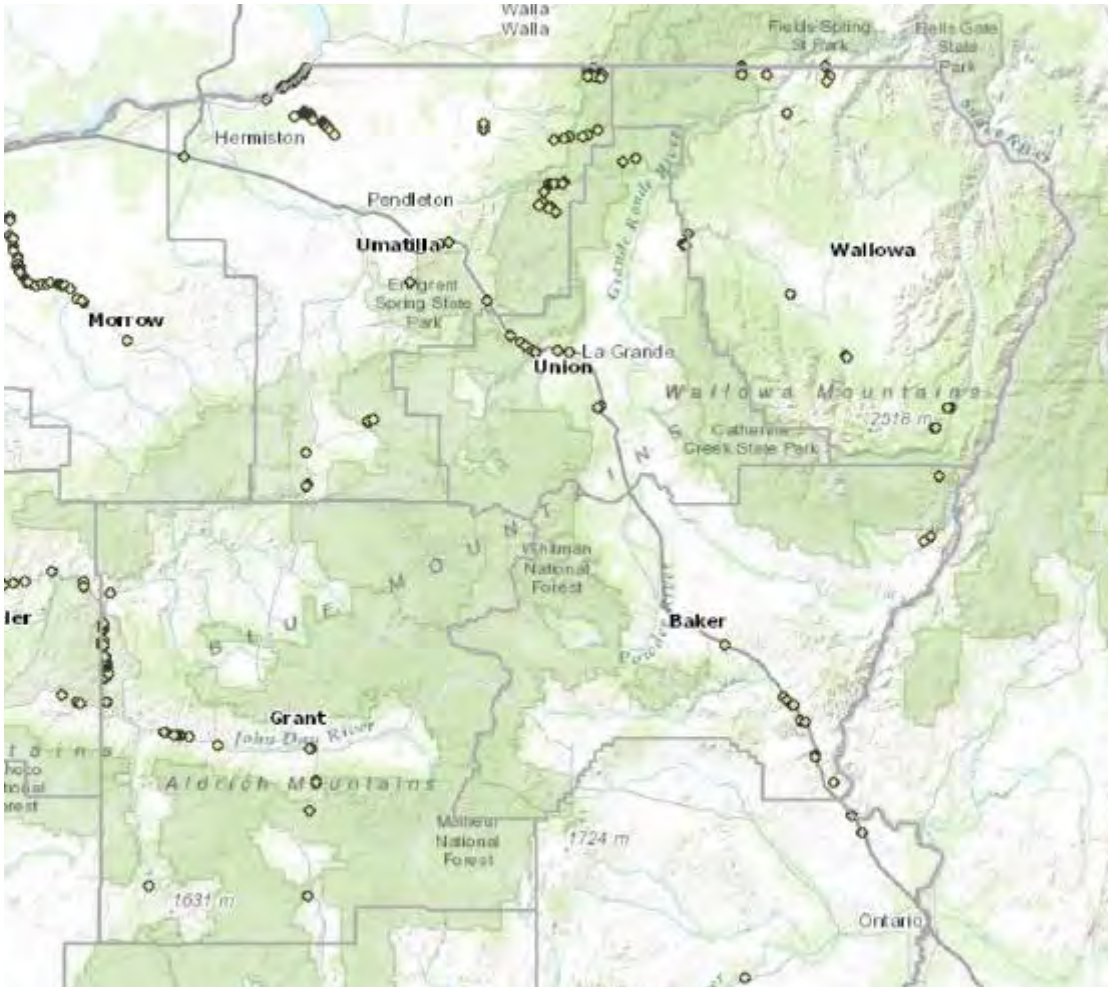
DOGAMI maps the State Landslide Information Layer for Oregon (SLIDO); Figure LS-1 relies on the 2012 SLIDO data and shows Northeast Oregon landslides that have been identified on published maps. The data shows that there is a history of landslides in the region with some major events occurring on Interstate 84.The database contains only landslides that have been located on these maps. Many landslides have not yet been located or are not on these maps and therefore are not in this database. This database does not contain information about relative hazards.[12]

[10] Storm Impacts and Landslides of 1996 Final Report. (1999) Oregon Department of Forestry.

[11] State Hazard Mitigation Plan.The Interagency Hazards Mitigation Team, (2000) Oregon State Police - Office of Emergency Management.

[12] DOGAMA. Statewide Landslide Information Database for Oregon (SLIDO-2).http://www.oregongeology.org/sub/slido/index.htm

Figure LS-1 SLIDO Mapped Landslides



Source: DOGAMI SLIDO Viewer

Hazard Risk Analysis

The participating Steering Committees, during this update, completed jurisdiction specific hazard risk analyses, based upon the previous plan's analyses. Each hazard analysis, developed from a Federal Emergency Management Agency (FEMA) tool that has been refined by the Oregon Military Department – Office of Emergency Management (OEM), addresses and weights (shown as percent within parentheses) probability (29%), vulnerability (21%), maximum threat (42%) and the history (8%) of each natural hazard and attributes a final hazard analysis score. The methodology produces scores that range from 24 to 240. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation. The method provides the jurisdiction with a relative ranking from which to prioritize mitigation strategies, but does not predict the occurrence of a particular hazard (for more information on all scores see Volume I, Section 2 of this NHMP). Provided below are brief descriptions of each category:

> **Probability** is the likelihood of future occurrence within a specified period of time.
> LOW = one incident likely within 75 to 100 years scores between 1 and 3 points
> MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points

HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Vulnerability includes the percentage of population and property likely to be affected under an "average" occurrence of the hazard.
LOW = less than 1% affected scores between 1 and 3 points
MEDIUM = between 1 and 10% affected scores between 4 and 7 points
HIGH = more than 10% affected scores between 8 and 10 points

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.
LOW – score at 1 to 3 points based on… < 5% affected
MEDIUM – score at 4 to 7 points based on… 5 - 25% affected
HIGH – score at 8 to 10 points based on… > 25% affected

History is the record of previous occurrences.
LOW – score at 1 to 3 points based on… 0 - 1 event past 100 years
MEDIUM – score at 4 to 7 points based on… 2 - 3 events past100 years
HIGH – score at 8 to 10 points based on… 4 or more events past100 years

The hazard risk analysis ratings, as determined by each participating Steering Committee, are shown in the following table. Within the table the probability and vulnerability scores are shown in **bold** if they are higher than in 2008, in normal text if the same or if not ranked in 2008, and with (parentheses) if they are lower than in 2008. Areas that were not rated in 2008 are denoted with an asterisk (*).

Table LS-1 Landslide Hazard Risk Analysis

	Total Threat Score	Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	155	#5	High	**Moderate**	Low	High
Baker City	64	#9	**Moderate**	Low	Low	Low
Halfway	203	#2	**High**	High	High	Moderate
Grant	240	#1	**High**	**Moderate**	High	High
John Day	104	#9	Moderate*	Low*	Low	Moderate
Union	225	#2	Low	(Low)	Moderate	Low
La Grande	156	#7	Moderate	Moderate	High	Low
Wallowa	187	#5	(Moderate)	(Low)	Moderate	Moderate
Enterprise	24	#9	Low	Low	Low	Low

Source: County and City Steering Committee Meetings (2013)

Additionally, each of the county Steering Committees completed a "Relative Risk Assessment" that ranks "severity of impact" and "relative risk" for each hazard. For more information on these scores see Volume I, Section 2 of this NHMP. For additional information on participating city ratings see Volume III of this NHMP.

History Assessment

Landslide/debris flows occur throughout Northeast Oregon but to a much lesser extent than in western Oregon. In general, northeastern Oregon soil profiles are shallow and rainfall is less frequent and intense than in the western portion of the state. Most Region 7 landslides occur within the Interstate 84 corridor, State Highways 82 (Union County), 86 (Baker

County, 19 (Grant County), and 3 (Wallowa County). Notable slides include the 1984 Hole-in-the-Wall slide, which damned the Powder River (Baker County) and the often troublesome Whopper Slide near Elgin (Union County). There is a record of landslide-associated fatalities in this region: in 1982, two people were killed in a landslide while working on a railroad near Baker City.[13]

Probability of Future Occurrence

The probability of rapidly moving landslide occurring depends on a number of factors, including steepness of slope, slope materials, local geology, vegetative cover, human activity, and water. There is a strong correlation between intensive winter rainstorms and the occurrence of rapidly moving landslides (debris flows). Consequently, the Oregon Department of Forestry tracks storms during the rainy season, monitors rain gauges and snow melt, and issues warnings as conditions warrant.

The probability of an area to have a landslide is increased depending on the factors that reduce the stability without causing failure (previously discussed). When several of these factors are combined, such as an area with steep slopes, weak geologic material, and previous landslide movement, the probability of future landslides is increased. There is a strong correlation between intensive winter rainstorms and the occurrence of rapidly moving landslides (debris flows). Geo-engineers with the Oregon Department of Forestry estimate widespread activity about every 20 years.[14]

Vulnerability Assessment

To a large degree, landslides are very difficult to predict. Vulnerability assessments assist in predicting how different types of property and population groups will be affected by a hazard.[15]The optimum method for doing this analysis at the city or county level is to use parcel-specific assessment data on land use and structures.[16]Data that includes specific landslide-prone and debris flow locations in the county can be used to assess the population and total value of property at risk from future landslide occurrences.

Landslides can impact major transportation arteries, blocking residents from essential services and businesses. Many aspects of the city are vulnerable to landslides. This includes land use and development patterns, the economy, population segments, ecosystem services, and cultural assets. The impacts to these community sectors are described in more detail in the hazard impacts section below.

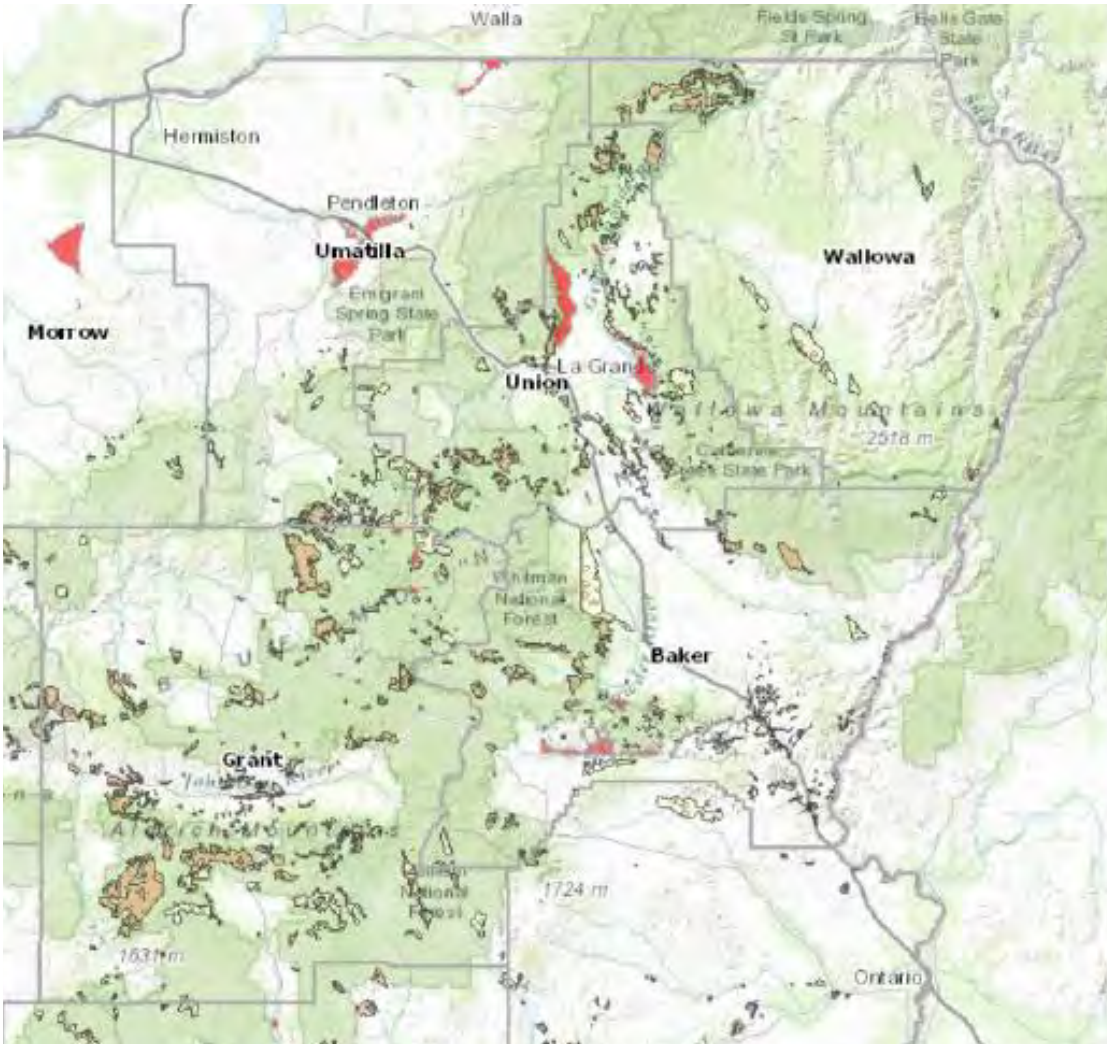
[13] Oregon State NHMP 2012 Region 7 Northeast Oregon Hazards Assessment

[14] Oregon State NHMP 2012 Region 7 Northeast Oregon Hazards Assessment

15Burby, R., ed. 1998. Cooperating with Nature. Washington D.C.: Joseph Henry Press.

[16] Ibid.

Figure LS-2 Landslide Susceptibility



Source: DOGAMI Hazard Viewer

Community Landslide Issues

What is susceptible to damage during a hazard event?

Depending upon the type, location, severity and area affected, severe property damage, injuries and loss of life can be caused by landslides. Landslides can damage or temporarily disrupt utility services, roads and other transportation systems and critical lifeline services such as police, fire, medical, utility and communication systems, and emergency response. In addition to the immediate damage and loss of services, serious disruption of roads, infrastructure and critical facilities and services may also have longer term impacts on the economy of the community and surrounding area.

Increasing the risk to people and property from the effects of landslides are the following five factors:

- Improper excavation practices, sometimes aggravated by drainage issues, can reduce the stability of otherwise stable slopes.

- Allowing development on or adjacent to existing landslides or known landslide-prone areas raises the risk of future slides regardless of excavation and drainage practices. Homeowners and developers should understand that in many potential landslide settings there are no development practices that can completely assure slope stability from future slide events.

- Building on fairly gentle slopes can still be subject to landslides that begin a long distance away from the development. Sites at greatest risk are those situated against the base of very steep slopes, in confined stream channels (small canyons), and on fans (rises) at the mouth of these confined channels. Home siting practices do not cause these landslides, but rather put residents and property at risk of landslide impacts. In these cases, the simplest way to avoid such potential effects is to locate development out of the impact area, or construct debris flow diversions for the structures that are at risk.

- Certain forest practices can contribute to increased risk of landslides. Forest practices may alter the physical landscape and its vegetation, which can affect the stability of steep slopes. Physical alterations can include slope steepening, slope-water effects, and changes in soil strength. Of all forest management activities, roads have the greatest effects on slope stability, although changing road construction and maintenance practices are reducing the effects of forest roads on landslides.

- High rainfall accumulation in a short period of time increases the probability of landslide. An extreme winter storm can produce inches of rainfall in a 24 hour period; if the storm occurs well into the winter season, when the ground is already saturated, the hydraulic overload effect is heightened.

Existing Hazard Mitigation Activities

The following activities are currently being carried out by local, regional, state, or national organizations.

Oregon Department of Forestry (ODF)

The Oregon Department of Forestry has provided a preliminary indication of debris flows (rapidly moving landslides) in Western Oregon. Their debris flow maps include locations subject to naturally occurring debris flows and include the initiation sites and locations along the paths of potential debris flows (confined stream channels and locations below steep slopes). These maps neither consider the effects of management-related slope alterations (drainage and excavation) that can increase the hazard, nor do they consider very large landslides that could possibly be triggered by volcanic or earthquake activity. Areas identified in these maps are not to be considered "further review areas" as defined by Senate Bill 12 (1999).[17] Information used to develop the ODF Debris Flow maps include:

[17] Western Oregon Debris Flow Hazard Maps: Methodology and Guidance for Map Use. (1999).

- Digital elevation models at 30-meter resolution, based on U.S. Geological Survey data, were used to derive slope steepness and then to develop polygons for assigned hazards. Note that actual slopes are steeper than these digitally elevated models.
- Mapped locations of Tyee soil formation and similar sedimentary geologic units.
- Oregon Department of Forestry Storm Impacts and Landslides of 1996 study; debris flow initiation and path location data.
- Stream channel confinement near steep hill slopes based on U.S. Geological Survey Digital Raster Graphics.
- Historical information on debris flow occurrence in western Oregon (from Oregon Dept. of Forestry, U.S. Forest Service, DOGAMI, Bureau of Land Management, and the Oregon Department of Transportation).
- Fan-shaped land formations below long, steep slopes.
- Areas of highest intensity precipitation do not appear to be correlated with known areas of high and extreme debris flow hazard, so precipitation intensity was not used to develop risk (hazard) ratings.[18]

Oregon Department of Geology and Mineral Industries (DOGAMI)

The Oregon Department of Geology and Mineral Industries (DOGAMI) conducted field investigations and consolidated data on Oregon landslides associated with three flood events in 1996 and 1997. They collected evidence of over 9,000 landslide and slope failure locations in the state. The generation of a statewide landslide inventory is intended to provide a means for developing and verifying hazard models as well as to facilitate various local efforts aimed at minimizing risk and damage in future storm events. The database includes a digital Geographic Information System file with landslide locations, a digital database with details on each landslide, and an accompanying report.[19]

In addition to the slope failures report, DOGAMI is identifying and mapping further review areas. The further review areas identify where landslides have occurred and where landslides are likely to occur.[20]

Debris Flow Warning System

The debris flow warning system was initiated in 1997 and involves collaboration between the Department of Forestry, DOGAMI, the Department of Transportation, local law enforcement, and National Oceanic and Atmospheric Administration (NOAA) Weather Radio and other media.

Since 2008, ODF meteorologists have not issued Debris Flow Warning for Oregon since they do not have sufficient resources. However, information is provided by the National Weather

[18]Ibid.

[19]Database of Slope Failures in Oregon for Three 1996/1997 Storm Events.Hofmeister, R.J. (2000).Oregon Department of Geology and Mineral Industries – Special Paper 34.

[20]Interagency Hazard Mitigation Team. 2012. Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

Service (NWS) and broadcast via the NOAA Weather Radio, and on the Law Enforcement Data System. The information provided does not include the Debris Flow Warning system as originally designed since the NWS does not have the geologic and geomorphology expertise. Instead they provide the following language in their flood watches that highlights the potential for landslides and debris flows[21]:

> *A flood watch means there is a potential for flooding based on current forecasts. Landslides and debris flows are possible during this flood event. People, structures and roads located below steep slopes, in canyons and near the mouths of canyons may be at serious risk from rapidly moving landslides.*

DOGAMI provides additional information on debris flows through the media. The Department of Transportation provides warning signs to motorists in landslide prone areas during high-risk periods.[22]

Landslide Brochure

The Department of Geology and Mineral Industries (DOGAMI) developed a landslide public outreach brochure in cooperation with several other state agencies. Forty thousand copies were printed in November 1997 (revised 2008) and were distributed widely through building code officials, county planners, local emergency managers, natural resource agency field offices, banks, real estate companies, insurance companies, and other outlets. Landslide brochures are available from DOGAMI, the Office of Emergency Management (OEM), Oregon Department of Forestry (ODF), and the Department of Land Conservation and Development (DLCD).[23] This brochure is included as an attachment to this section. The brochures can also be downloaded via the following locations:

Oregon Geology Factsheet: Landslide Hazards in Oregon

Oregon Geology Factsheet: Understanding Landslide Deposit Maps

Oregon State Building Code Standards

The Oregon Building Codes Division adopts statewide standards for building construction that are administered by the state and local municipalities throughout Oregon. The One- and Two-Family Dwelling Code and the Structural Specialty Code contain provisions for lot grading and site preparation for the construction of building foundations.

Both codes contain requirements for cut, fill and sloping of the lot in relationship to the location of the foundation. There are also building setback requirements from the top and bottom of slopes. The codes specify foundation design requirements to accommodate the type of soils, the soil bearing pressure, and the compaction and lateral loads from soil and ground water on sloped lots. The building official has the authority to require a soils analysis for any project where it appears the site conditions do not meet the requirements of the code, or that special design considerations must be taken. ORS 455.447 and the Structural

[21]NOAA, NWS. Letter dated December 20, 2010 from Stephen K. Todd, Meteorologist-in-Charge.

[22]Interagency Hazard Mitigation Team. 2012. Oregon Natural Hazards Mitigation Plan. Salem, OR: Oregon Military Department – Office of Emergency Management

[23]Ibid.

Code require a seismic site hazard report for projects that include essential facilities such as hospitals, fire and police stations and emergency response facilities, and special occupancy structures, such as large schools and prisons. This report includes consideration of any potentially unstable soils and landslides.[24]

Comprehensive Plan

- The Baker County Comprehensive Plan has language in its Goal 7 section regarding landslides: "Land areas along the slack waters of the Powder River and along the west shore of the Snake River that are particularly vulnerable to landslides and/or flash floods have been inventoried by Baker County and have been removed from the residential recreational (RR-2) zone."[25]
- The Grant County Comprehensive Plan does not have language that guides development concerning landslides.[26]
- The Union County Comprehensive Plan has language in its Goal 7 section regarding landslides: "That landslide potential will be recognized in any development south or west of La Grande, and that development will be prohibited in areas of known active landslide activity."[27]
- The Wallowa County Comprehensive Plan does not have language that guides development concerning landslides.[28]

Landslide Mitigation Action Items

The following actions have been identified by the Baker County, Baker City, Halfway, Grant County, John Day, Union County, La Grande, Wallowa County, and Enterprise Steering Committees, and are recommended for mitigating the potential effects of landslide in the various identified jurisdictions. Below you will find a brief description, title, of the action item, see the full action item worksheet in Appendix A or within the city addendum for a full description of the action item.

Table LS-2 Landslide Mitigation Action Items

Action Item	Priority	Proposed Action Title	Action Item Form Page Number	Affected Jurisdictions								
				Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
LS #1		Identify, obtain, and evaluate detailed risk assessments in landslide prone areas and develop mitigation strategies to reduce the likelihood of a	A-100	X			X		X	X	X	

[24]Planning for Natural Hazards: Oregon Technical Resource Guide. Community Planning Workshop. (July 2000). Chapter 5.

[25]Baker County Comprehensive Plan 1983

[26]Grant County Comprehensive Plan 1996

[27]Union County Comprehensive Plan 1979

[28]Wallowa County Comprehensive Plan 1976

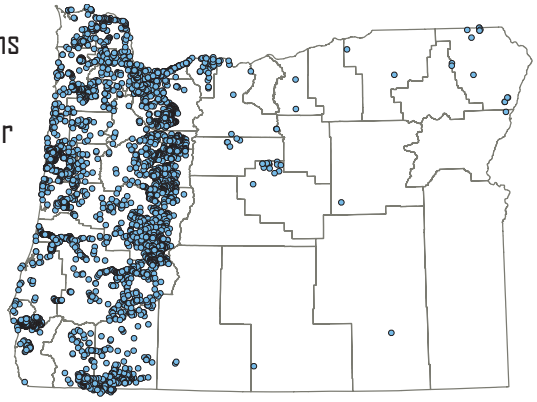
Attachment LS-1:
Landslide Hazards in Oregon

Last revised 11-12-2008

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Oregon Geology Fact Sheet | Landslide Hazards in Oregon

Landslides affect thousands of Oregonians every year. Protect yourself and your property by knowing landslide types, their triggers and warning signs, how you can help prevent landslides, and how to react when one happens.



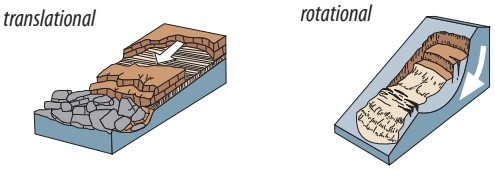
9,500 landslides were reported in Oregon in winter 1996 -97 ▶

Common landslide triggers in Oregon

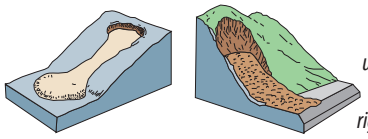
- intense rainfall
- rapid snow melt
- freeze/thaw cycles
- earthquakes
- volcanic eruptions
- human
  - changing the natural slope
  - concentrating water
- combinations of the above

COMMON LANDSLIDE TYPES

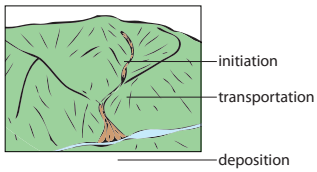
SLIDES — downslope movement of soil or rock on a surface of rupture (failure plane or shear-zone). Commonly occurs along an existing plane of weakness or between upper, relatively weak and lower, stronger soil and/or rock. The main modes of slides are translational and rotational.



FLOWS — mixtures of water, soil, rock, and/or debris that have become a slurry and commonly move rapidly downslope. The main modes of flows are unchannelized and channelized. Avalanches and lahars are flows.

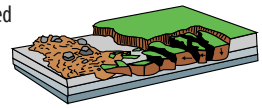


unchannelized flows– left: earth flow; right: debris avalanche

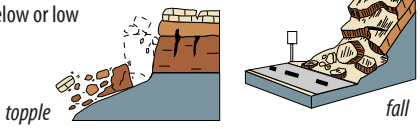


channelized flow

SPREADS — extension and subsidence of commonly cohesive materials overlying liquefied layers.



TOPPLES / FALLS — rapid, nearly vertical, movements of masses of materials such as rocks or boulders. Toppling failures are distinguished by forward rotation about some pivotal point below or low in the mass.



topple *fall*

TRIGGERS AND CONDITIONS

Slides are commonly triggered by heavy rain, rapid snow melt, earthquakes, grading/removing material from bottom of slope or adding loads to the top of the slope, or concentrating water onto a slope (for example, from agriculture/landscape irrigation, roof downspouts, or broken water/sewer lines).

Slides generally occur on moderate to steep slopes, especially in weak soil and rock.

Flows are commonly triggered by intense rainfall, rapid snow melt, or concentrated water on steep slopes. Earth flows are the most common type of unchannelized flow. Avalanches are rapid flows of debris down very steep slopes.

A channelized flow commonly starts on a steep slope as a small landslide, which then enters a channel, picks up more debris and speed, and finally deposits in a fan at the outlet of the channel.

Debris flows, sometimes referred to as rapidly moving landslides, are the most common type of channelized flow. Lahars are channelized debris flows caused by volcanic eruptions.

Spreads are commonly triggered by earthquakes, which can cause liquefaction of an underlying layer. Spreads usually occur on very gentle slopes near open bodies of water.

Topples and falls are commonly triggered by freeze-thaw cycles, earthquakes, tree root growth, intense storms, or excavation of material along the toe of a slope or cliff. Topples and falls usually occur in areas with near vertical exposures of soil or rock.

EXAMPLES



translational slide *rotational slide*
(most slides are combinations of translational and rotational movement)



debris avalanche (unchannelized flow) *earth flow (unchannelized flow)*



channelized debris flow *lahar aftermath (note the flow height indicated by stained trees)*



spread



topple *fall*

Landslide diagrams modified from USGS Landslide Fact Sheet FS2004-3072. Photos — Translational slide: Johnson Creek, OR (Landslide Technology). Rotational slide: Oregon City, OR, January 2006. Debris avalanche flow: Cape Lookout, OR, June 2005 (Ancil Nance). Earth flow: Portland, OR, January 2006 (Gerrit Huizenga). Channelized debris flow: Dodson, OR, 1996 (Ken Cruikshank, Portland State University). Lahar: Mount St. Helens, WA, 1980 (Lyn Topinka, USGS/Cascades Volcano Observatory). Spread: induced by the Nisqually earthquake, Sunset Lake, Olympia, WA, 2001 (Steve Kramer, University of Washington). Fall: Portland, OR (DOGAMI). Topple: I-80 near Portland, OR, January 2006 (DOGAMI).

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Oregon Geology Fact Sheet | Landslide Hazards in Oregon

Signs of possible landslide problems:

- Structural deformation such as large foundation cracks, misaligned doors and windows, tilted floors, or sagging decks
- Large, open cracks in driveways, curbs, and roads
- Failing retaining walls
- Arc-shaped cracks in the ground

What can I do to reduce landslide risk around my home?

- If you are looking for or are building a home, avoid siting the structure in a hazardous location.
- Consult a registered geologist or licensed geotechnical engineer if you are considering building or buying on a location with high-risk characteristics.
- Control road or driveway water so it flows away from steep slopes and into storm drains or natural drainages where it will not harm you or your neighbors.

Who should I consult if I have questions about a specific site?

Contact the **Oregon Board of Geologist Examiners** (http://www.osbge.org/; phone 503-566-2837) or the **Oregon State Board of Examiners for Engineering and Land Surveying** (http://osbeels.org/; phone 503-362-2666) for lists of registered professional consultants available for site-specific evaluations.

When are slides most likely to happen?

- Most recent slides and flows have occurred after several hours or, in some cases, several days of heavy rain or rapid snow melt. Flows may occur hours after the period of the heaviest rain in a storm.
- Earthquakes can cause landslides; if you are on sloping ground or near a riverbank during an earthquake, be alert for landslides.

What should I do during dangerous weather?

- During intense, prolonged rainfall, listen for advisories and warnings over local radio or TV or National Oceanic and Atmospheric Administration (NOAA) weather radio. In western Oregon "intense" rainfall is considered 4% of your average annual rainfall in a 12-hour period during the wet season. East of the Cascade Range "intense" rainfall is 2 inches in 4 hours. Debris flows may occur if such rainfall rates continue.
- Be aware that you may not be able to receive local warning broadcasts in canyons. Isolated, very intense rain may occur outside warning areas. You may want to invest in your own rain gauge. Don't assume highways are safe. Be alert when driving, especially at night.



- Watch carefully for collapsed pavement, mud, fallen rock, and other debris. Be particularly careful in areas marked as slide or rockfall areas. Watch for signs with warnings or road closures.
- Plan your evacuation route prior to a big storm. If you have several hours advance notice, drive to a location well away from steep slopes and narrow canyons.
- Once storm intensity has increased, it may be unsafe to leave by vehicle. Stay alert and awake; you may need to evacuate by foot.
- Listen for loud, unusual sounds. If you think there is danger of a landslide, evacuate immediately—don't wait for an official warning.
- Get away from your home if it is in an unsafe area. Be careful but move quickly. Move away from stream channels.

RESOURCES – Where can I get additional information?

- **Nature of the Northwest Information Center** (http://www.naturenw.org), operated by the Oregon Department of Geology and Mineral Industries, carries earthquake and landslide hazard maps and other reports. 800 NE Oregon St., #5, Portland, OR 97232, phone 503-872-2750.
- **Oregon Department of Geology and Mineral Industries** (http://www.OregonGeology.com) maps landslides and issues reports and maps.
- **Local city or county emergency managers or planners** may have landslide mitigation information.
- **Association of Oregon Counties** (http://www.aocweb.org/) and the **League of Oregon Cities** (http://www.orcities.org/) work with local government and state agencies to coordinate these efforts.
- **Oregon Department of Forestry** (http://www.oregon.gov/ODF/PRIVATE_FORESTS/PCFPubIndex.shtml) publishes technical papers on landslides.
- **Oregon Natural Hazards Workgroup, Partners for Disaster Resistance and Resilience** (http://www.oregonshowcase.org/) provides pre-disaster mitigation planning information.
- **Oregon Department of Transportation** maintains highways and issues 24-hour information about road conditions and road closures. For current conditions, call 1-800-977-6368 or visit http://www.tripcheck.com.
- **Oregon Department of Land Conservation and Development** maintains policies that guide local planning for development away from hazardous areas including landslide-prone areas (http://www.oregon.gov/LCD/HAZ/landslides.shtml) and also maintains the **Oregon Coast Management Program – Coastal Atlas Hazards Map** (http://www.coastalatlas.net/learn/topics/hazards/landslides/).
- **Oregon Department of Consumer and Business Services, Building Codes Division** (http://www.cbs.state.or.us/bcd/) provides guidelines for foundations of structures on or adjacent to slopes.
- **USGS National Landslide Information Center** (http://landslides.usgs.gov/) has educational information and publications.
- Geology and engineering departments at **Portland State University** (http://www.pdx.edu), **Oregon State University, Corvallis** (http://www.oregonstate.edu), and **University of Oregon, Eugene** (http://www.uoregon.edu) research landslide hazards.

Other Agencies and Societies

- Oregon Emergency Management, http://egov.oregon.gov/OOHS/OEM/
- Federal Emergency Management Agency (FEMA), http://www.fema.gov/hazards/landslides/
- USDA Forest Service Pacific Northwest Research Station, http://www.fs.fed.us/pnw/
- USDA Natural Resources Conservation Service, Soils, http://soils.usda.gov/
- Association of Engineering Geologists, Oregon section, http://www.aegoregon.org/
- American Society of Civil Engineers, Oregon section,
- http://www.asceor.org/
- Bureau of Land Management, Oregon section, http://www.blm.gov/or/

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Attachment LS-2: Understanding Landslide Deposit Maps

Created 12-2010

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Oregon Geology Fact Sheet

Understanding Landslide Deposit Maps

Losses from landsliding in Oregon range from $10M to hundreds of millions a year, making landslides one of the most common and destructive natural hazards in the state. DOGAMI uses lidar, a technology that uses laser light, to create very accurate landslide inventory maps for Oregon.

WHAT IS A LANDSLIDE DEPOSIT INVENTORY MAP?

A landslide deposit inventory map shows the locations of all identified landslide deposits for an area along with the characteristics for each landslide. One characteristic is the type of landslide movement: slide, flow, fall, topple, and spread. (See DOGAMI's *Landslides in Oregon Fact Sheet*.) Landslides are also classified according to the general age of the last movement. Older landslide features may be eroded and/or covered with deposits, which can decrease the confidence that a landslide happened in that area. Other characteristics of landslide deposits include depth of failure, slope, direction of movement, area, and volume.

A landslide deposit map is *not* a map of locations of all past landslides. For example, many very small landslide deposits cannot be located. In other cases, deposits are removed immediately and are not included on inventory maps.

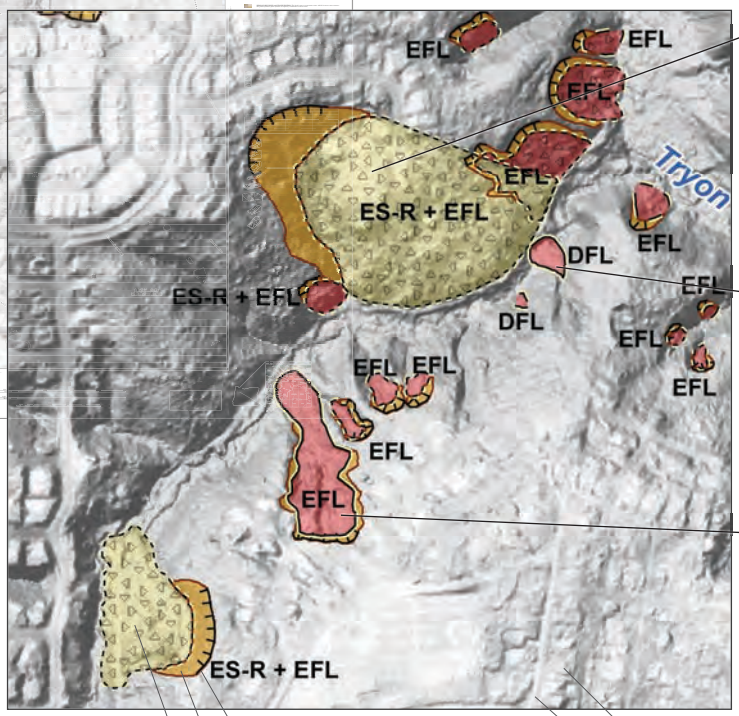
HOW CAN THESE MAPS REDUCE LANDSLIDE RISK?

Landslide inventory maps provide basic information for identifying areas of higher and lower hazards, which is the first step in risk reduction. If a site is within a mapped landslide deposit, or even in an area with many adjacent or surrounding landslides, additional investigation might be the next step. It is important to note that although areas with mapped landslide deposits are likely to be at *higher risk* than other areas, areas mapped as landslide deposits will not automatically have problems in the future. We can prepare by performing risk reduction; that is, by taking steps to reduce the landslide hazard and/or the vulnerability. Landslide inventory maps can be used in comprehensive land use plans, the development of hazard ordinances, and in updating building code regulations.

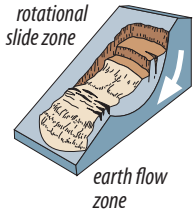


⇧ SE quarter of the Lake Oswego quadrangle, mapped at 1:8,000 scale; DOGAMI map IMS-32). Actual map size is 36 by 42 inches.

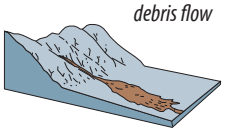
Landslide inventory map (left) and detail (below). Each landslide is classified according to type of movement (text label), activity of landsliding (red is active/historic [less than 150 years]; yellow is prehistoric/ancient [greater than 150 years]), failure plane depth: shallow (less than 4.5 m [15 ft]; no pattern) or deep (patterned), and confidence of interpretation. Landslide features such as head scarp line and zone are also shown.



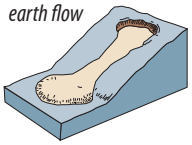
Example 1
Deep seated (patterned) combination earth slide - rotational + earth flow (ES-R + EFL) with prehistoric/ancient movement (yellow color); mapper assigned a moderate confidence of interpretation (dashed outline).



Example 2
Shallow seated (no pattern) debris flow (DFL) with historic/active movement (red color); mapper assigned a high confidence of interpretation (solid outline).



Example 3
Shallow seated (no pattern) earth flow (EFL) with historic/active movement (red color); mapper assigned a high confidence of interpretation (solid outline).



High-resolution, lidar-derived landslide and man-made features:
Slide extent
Head scarp zone
Head scarp line
Roads
Buildings

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Oregon Geology Fact Sheet

Understanding Landslide Deposit Maps

HOW IS A LANDSLIDE INVENTORY MAP CREATED?

The first step is to collect any previous landslide studies. These data are reviewed and corrected. The second step is visualization of lidar data with a geographic information system. A geotechnical professional who is trained and has experience mapping landslides interprets the lidar data into a landslide deposit geodatabase. These data are used to create one-quarter quadrangle maps at 1:8,000 scale. The maps are reviewed by qualified professionals to ensure that the maps are as accurate as possible.

DOGAMI selects areas for landslide inventory mapping on the basis of three criteria: 1) existence of lidar data, 2) funding, and 3) risk. Contact DOGAMI for more information. Mappers follow the DOGAMI landslide deposit inventory mapping protocol (Burns, W. J., and Madin, I. P., 2009, Protocol for inventory mapping of landslide deposits from light detection and ranging (lidar) imagery: Oregon Department of Geology and Mineral Industries Special Paper 42), which is included with all DOGAMI landslide inventory IMS publications.

Signs of possible landslide problems:

- Structural deformation such as large foundation cracks, misaligned doors and windows, tilted floors, or sagging decks
- Large, open cracks in driveways, curbs, and roads
- Failing retaining walls
- Arc-shaped cracks in the ground

What can I do to reduce landslide risk around my home?

- If you are looking for or are building a home, avoid siting the structure in a hazardous location.
- Consult a certified engineering geologist or a licensed geotechnical engineer if you are considering building or buying on a location with high-risk characteristics.
- Control stormwater so it flows away from steep slopes and into storm drains or natural drainages where it will not harm you or your neighbors.



Who should I consult if I have questions about a specific site?

Contact the Oregon Board of Geologist Examiners (http://www.osbge.org/; phone 503-566-2837) or the Oregon State Board of Examiners for Engineering and Land Surveying (http://osbeels.org/; phone 503-362-2666) for lists of registered professional consultants available for site-specific evaluations.

RESOURCES

Nature of the Northwest Information Center
(http://www.naturenw.org) is operated by the Oregon Department of Geology and Mineral Industries and carries earthquake and landslide hazard maps. 800 NE Oregon St., #28, Ste. 965, Portland, OR 97232, phone 971-673-2331.

Landslide Loss Reduction: A Guide for State and Local Government Planning, FEMA 182 (http://www.fema.gov/library/viewRecord.do?id=1417) Colorado Geological Survey, Department of Natural Resources, Denver, CO, 1989.

Homeowner's Guide to Landslides: Recognition, Prevention, Control, and Mitigation (http://www.oregongeology.org/sub/Landslide/homeowners-landslide-guide.pdf), Federal Emergency Management Agency, Region Ten, and Oregon State Police, December 1996.

Forestry, Landslides and Public Safety (http://www.oregon.gov/ODF/privateforests/docs/LandslidesPublicSafety.pdf)
Oregon Department of Forestry Issue Paper, Salem, Oregon, April 1998.

Agencies

Oregon Department of Geology and Mineral Industries
(http://www.OregonGeology.org) maps landslides and issues reports and maps.

Oregon Department of Forestry
(http://www.oregon.gov/ODF/PRIVATE_FORESTS/PCFPubIndex.shtml) publishes technical papers on landslides.

Oregon Department of Transportation (http://www.oregon.gov/ODOT/) maintains highways and issues 24-hour information about road conditions and road closures. For current conditions, call 1-800-977-6368 or visit http://www.tripcheck.com.

Oregon Department of Land Conservation and Development
maintains policies that guide local planning for development away from hazardous areas including landslide-prone areas (http://www.oregon.gov/LCD/HAZ/landslides.shtml) and also maintains the Oregon Coast Management Program — Coastal Atlas Hazards Map (http://www.coastalatlas.net/learn/topics/hazards/landslides/).

USGS National Landslide Information Center
(http://landslides.usgs.gov/) has educational information and publications.

Local city or county emergency managers or planners
may have landslide mitigation information.

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SEVERE WEATHER
HAZARD ANNEX

Causes and Characteristics of Severe Weather

The purpose of this annex is to summarize four different hazards dust storm, extreme heat, windstorm, and winter storm; provide their hazards history; and list the rankings that each county provided for each hazard.

Dust Storm

A dust storm is a strong, violent wind that carries fine particles such as silt, sand, clay, and other materials, often for long distances. A dust storm can spread over hundreds of miles and rise over 10,000 feet. They have wind speeds of at least 25 miles per hour. Dust storms usually arrive with little warning and advance in the form of a big wall of dust and debris. The dust is blinding, making driving safely a challenge. A dust storm may last only a few minutes at any given location, but often leave serious car accidents in their wake, occasionally massive pileups. The arid regions of Central and Eastern Oregon can experience sudden dust storms on windy days. These are produced by the interaction of strong winds, fine-grained surface material, and landscapes with little vegetation. The winds involved can be as small as "dust devils" or as large as fast moving regional air masses.[1]

Extreme Temperatures

Northeast Oregon can also be a place of extreme temperatures events. From extreme cold spells to extreme heat waves, extreme temperatures events have the potential to inflict serious health damage. In extreme heat environments the body must work harder to maintain a normal temperature, these conditions can induce heath related illnesses, particularly among vulnerable population types.[2] Extreme cold events can be defined similarly -- where conditions get so severe that health related illnesses occur. Perhaps the most notable place in Oregon for extreme cold events is the town of Seneca (Grant County). Seneca currently holds the record for coldest Oregon temperature at -54° F in 1933, and frequently gets negative temperature readings.[3]

Windstorm

Extreme winds occur throughout Oregon. The most persistent high winds take place along the Oregon Coast and in the Columbia River Gorge. However, extreme weather events occur in all regions of Oregon.[4] West winds generated from the Pacific Ocean are strongest along

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1 State of Oregon NHMP 2012

2 FEMA “Extreme Heat” http://www.ready.gov/heat

3Taylor, George H. and Chris Hannan. The Oregon Weather Book. Corvallis, OR: Oregon State University Press. 1999

4Oregon State Natural Hazard Mitigation Plan 2012

the coast and slow down inland due to the obstruction of the Coastal mountain range.[5]Prevailing winds in Oregon vary with the seasons. In summer, the most common wind directions are from the west or northwest; in winter, they are from the south and east. Local topography, however, plays a major role in affecting wind direction. For example, the north-south orientation of the Willamette Valley channels the wind most of the time, causing predominately north and south winds.[6]

Although rare, tornados can and do occur in Oregon. Tornadoes are the most concentrated and violent storms produced by the earth's atmosphere. They are created by a vortex of rotating winds and strong vertical motion, which possess remarkable strength and cause widespread damage. Wind speeds in excess of 300 mph have been observed within tornadoes, and it is suspected that some tornado winds exceed 400 mph. The low pressure at the center of a tornado can destroy buildings and other structures it passes over. Tornadoes are most common in the Midwest, and are more infrequent and generally small west of the Rockies. Nonetheless, Oregon and other western states have experienced tornadoes on occasion, many of which have produced significant damage and occasionally injury or death. Oregon's tornadoes can be formed in association with large Pacific storms arriving from the west. Most of them, however, are caused by intense local thunderstorms. These storms also produce lightning, hail, and heavy rain, and are more common during the warm season from April to October.[7] Northeast Oregon's relatively low population may cause many tornadoes to go unreported.[8] One example of this is a tornado that had virtually no eyewitnesses -- formed in June 11, 1968 in Wallowa County and destroyed about 1,800 acres of timber and damaged another 1,200 acres.[9]

Winter Storm

Severe winter storms can consist of rain, freezing rain, ice, snow, cold temperatures, and wind. Winter storms occur over eastern Oregon regularly during December through February.[10] Northeast Oregon is known for cold, snowy winters. This is advantageous in at least one respect: in general, the region is prepared, and those visiting the region during the winter, usually come prepared. However, there are occasions when preparation cannot meet the challenge. Drifting, blowing snow has often brought highway traffic to a standstill. Also, windy, icy conditions have often closed mountain passes and canyons to certain classes of truck traffic. In these situations, travelers must seek accommodations, sometimes in communities where lodging is very limited. And local residents also experience problems. During the winter, heating, food, and the care of livestock and farm animals are everyday

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5US Department of Agriculture. http://www.fsa.usda.gov/or/Notice/Flp104.pdf

6Statesman Journal. February 8, 2002.

7Taylor, George H., Holly Bohman, and Luke Foster. August 1996. A History of Tornadoes in Oregon.Oregon Climate Service. Corvallis, OR: Oregon State University. http://www.ocs.orst.edu/pub_ftp/reports/book/tornado.html

8 Taylor, George; Hatton Raymond Oregon Weather Book 1999

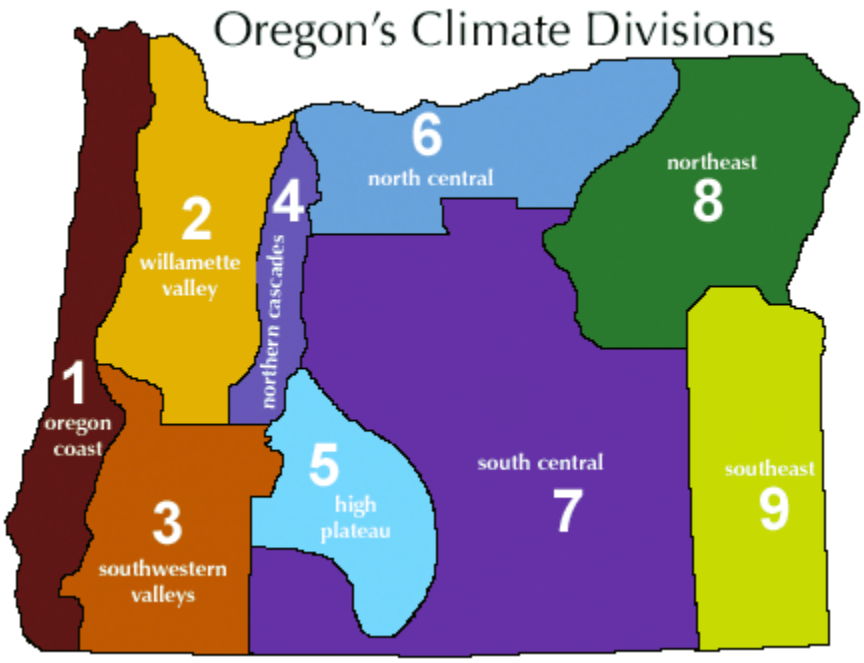
9 Ibid

10Oregon State Natural Hazards Mitigation Plan "Winter Storms Chapter". 2012

concerns. Access to farms and ranches can be extremely difficult and present a serious challenge to local emergency managers.[11]

The National Climatic Data Center has established climate divisions in the United States for areas that have similar temperature and precipitation characteristics. Oregon's latitude, topography, and proximity to the Pacific Ocean give the state diversified climates. Most of Northeast Oregon is in Climate Division 8: Northeast as seen in Figure SW-2. The climate in Division 8 generally consists of snowy winters and dry and hot summers.[12]

Figure SW-1 Oregon's Climate Divisions



Source: Oregon Climate Service

Ice storms can occur anywhere in Oregon. Like snow, ice storms are comprised of cold temperatures and moisture, but subtle changes can result in varying types of ice formation, including freezing rain, sleet, and hail. Freezing rain can be the most damaging of ice formations. While sleet and hail can create hazards for motorists when it accumulates, freezing rain can cause the most dangerous conditions within a community. Ice buildup can bring down trees, communication towers, and wires creating hazards for property owners, motorists, and pedestrians alike. The most common freezing rain occurs near the Columbia Gorge, but it also poses a hazard to Northeast Oregon.[13]Snow storms are common to central

11 Ibid

[12]Ibid

[13] Taylor, George H. and Chris Hannan. The Oregon Weather Book. Corvallis, OR: Oregon State University Press. 1999

and eastern Oregon because the air can get cold enough and the only necessary ingredient is sufficient moisture. Relative to western Oregon, Northeast Oregon receives a large amount of annual snowfall.

History of Severe Weather in Northeast Oregon

Severe weather incidents have historically been a threat to Northeast Oregon. Table SW-1 below lists the most significant severe weather storms to impact Northeast Oregon

Table SW-1 Partial History of Significant Severe Weather Events

Date	Location	Comments
December 22, 1861	Pacific Northwest	**Snowstorm:** Very snowy winter; temperatures ranged from 0°F to -30° F. Over 10,000 cattle starved in eastern Oregon.
December 1892	Northern Counties	**Snowstorm:** Between 15 and 30 inches of snow fell throughout the northern counties
August 5-11, 1898	Eastern Oregon	**Heat wave**: record breaking heat east of the Cascades; Pendleton reached 119° F
April 1931	NE Oregon	**Windstorm:** Unofficial wind speeds reported at 78 mph. Damage to fruit orchards and timber.
February 1933	Statewide	**Cold Spell**: Coldest February to date for eastern Oregon. Seneca reached -54°F, all time record for Oregon.
June, 1937	Baker County	**Tornado:** A barn was destroyed, as well as other structural building damage; damage was category 4
January 9-18, 1950	Statewide	**Ice / Snow Storm**: Heaviest snowfalls on record for January; lots of snow from January 9 to 18; extreme low temperatures
November 10-11, 1951	Statewide	**Windstorm:** Widespread damage, transmission and utility lines, wind speeds 40-60 mph, gust 75-80 mph
December 4, 1951	Statewide	**Windstorm:** Wind Speed up to 60 mph in Willamette Valley, 75 mph gusts; damage to building and utility lines.
December 21-23, 1955	Statewide	**Windstorm:** Wind speeds 55-65 mph, with 69 mph gusts. Considerable damage to buildings and utility lines.
January 25-31, 1957	Statewide	**Cold Spell:** included a -43°F minimum temperature in Seneca on January 26th
November 3, 1958	Statewide	**Windstorm:** Wind speeds up to 51 mph, with 71 mph gusts. Major highways blocked by fallen trees.
March 1-2, 1960	Statewide	**Snowstorm:** Heavy snow throughout state
October 12, 1962	Almost all of Oregon	**Windstorm:** Oregon's most famous and most destructive windstorm, the Columbus Day Storm, produced a barometric pressure low of 960 mb. Total damage estimated at $170 million
January 30-31, 1963	Northern Oregon	**Ice Storm:** Large number of downed power lines, many injuries, one reported death.
June 11, 1968	Wallowa County	**Tornado:** Category 7 damage -- possibly the strongest tornado to strike the Northwest.
January 25-30, 1969	Statewide	**Snowstorm:** Heavy snow throughout state; $3-4 million in property damage

Sources: Oregon State Natural Hazard Mitigation Plan 2012; George and Ray Hatton, 1999, The Oregon Weather Book; NOAA Storm Events Database, http://www.ncdc.noaa.gov/stormevents/. Accessed March 27, 2013.

Table SW-1 Partial History of Significant Severe Weather Events (cont'd)

Date	Location	Comments
March 25-26, 1971	Most of Oregon	**Windstorm:** Storm center moved into NW Washington, bringing cold front heading east and damaging winds on March 26.
July, August 1971	Eastern Oregon	**Heat Wave:** temperatures were high in Eastern Oregon for four consecutive weeks. Ontario had 32 consecutive days of 100°F or more.
January 9-11, 1980	Statewide	**Snowstorm/Windstorm:** Series of snow storms, extreme winds across state. Many injuries and power outages. One death in Baker along with 5 others across the state
November 13-15, 1981	Pacific Northwest	**Snowstorm:** Back-to-back storms on the 13th and 15th of November
February 1985	Statewide	**Snowstorm:** Heavy snow throuhgout the state.
January 7, 1986	Northeast Oregon	**Windstorm:** Elgin High School gymnasium received damage; sustained winds of 80 to 90 mph in La Grande.
February 1986	Central/Eastern Oregon	**Snowstorm**: Heavy snow. Traffic accidents; broken power lines; 6 to 12 inches of snow in the basins and valleys of northeastern Oregon
December 26 1988 - January 22, 1989	Northeastern Oregon	**Snowstorm:** Summerville was (the most) affected, with three blizzards during a four week period.
February 1-8, 1989	Statewide	**Snowstorm/Cold Spell:** Heavy snow and cold temperatures throughout state. Max temperature in Baker City was -2°F; Seneca's minimum temperature was -48°F.
December 1990	Wallowa County	**Severe Windstorm:** wind damage to City of Joseph Elementary School and post office.
February 11-16, 1990	Statewide	**Snowstorm:** Heavy snow throughout state
January 6-7, 1991	All of eastern Oregon	**Snowstorm:** The higher lands of eastern Oregon accumulated between 1 and 6 inches of new snow.
March 1991	NE Oregon	**Severe windstorm**
December 12, 1991	NE Oregon	**Severe windstorm**
December 1992	Northeastern Mtns.	**Severe Windstorm**
December 1993	NE Oregon	**Windstorm:** High winds ranged between 70 and 80 mph with gusts of up to 103 mph. No significant damage was repotred.
January 1994	Northeastern Mtns.	**Snowstorm:** Heavy snow throughout the region
May 15, 1994	Eastern Oregon	**Windstorm:** Severe windstorm, blowing dust, Winds 55 to 65 mph. Particularly damaging in Baker County ($25,000 in property damage)
December 12, 1995	Statewide	**Windstorm:** Strongest windstorm since Nov. 1981; barometric pressure of 966.1 mb at Astoria, and an Oregon record low 953 mb off the coast; major disaster declaration FEMA-1107-DR-OR
Winter 1998-99	Statewide	**Winter Storm:** One of the snowiest winters in Oregon history (Snowfall at Crater Lake: 586 inches)
May 2003	Baker City	**Windstorm:** 60 mph winds in Baker City caused property damage and power outages

Sources: Oregon State Natural Hazard Mitigation Plan 2012; George and Ray Hatton, 1999, The Oregon Weather Book; NOAA Storm Events Database, http://www.ncdc.noaa.gov/stormevents/. Accessed March 27, 2013.

Table SW-1 Partial History of Significant Severe Weather Events (cont'd)

Date	Location	Comments
June, 2003	Baker and Wallowa County	**Windstorm:** 65 mph winds in Baker City caused property damage and power outages. $1,000 in property damage in Wallowa County
July, 2003	Union County	**Windstorm:** $30,000 in property damage
December 2003 - January 2004	Statewide	**Winter Storm:** Public assistance to state and local governments for the repair or replacement of disaster damaged public facilities was available to Baker, Grant, Union, and Wallowa Counties among others. Counties eligible for HMGP funding.
July, 2004	Union County	**Windstorm:** $300,000 in property damage
March 31, 2004	Grande Ronde Valley	**Dust Storm:** Dust storm required closure of roads due to visibility, reported car crashes.
December 2006	Statewide	**Windstorm:** severed tree limbs were strewn about Baker City streets. Peak wind gusts in Baker City of 47 mph. 475 Baker City residents were without power for two hours
November, 2007	Wallowa County	**Windstorm:** $500,000 in damages from a windstorm near Wallowa Lake State Park
January 2008	Union County	**Winter / Windstorm:** extreme winter storm caused extensive damage to structures, businesses, public buildings, and infrastructure in Union County prompting a governor's disaster declaration EO NO. 08 - 02
February 2011	Grant and Union Counties	**Winter / Windstorm:** severe winter weather prompted a governor's disaster declaration for Grant / Union County. EO NO. 11 -01

Sources: Oregon State Natural Hazard Mitigation Plan 2012; George and Ray Hatton, 1999, The Oregon Weather Book; NOAA Storm Events Database, http://www.ncdc.noaa.gov/stormevents/. Accessed October, 2013.

How are Hazards Identified?

Windstorms in Northeast Oregon usually occur from October to March, and their extent is determined by their track, intensity (the air pressure gradient they generate), and local terrain. The National Weather Service uses weather forecast models to predict oncoming windstorms, while monitoring storms with weather stations in protected valley locations throughout Oregon.[14]

Extreme weather events are experienced in all regions of Oregon. The regions that experience the highest wind speeds are in the Central and North Coast of Region 1. The table below shows the wind speed probability intervals that structures 33 feet above the ground would expect to be exposed to within a 25, 50, and 100 year period. The table shows that structures in Northeast Oregon, within Region 7, can expect to be exposed to lower wind speeds than most regions within the state.

14"Some of the Area's Windstorms." National Weather Service, Portland. http://www.wrh.noaa.gov/pqr/paststorms/wind.php

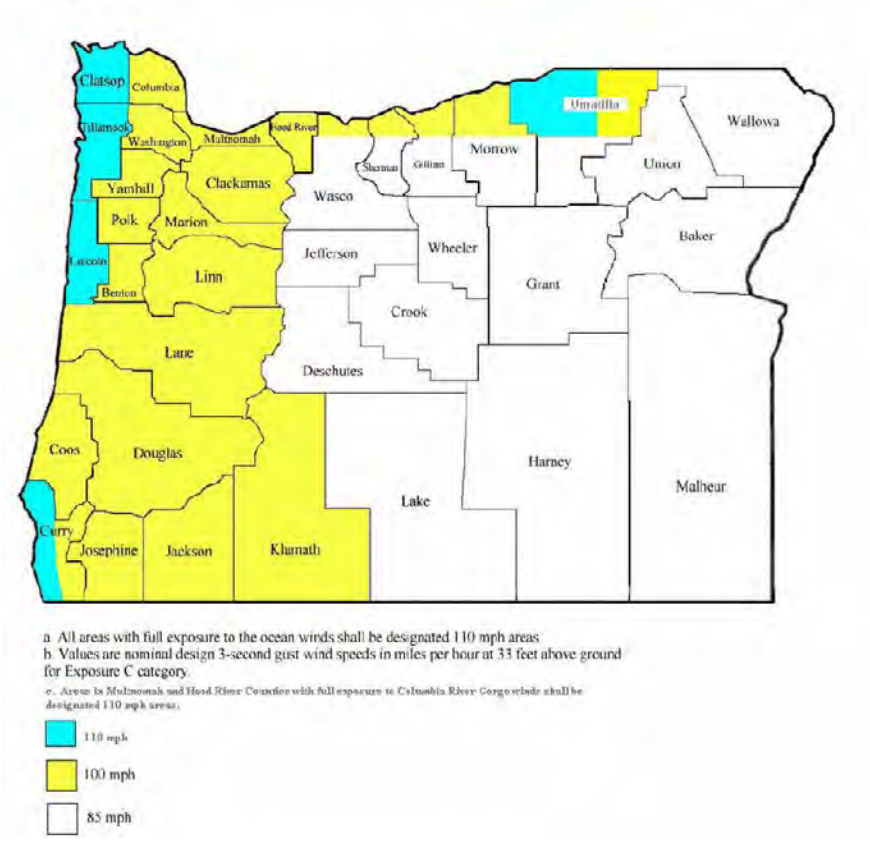
Figure SW-1 below shows the maximum wind speed that structures 33 feet above the ground would expect to be exposed to; for the four counties in Northeast Oregon that expected wind speed is less than for much of the rest of the state at 85 mph.

Table SW-2 Probability of Severe Wind Events by NHMP Region

	25-Year Event (4% annual probability)	50-Year Event (2% annual probability)	100-Year Event (1% annual probability)
Region 1: Oregon Coast	75 mph	80 mph	90 mph
Region 2: North Willamette Valley	65 mph	72 mph	80 mph
Region 3: Mid/Southern Willamette Valley	60 mph	68 mph	75 mph
Region 4: Southwest Oregon	60 mph	70 mph	80 mph
Region 5: Mid-Columbia	75 mph	80 mph	90 mph
Region 6: Central Oregon	60 mph	65 mph	75 mph
Region 7: Northeast Oregon	70 mph	80 mph	90 mph
Region 8: Southeast Oregon	55 mph	65 mph	75 mph

Source: Oregon State Natural Hazard Mitigation Plan, 2012

Figure SW-2 Oregon Building Codes Wind Speed Map



Source: State of Oregon Natural Hazards Mitigation Plan. 2012.

The magnitude or severity of severe winter storms is determined by a number of meteorological factors including the amount and extent of snow or ice, air temperature, wind speed, and event duration.

Snowfall Precipitation

Snowfall varies by elevation, ranging from approximately seven (7) inches in Dayville (Grant County) to nearly 88 inches in Austin (Grant County).Aggregately; annual snowfall is highest in Wallowa County at over 46 inches and lowest in Union County at nearly 32 inches. See Table SW-3 for average monthly snow (inches).

Table SW-3 Average Snowfall Precipitation (inches)

County	Climate Station	January	February	March	April	May	June	July	August	September	October	November	December	Annual
Baker	Baker FAA AP	6.3	3.2	2.8	1.3	0.5	0	0	0	0	0.4	3.3	7.1	25.0
	Halfway	24.1	10.8	4.6	0.5	0	0	0	0	0	0.8	11	21	72.4
	Richland	7.1	2.7	0.5	0.1	0	0	0	0	0	0.1	2.4	5	16.8
	Unity	7.9	4.8	2.6	0.8	0.1	0	0	0	0	0.3	4	9.6	32.5
Grant	Austin 3 S	22.7	14.8	10	4.9	0.5	0	0	0	0.1	1.1	15.2	22.9	87.6
	Dayville 8 NW	1.9	1.7	0.3	0	0	0	0	0	0	0	0.6	3	6.6
	John Day	5.1	3.3	2	0.8	0	0	0	0	0	0.8	4	7.5	37.9
	Long Creek	8.1	6.2	4.9	3	0.4	0.1	0	0	0	0.8	4	7.5	37.9
	Monument 2	5.2	2.9	1.2	0.1	0	0	0	0	0	0.1	2	4.9	17.6
Union	Elgin	16.5	7.9	3	0.9	0	0	0	0	0	0.1	6.5	15.7	51.8
	La Grande	7.8	2.9	1.5	0.4	0	0	0	0	0	0.2	2.6	6.1	23.1
	Union Exp Stn	7.1	3.1	1.5	0.6	0.1	0	0	0	0	0.1	2.8	5.3	20.2
Wallowa	Enterprise	9.7	8.3	7.2	4.5	1	0	0	0	0.1	1.4	8.7	8.3	48.8
	Enterprise 20 NNE	9.7	8.3	7.2	4.5	1	0	0	0	0.1	1.4	8.7	8.3	48.8
	Wallowa	12.8	7	3.4	1	0.1	0	0	0	0	0.3	6.7	10.2	41.0

Sources: The Oregon Climate Service, NOAA Climate Stations.

Community Severe Weather Issues

What is susceptible to damage during a hazard event?

The damaging effects of windstorms may extend for distances of 100 to 300 miles from the center of storm activity. Positive wind pressure is a direct and frontal assault on a structure, pushing walls, doors, and windows inward. Debris carried by extreme winds can contribute directly to injury and loss of life and indirectly through the failure of protective structures (i.e. buildings) and infrastructure. High winds can topple trees and break limbs which in turn can result in power outages and disrupt telephone, computer, and TV and radio services.

Negative pressure also affects the sides and roof: passing currents create lift and suction forces that act to pull building components and surfaces outward. The effects of winds are magnified in the upper levels of multi-story structures. As positive and negative forces impact and remove the building protective envelope (doors, windows, and walls), internal pressures rise and result in roof or leeward building component failures and considerable structural damage. The effects of winds are magnified in the upper levels of multi-story structures. Manufactured homes, multi-story retirement homes, and buildings in need of roof repair are structures that may be most vulnerable to wind storms. Buildings adjacent to open fields or adjacent to trees are also more vulnerable to wind storms than more protected structures. The effects of wind speed are shown in Table WD-5 (Note, wind speeds in Northeast Oregon rarely exceed 85 mph).

Windstorms can result in collapsed or damaged buildings, damaged or blocked roads and bridges, damaged traffic signals, streetlights, and parks, among others. Roads blocked by fallen trees during a windstorm may have severe consequences to people who need access to emergency services. Emergency response operations can be complicated when roads are blocked or when power supplies are interrupted. Windstorms can cause flying debris which can also damage utility lines. Overhead power lines can be damaged even in relatively minor windstorm events. Industry and commerce can suffer losses from interruptions in electric service and from extended road closures. They can also sustain direct losses to buildings, personnel, and other vital equipment. There are direct consequences to the local economy resulting from windstorms related to both physical damages and interrupted services.

Table SW-4 Effects of Wind Speed

Wind Speed (mph)	Wind Effects
25-31	Large branches will be in motion.
32-38	Whole trees in motion; inconvenience felt walking against the wind.
39-54	Twigs and small branches may break off trees; wind generally impedes progress when walking; high profile vehicles such as trucks and motor homes may be difficult to control.
55-74	Potential damage to TV antennae; may push over shallow rooted trees, especially if the soil is saturated.
75-95	Potential for minimal structural damge, particularly to unanchored mobile homes; power lines, and signs; and tree branches may be blown down.
96-110	Moderate structural damage to walls, roofs, and windows; large signs and tree branches blown down; moving vehicles pushed off roads.
111-130	Extensive structural damage to walls, roofs, and windows; trees blow down; mobile homes may be destroyed.
131-155	Extreme damage to structures and roofs; trees uprooted or snapped.
Greater than 155	Catastrophic damage; structures destroyed.

Source: Washington County, Office of Consolidated Emergency Management, Wind Effects.

Severe winter weather can be a deceptive killer. Winter storms which bring snow, ice and high winds can cause significant impacts on life and property. Many severe winter storm deaths occur as a result of traffic accidents on icy roads, heart attacks which shoveling snow, and hypothermia from prolonged exposure to the cold. The temporary loss of home heating can be particularly hard on the elderly, young children and other vulnerable individuals.

Property is at risk due to flooding and landslides that may result if there is a heavy snowmelt. Additionally, ice, wind and snow can affect the stability of trees, power and telephone lines and TV and radio antennas. Down trees and limbs can become major hazards for houses, cars, utilities and other property. Such damage in turn can become major obstacles to providing critical emergency response, police, fire and other disaster recovery services.

In Northeast Oregon, ice storms occur on a frequent basis and cause significant damage, especially to local utilities. The older lines have wider spans between poles, and when ice

accumulates on them, they are heavily weighed down. When the ice melts, the lines snap up and wrap around other overhead lines, causing a short and significant structural damage.

Severe winter weather also can cause the temporary closure of key roads and highways, air and train operations, businesses, schools, government offices and other important community services. Below freezing temperatures can also lead to breaks in un-insulated water lines serving schools, businesses, and industry and individual homes. All of these effects if lasting more than several days can create significant economic impacts for the communities affected as well for the surrounding region, and even outside of Oregon. In the rural areas of Oregon severe winter storms can isolate small communities, farms and ranches and create serious problems for open range cattle operations such as those in southeastern Oregon.

Winter storms can have significant impacts to the local economy. Early and late season extreme cold can damage agricultural crops, while snow and ice can block access for the distribution of crops and provision of agricultural services.

Hazard Risk Analysis

The participating Steering Committees, during this update, completed jurisdiction specific hazard risk analyses, based upon the previous plan's analyses. Each hazard analysis, developed from a Federal Emergency Management Agency (FEMA) tool that has been refined by the Oregon Military Department – Office of Emergency Management (OEM), addresses and weights (shown as percent within parentheses) probability (29%), vulnerability (21%), maximum threat (42%) and the history (8%) of each natural hazard and attributes a final hazard analysis score. The methodology produces scores that range from 24 to 240. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation. The method provides the jurisdiction with a relative ranking from which to prioritize mitigation strategies, but does not predict the occurrence of a particular hazard (for more information on all scores see Volume I, Section 2 of this NHMP). Provided below are brief descriptions of each category:

Probability is the likelihood of future occurrence within a specified period of time.
LOW = one incident likely within 75 to 100 years scores between 1 and 3 points
MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points
HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Vulnerability includes the percentage of population and property likely to be affected under an "average" occurrence of the hazard.
LOW = less than 1% affected scores between 1 and 3 points
MEDIUM = between 1 and 10% affected scores between 4 and 7 points
HIGH = more than 10% affected scores between 8 and 10 points

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.
LOW – score at 1 to 3 points based on… < 5% affected
MEDIUM – score at 4 to 7 points based on… 5 - 25% affected
HIGH – score at 8 to 10 points based on… > 25% affected

History is the record of previous occurrences.
LOW – score at 1 to 3 points based on… 0 - 1 event past 100 years

MEDIUM – score at 4 to 7 points based on… 2 - 3 events past100 years

HIGH – score at 8 to 10 points based on… 4 or more events past100 years

The hazard risk analysis ratings, as determined by each participating Steering Committee, are shown in the following table. Within the table the probability and vulnerability scores are shown in **bold** if they are higher than in 2008, in normal text if the same or if not ranked in 2008, and with (parentheses) if they are lower than in 2008. Areas that were not rated in 2008 are denoted with an asterisk (*). The following are the hazard risk analysis ratings for dust storm, extreme temperatures, windstorm, and winter storm.

Dust Storm Probability Assessment

Approximately half of the dust in today's atmosphere may result from changes to the environment caused by human activity, including agriculture, overgrazing, and the cutting of forests.[15] The Steering Committees considered the changing environment when assigning dust storm's probability score. Dust storms occur most frequently over deserts and regions of dry soil, where particles are loosely bound to the surface. They happen in any dry area where loose dirt can easily be picked up by wind.[16]

Dust Storm Vulnerability Assessment

The areas of most concern to dust storm events by the Baker County and Grant County Steering Committees are on highways that have a potential to cause an automobile collision. These types of dust storms were considered during a worst-case-scenario type event.

Table SW-5 Dust Storm Hazard Risk Analysis

	Total Threat Score	Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	90	#8	Moderate*	Moderate*	Moderate	Low
Baker City	NR	NR	NR	NR	NR	NR
Halfway	NR	NR	NR	NR	NR	NR
Grant	NR	NR	NR	NR	NR	NR
John Day	NR	NR	NR	NR	NR	NR
Union	38	#9	Low*	Low*	Low	Low
La Grande	24	#9	Low*	Low*	Low	Low
Wallowa	NR	NR	NR	NR	NR	NR
Enterprise	NR	NR	NR	NR	NR	NR

Source: County and City Steering Committee Meetings (2013)

[15] Oregon State NHMP 2012

[16] Oregon State NHMP 2012

Extreme Temperatures Probability Assessment

During the risk assessment portion of the city and county meetings it was noted that extreme temperatures events have frequently occurred for many of the participating jurisdictions. The Steering Committees noted that there are changing variables in the environment when assigning the score for probability. All of the Steering Committees assumed a high probability of future occurrence.

Extreme Temperatures Vulnerability Assessment

The Steering Committees were most concerned with how extreme temperatures events could affect their more vulnerable populations, particularly the elderly.

Table SW-6 Extreme Temperatures Hazard Risk Analysis

	Total Threat Score	County Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	NR	NR	NR	NR	NR	NR
Baker City	171	#6	High*	Moderate*	High	Moderate
Halfway	NR	NR	NR	NR	NR	NR
Grant	NR	NR	NR	NR	NR	NR
John Day	165	#6	High*	Moderate*	Moderate	High
Union	198	#4	High*	High*	High	Moderate
La Grande	188	#5	High*	High*	High	Low
Wallowa	NR	NR	NR	NR	NR	NR
Enterprise	163	#4	High*	Moderate*	Moderate	Low

Source: County and City Steering Committee Meetings (2013)

Windstorm Probability Assessment

The recurrence interval of a windstorm on the order of the Columbus Day Storm (Oct., 1962) is about 100 years.[17] Lesser windstorms can be expected annually. The hazard history section details numerous severe windstorm events and/ or tornadoes affecting the county and cities since 1931.While other storms could have been included with more background information available, those included average out to one windstorm or tornado every 1.8 years. It should be noted that some of the report incidents are localized events that do not affect large areas of the county or cities.

Windstorm Vulnerability Assessment

Many buildings, utilities, and transportation systems within Northeastern Oregon are vulnerable to wind damage. This is especially true in open areas, such as natural grasslands or farmlands. It also is true in forested areas, along tree-lined roads and electrical transmission lines, and on residential parcels where trees have been planted or left for aesthetic purposes. Structures most vulnerable to high winds in Northeast Oregon include

[17] George Taylor, State Climatologist

insufficiently-anchored manufactured homes and older buildings with roof structures not designed for anticipated wind loads. Fallen trees and debris are common and can block roads for long periods, in addition to bringing down power and/or utility lines.

Table SW-7 Windstorm Hazard Risk Analysis

	Total Threat Score	County Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	202	#4	High	**High**	High	High
Baker City	192	#5	High*	Moderate	High	High
Halfway	157	#4	High*	Moderate*	Moderate	High
Grant	231	#4	High	High	High	High
John Day	231	#2	High*	High*	High	High
Union	172	#5	High	High	High	High
La Grande	113	#8	High	(Moderate)	Low	Low
Wallowa	194	#4	High	(Moderate)	High	High
Enterprise	194	#3	High	Moderate	High	High

Source: County and City Steering Committee Meetings (2013)

Winter Storm Probability Assessment

The recurrence interval for severe winter storms throughout Oregon is about every 13 years; however, there can be many localized storms between these periods. While other storms could have been included with more background information available, those included average out to one winter storm every 2.5 years. Destructive winter storms that produce heavy snow, ice, rain and freezing rain, and high winds have a long history in Oregon. Severe storms affecting Oregon with snow and ice typically originate in the Gulf of Alaska or in the central Pacific Ocean. These storms are most common from October through March. Ice storms are comprised of cold temperatures and moisture, but subtle changes can result in varying types of ice formation, which may include freezing rain, sleet and hail. Of these, freezing rain can be the most damaging of ice formations. Outside of mountainous areas significant snow accumulations are much less likely western Oregon than on the eastside of the Cascades. However, if a cold air mass moves northwest through the Columbia Gorge and collides with a wet Pacific storm then a larger than average snowfall may result.

Winter Storm Vulnerability Assessment

Severe winter storms can cause power outages and transportation and economic disruptions, and pose a high risk for injuries and loss of life. The events can also be typified by a need to shelter and care for adversely impacted individuals. Northeast Oregon has suffered severe winter storms in the past that brought economic hardship and affected the life and safety of residents. Future severe winter storms may cause similar impacts region wide.

Table SW-8 Winter Storm Hazard Risk Analysis

	Total Threat Score	County Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	238	#2	High	High	High	High
Baker City	233	#2	High	High	High	High
Halfway	113	#6	Moderate*	Low*	Moderate	Low
Grant	231	#4	High	High	High	High
John Day	231	#2	High*	High*	High	High
Union	240	#1	High	High	High	High
La Grande	230	#1	High	High	High	Moderate
Wallowa	201	#2	High	(Moderate)	High	High
Enterprise	195	#2	High	Moderate	High	Moderate

Source: County and City Steering Committee Meetings (2013)

Existing Severe Weather Mitigation Activities

Dust Storm

Soil Water and Conservation Districts have been actively promoting, through education and incentives, direct seeding methods. Direct seeding (or no-till cropping systems) results in minimal soil disturbance and reduced potential for wind and water erosion. The Cooperative State Research, Education, and Extension Service (CRSEES) funded research on a no-till crop project found here: http://www.csrees.usda.gov/nea/nre/sri/air_sri_dust.html.

The Conservation Reserve Program (CRP) retires eligible cropland from agricultural production and plants the land with permanent grass cover to reduce erosion and therefore dust storm events.

Extreme Temperatures

FEMA has recommendations for extreme temperature mitigation activities. In order to help vulnerable population types from extreme cold events, which was of concern by the city working groups, measures should be taken to ensure that they are protected. These can include: organizing outreach to vulnerable populations by establishing and promoting accessible heating centers within the communities; requiring minimum temperatures in housing codes; encouraging utility companies to offer special arrangement for paying heating bills; and creating a database to track vulnerable populations (e.g. elderly and homeless). Baker City noted that they already engage in activities to educate property owners about freezing pipes. These activities can include locating water pipes on the inside of the building insulation or keeping them out of attics, crawl spaces and vulnerable outside walls.[18]

[18] FEMA "Mitigation Ideas – A Resource for Reducing Risk to Natural Hazards" http://www.fema.gov/media-library-data/20130726-1904-25045-0186/fema_mitigation_ideas_final508.pdf

Windstorm

Oregon Building Codes (both residential and other code) set standards to withstand 80 mph winds. It is based on the 2003 edition of the International Residential Code and the International Building Code. FEMA has recommended having a safe room in homes or small businesses to prevent residents and workers from "dangerous forces" of extreme winds to avoid injury or death. This recommendation is provided through FEMA's resources manual: Taking Shelter from the Storm.[19]

Existing strategies and programs at the state level are usually performed by Public Utility Commission (OPUC), Building Code Division (BCD), Oregon Department of Forestry (ODF), Oregon Emergency Management (OEM), Oregon Department of Transportation (ODOT), and the Oregon Emergency Response System (OERS), who all have vital roles in providing windstorm warnings statewide.

The Public Utility Commission ensures operators manage, construct and maintain their utility lines and equipment in a safe and reliable manner. These standards are listed on the following website: http://www.puc.state.or.us/PUC/safety/index.shtml.

OPUC promotes public education and requires utilities to maintain adequate tree and vegetation clearances from high voltage utility lines and equipment.

Winter Storm

Studded tires can be used in Oregon from November 1 to April 1. They are defined under Oregon law as a type of traction tire. Research shows that studded tires are more effective than all-weather tires on icy roads, but can be less effective in most other conditions.

Street/ Road/ Highway Maintenance

Highway maintenance operations are guided by local level service (LOS) requirements. In general, classifications of highways receive more attention. Routes on the National Highway System network, primary interstate expressways and primary roads, will be cleared more quickly and completely.

The Oregon Department of Transportation is responsible for performing precautionary measures to maintain the safety and operability of roads during winter storm conditions. The road maintenance programs redesigned to provide the best use of limited resources to maximize the movement of traffic within the community during winter weather. During storm events, they focus on clearing major arterial and collector streets first, and then respond to residential connector streets, school zones, transit routes, and steep residential streets as resources become available. The cities also have mutual aid agreements with county and the maintenance section of ODOT that allow the city to swap portions of routes adjoining areas already served by other agencies. ODOT spends roughly $16 million per year on snow and ice removal from the state highway system through winter maintenance practices.

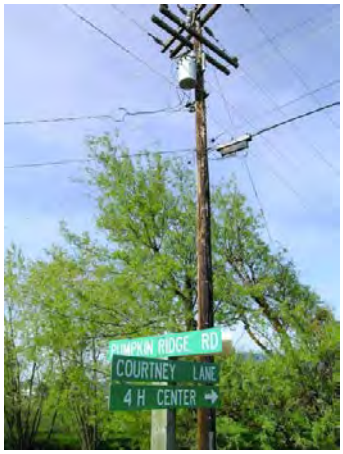
[19] http://www.fema.gov/safe-room-resources/fema-p-320-taking-shelter-storm-building-safe-room-yourhome-or-small-business

Through the educational collaboration between the Oregon Department of Forestry and the Pacific Northwest Chapter, International Society of Arboriculture (ISA) the *How to Recognize and Prevent Tree Hazards* activity brochure was create in February 2002.

Winter Storm Mitigation Activity #1

On May 13, 2005 Union County and the Oregon Trail Electric Project participated in a project that involved the inter-setting of electrical poles to a transmission line in the unincorporated community of Summerville. This project shortened the span lengths to reduce failure during winter storm events. This project was financed with HMGP funding. For more information on current mitigation activities see the matrix of mitigation action items in Appendix B.

Summerville Electric Line Project



Source: Oregon Emergency Management

Severe Weather Mitigation Action Items

The following actions have been identified by the Baker County, Baker City, Halfway, Grant County, John Day, Union County, La Grande, Wallowa County, and Enterprise Steering Committees, and are recommended for mitigating the potential effects of severe weather events in the various identified jurisdictions. Below you will find a brief description, title, of the action item, see the full action item worksheet in Appendix A for a full description of the action item.

Table SW-9 Severe Weather Mitigation Action Items

Action Item	Priority	Proposed Action Title	Action Item Form Page Number	Affected Jurisdictions								
				Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
SW #1		Participate in the NOAA Storm Ready Program	A-102	X			X		X		X	
SW #2		Shorten spans and anchor poles on utility lines in high wind or heavy icing areas	A-104	X			X		X		X	
SW #3		Bury overhead power lines in winter storm and windstorm prone areas	A-105	X			X		X		X	

Volcanic Event Hazard Annex

Volcanoes are present in Washington, Oregon, and California where volcanic activity is generated by continental plates moving against each other (Cascadia Subduction Zone movement). Because the population of the Pacific Northwest is rapidly expanding, volcanoes of the Cascades Range are now considered some of the most dangerous in the United States.[1]

Volcanoes, however, provide benefits to humans living on or near them. They produce fertile soil, and provide valuable minerals, geothermal resources, and scenic beauty. Volcanic products are used as building or road-building materials, as abrasive and cleaning agents, and as raw materials for many chemical and industrial uses. Volcanic ash makes soil rich in mineral nutrients thus encouraging human settlement.[2]

Causes and Characteristics of Volcanic Eruption

Northeast Oregon and the Pacific Northwest, lie within the "ring of fire," an area of very active volcanic activity surrounding the Pacific Basin. Volcanic eruptions occur regularly along the ring of fire, in part because of the movement of the Earth's tectonic plates. The Earth's outermost shell, the lithosphere, is broken into a series of slabs known as tectonic plates. These plates are rigid, but they float on a hotter, softer layer in the Earth's mantle. As the plates move about on the layer beneath them, they spread apart, collide, or slide past each other. Volcanoes occur most frequently at the boundaries of these plates and volcanic eruptions occur when the hotter, molten materials, or magma, rise to the surface.

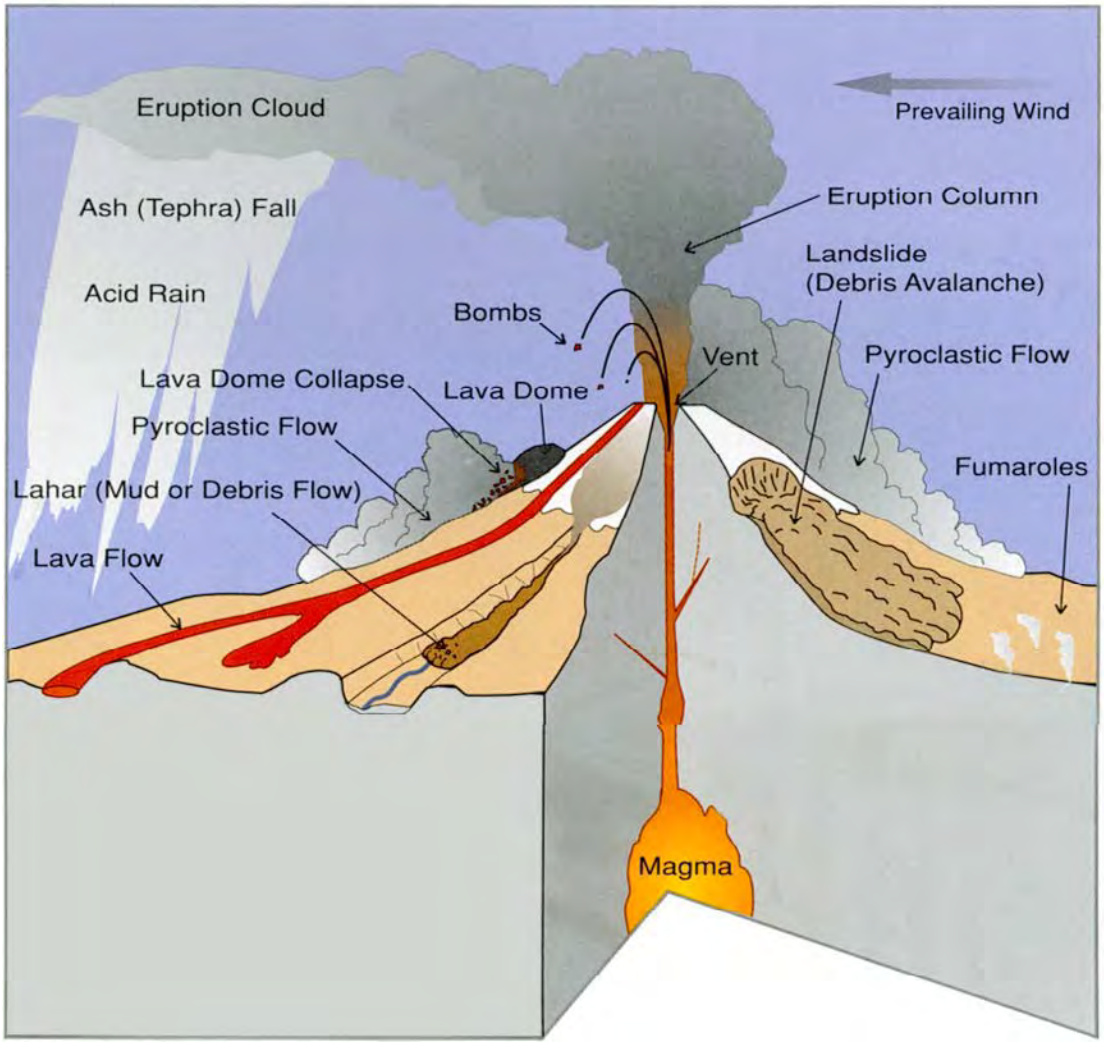
The primary threat to lives and property from active volcanoes is from violent eruptions that unleash tremendous blast forces, generate mud and debris flows, and produce flying debris and ash clouds. The immediate danger area in a volcanic eruption generally lies within a 20-mile radius of the blast site. The following section outlines the specific hazards posed by volcanoes.

Volcanoes are commonly conical hills or mountains built around a vent that connect with reservoirs of molten rock below the surface of the earth.[3] Some younger volcanoes may connect directly with reservoirs of molten rock, while most volcanoes connect to empty chambers. Unlike most mountains, which are pushed up from below, volcanoes are built up by an accumulation of their own eruptive products: lava or ash flows and airborne ash and dust. When pressure from gases or molten rock becomes strong enough to cause an upsurge, eruptions occur. Gases and rocks are pushed through the opening and spill over, or fill the air with lava fragments. Figure VE-1 diagrams the basic features of a volcano.

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[1] Dzurisin, Dan, Peter H. Stauffer, and James W. Hendley II, Living With Volcanic Risk in the Cascades, USGS Fact Sheet 165-97, (2000).
[2] FEMA Library: Volcanoes at http://www.fema.gov/library/volcano.htm.
[3] Tilling, Robert I., Volcanoes, USGS General Interest Publication, (1985).

Figure VE-1 Volcanic Hazard from a Composite Type Volcano



Source: Walder et al, "Volcano Hazards in the Mount Jefferson Region," 1999; W.E. Scott, R.M. Iverson, S.P. Schilling, and B.J. Fischer, Volcano Hazards in the Three Sisters Region, Oregon: U.S. Geological Survey Open-File Report 99-437, 14p,200.

Related Hazards

Ash / Tephra

Tephra consists of volcanic ash (sand-sized or finer particles of volcanic rock) and larger fragments. During explosive eruptions, tephra together with a mixture of hot volcanic gas are ejected rapidly into the air from volcanic vents. Larger fragments fall down near the volcanic vent while finer particles drift downwind as a large cloud. When ash particles fall to the ground, they can form a blanket-like deposit, with finer grains carried further away from the volcano. In general, the thickness of ash fall deposits decreases in the downwind direction. Tephra hazards include impact of falling fragments, suspension of abrasive fineparticles in the air and water, and burial of structures, transportation routes and vegetation.

During an eruption that emits ash, the ash fall deposition is controlled by the prevailing wind direction.[4] The predominant wind pattern over the Cascades is from the west, and previous eruptions seen in the geologic record have resulted in most ash fall drifting to the east of the volcanoes.[5]

Earthquakes

Volcanic eruptions can be triggered by seismic activity or earthquakes can occur during or after a volcanic eruption. Earthquakes produced by stress changes are called volcano-tectonic earthquakes. These earthquakes, typically small to moderate in magnitude, occur as rock is moving to fill in spaces where magma is no longer present and can cause land to subside or produce large ground cracks.[6] In addition to being generated after an eruption and magma withdrawal, these earthquakes also occur as magma is intruding upward into a volcano, opening cracks and pressurizing systems.[7] Volcano-tectonic earthquakes do not indicate that the volcano will be erupting but can occur at anytime and cause damage to manmade structures or provoke volcanic events.

Lava flows

Lava flows are streams of molten rock that erupt relatively non-explosively from a volcano and move down slope, causing extensive damage or total destruction by burning, crushing, or burying everything in their paths. Secondary effects can include forest fires, flooding, and permanent reconfiguration of stream channels.[8]

Pyroclastic flows and surges

Pyroclastic flows are avalanches of rock and gas at temperatures of 600 to 1500 degrees Fahrenheit. They typically sweep down the flanks of volcanoes at speeds of up to 150 miles per hour. Pyroclastic surges are a more dilute mixture of gas and rock. They can move even more rapidly than a pyroclastic flow and are more mobile. Both generally follow valleys, but surges sometimes have enough momentum to overtop hills or ridges in their paths. Because of their high speed, pyroclastic flows and surges are difficult or impossible to escape. If, it is expected that they will occur, evacuation orders should be issued as soon as possible for the hazardous areas. Objects and structures in the path of a pyroclastic flow are generally destroyed or swept away by the impact of debris or by accompanying hurricane-force winds. Wood and other combustible materials are commonly burned. People and animals may also be burned or killed by inhaling hot ash and gases. The deposit that results from pyroclastic flows is a combination of rock bombs and ash and is termed *ignimbrite.* These deposits may accumulate to hundreds of feet thick and can harden to resistant rock.[9]

Lahars and debris flows

Lahar is an Indonesian term that describes a hot or cold mixture of water and rock fragments flowing down the slopes of a volcano or river valley.[10] Lahars typically begin when floods related to volcanism are produced by melting snow and ice during eruptions of ice-

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[4]Oregon State Natural Hazard Mitigation Plan. 2012." Volcanic Hazards Chapter,"
[5] Ibid.
[6]Riley, Colleen M., A Basic Guide to Volcanic Hazards, Michigan Technological University: http://www.geo.mtu.edu/volcanoes/hazards/primer.
[7]Scott, W. E., USGS Cascades Volcano Observatory, Personal Correspondence, (July 5, 2001).
[8]Oregon State Natural Hazard Mitigation Plan. 2012." Volcanic Hazards Chapter,"
[9] Ibid.
[10]USGS website: http://volcanoes.usgs.gov/Hazards/What/Lahars/lahars.html

clad volcanoes like Mount Shasta, and by heavy rains that may accompany eruptions. Floods can also be generated by eruption-caused waves that could overtop dams or move down outlet streams from lakes.

Lahars react much like flash flood events in that a rapidly moving mass moves downstream, picking up more sediment and debris as it scours out a channel. This initial flow can also incorporate water from rivers, melting snow and ice. By eroding rock debris and incorporating additional water, lahars can easily grow to more than ten times their initial size. But as a lahar moves farther away from a volcano, it will eventually begin to lose its heavy load of sediment and decrease in size.[11]

Lahars often cause serious economic and environmental damage. The direct impact of a lahar's turbulent flow front or from the boulders and logs carried by the lahar can easily crush, abrade, or shear off at ground level just about anything in the path of a lahar. Even if not crushed or carried away by the force of a lahar, buildings and valuable land may become partially or completely buried by one or more cement-like layers of rock debris. By destroying bridges and key roads, lahars can also trap people in areas vulnerable to other hazardous volcanic activity, especially if the lahars leave deposits that are too deep, too soft, or too hot to cross.[12]

Volcanic Landslides (debris avalanches)

Landslides – or debris avalanches – are a rapid downhill movement of rocky material, snow, and (or) ice. Volcanic landslides range in size from small movements of loose debris on the surface of a volcano to massive collapses of the entire summit or sides of a volcano. Steep volcanoes are susceptible to landslides because they are built up partly of layers of loose volcanic rock fragments. Landslides on volcano slopes are triggered not only by eruptions, but also by heavy rainfall or large earthquakes that can cause materials to break free and move downhill.[13]

History of Volcanic Events in Northeast Oregon

Although there have been no recent volcanic events in the Northeast Oregon region, it is important to note the area is active and susceptible to eruptive events since the region is near the volcanic Cascades Range. Figure VE-2 displays volcanoes of the western United States.

[11] Ibid.
[12] Ibid.
[13] Wright and Pierson, Living With Volcanoes, USGS Volcano Hazards Program Circular 1973, (1992).

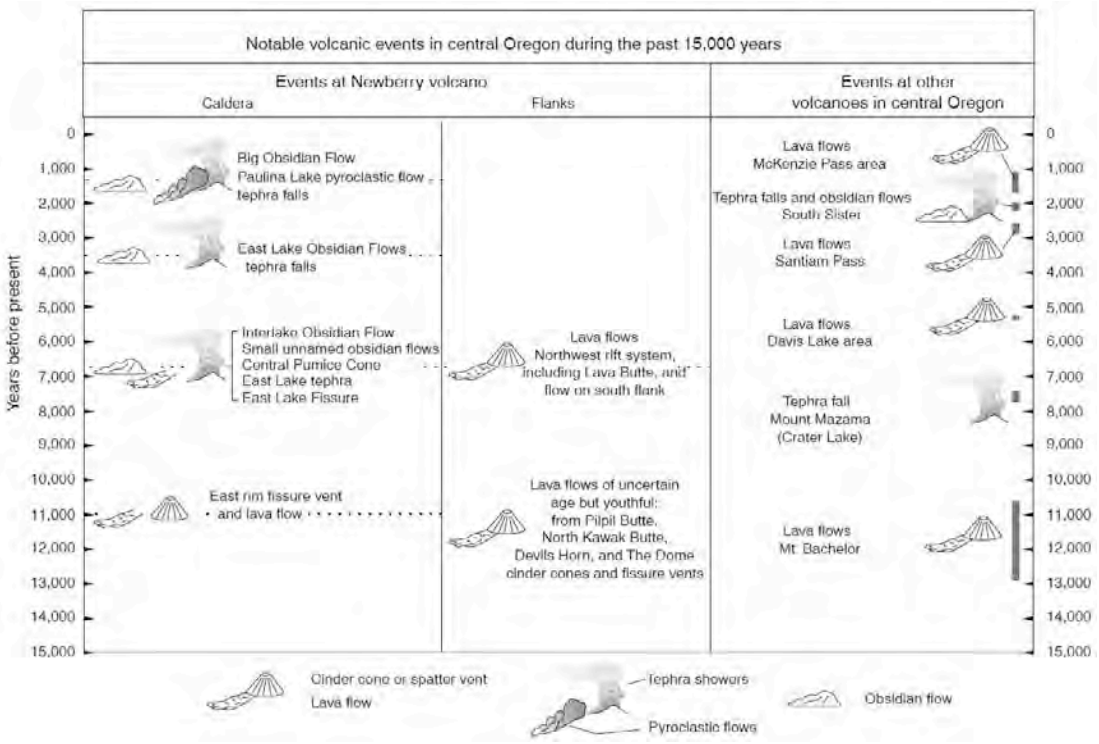
Figure VE-2Potentially Active Volcanoes of the Western United States



Source: USGS. http://www.volcano.si.edu/reports/usgs/maps.cfm#usa

Volcanoes in the Cascade Range have been erupting for hundreds of thousands of years. Newberry Volcano, for example, has had many events in the last 15,000 years as shown in the table below. The Three Sisters region has also had some activity during this time while the last major eruptive activity at Mt. Mazama occurred approximately 7,700 years ago, forming Crater Lake in its wake. Some of the most recent events include Big Obsidian Flow at Newberry Volcano. All of the Cascade volcanoes are characterized by long periods of quiescence and intermittent activity. And these characteristics make predictions, recurrence intervals, or probability very difficult to ascertain.

Figure VE-3 Notable Volcanic Events in Central Oregon during the Past 15,000 Years



Source: D.R. Sherrod, L.G. Mastin, W.E. Scott, and S.P. Schilling, 1997, Volcano Hazards at Newberry Volcano, Oregon: U.S. Geological Survey Open-File Report 97-513

Mount St. Helen's Case Study

On May 18, 1980, following two months of earthquakes and minor eruptions and a century of dormancy, Mount St. Helens in Washington, exploded in one of the most devastating volcanic eruptions of the 20th century. Although less than 0.1 cubic mile of magma was erupted, 58 people died, and damage exceeded 1.2 billion dollars. Fortunately, most people in the area were able to evacuate safely before the eruption because the U.S. Geological Survey (USGS) and other scientists had alerted public officials to the danger. As early as 1975, USGS researchers had warned that Mount St. Helens might soon erupt. Coming more than 60 years after the last major eruption in the Cascades (Lassen Peak), the explosion of St. Helens was a spectacular reminder that the millions of residents of the Pacific Northwest share the region with live volcanoes.[14]

[14]Dzurisin, Dan, Peter H. Stauffer, and James W. Hendley II, Living With Volcanic Risk in the Cascades, USGS Fact Sheet 165-97, (2000).

Risk Assessment

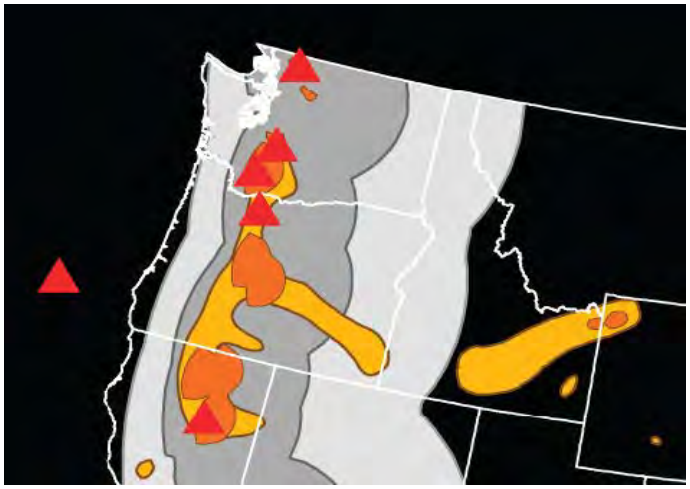
How are Hazards Identified?

Note: The red triangles are volcano locations. Dark-orange areas have a higher volcanic hazard; light-orange areas have a lower volcanic hazard. Dark-gray areas have a higher ash fall hazard; light-gray areas have a lower ash fall hazard. Information is based on data during the past 10,000 years.

Communities that are closer to volcanoes may be at risk to the proximal hazards, as well as the distal hazards, such as lahars, lava flows, and ash fall. The communities that are farther away, such as Baker City and La Grande, are only at risk from the distal hazards, (mainly ash fall). The image below shows the locations of some of the Cascade volcanoes (red triangles) with relative volcanic hazard zones. In the figure below dark orange areas have a higher volcanic hazard; light-orange areas have a lower volcanic hazard. Dark-grey areas have a higher ash fall hazard; light-grey areas have a lower ash fall hazard.

Geologic hazard maps have been created for most of the volcanoes in the Cascade Range by the USGS Volcano Program at the Cascade Volcano Observatory in Vancouver, WA and are available at http://vulcan.wr.usgs.gov/Publications/hazards_reports.html.

Figure VE-4 National Volcanic Hazard Map



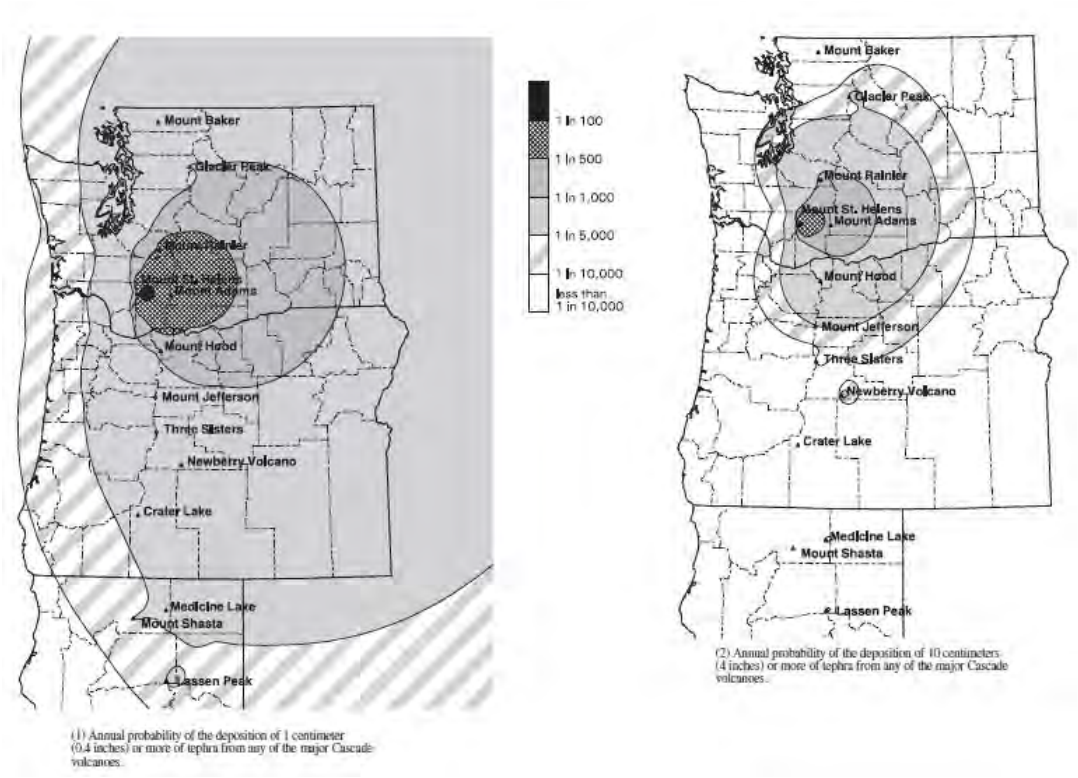
Source: Image modified from USGS Fact Sheet 2006-3014

Scientists also use wind direction to predict areas that might be affected by volcanic ash; during an eruption that emits ash, the ash fall deposition is controlled by the prevailing wind direction. The predominant wind pattern over the Cascades originates from the west, and previous eruptions seen in the geologic record have resulted in most ash fall drifting to the east of the volcanoes. Figure VE-5 depicts the potential and geographical extent of volcanic ash fall in excess of ten centimeters from a large eruption within the Cascade Range (Mt. St. Helens). The image on the left shows the annual probability of the deposition of one-centimeter or more of tephra; the figure on the right shows the annual probability of the deposition of ten-centimeters or more of tephra.

Cascadia: Living On Fire

A detailed report of the Pacific Northwest's catastrophic hazards and history written by Rick Gore appears in the May 1998 National Geographic, Vol. 193, No. 5. For more information or to request a back copy of this article, write to: National Geographic Society, P.O. Box 98199, Washington, D.C. 20090-8199 or visit www.nationalgeographic.com on the Internet.

Figure VE-5 Regional Tephra-fall Maps



Source: USGS "Volcano Hazards in the Mount Jefferson Region, Oregon"

Hazard Risk Analysis

The participating Steering Committees, during this update, completed jurisdiction specific hazard risk analyses, based upon the previous plan's analyses. Each hazard analysis, developed from a Federal Emergency Management Agency (FEMA) tool that has been refined by the Oregon Military Department – Office of Emergency Management (OEM), addresses and weights (shown as percent within parentheses) probability (29%), vulnerability (21%), maximum threat (42%) and the history (8%) of each natural hazard and attributes a final hazard analysis score. The methodology produces scores that range from 24 to 240. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation. The method provides the jurisdiction with a relative ranking from which to prioritize mitigation strategies, but does not predict the occurrence of a particular

hazard (for more information on all scores see Volume I, Section 2 of this NHMP). Provided below are brief descriptions of each category:

Probability is the likelihood of future occurrence within a specified period of time.
LOW = one incident likely within 75 to 100 years scores between 1 and 3 points
MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points
HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Vulnerability includes the percentage of population and property likely to be affected under an "average" occurrence of the hazard.
LOW = less than 1% affected scores between 1 and 3 points
MEDIUM = between 1 and 10% affected scores between 4 and 7 points
HIGH = more than 10% affected scores between 8 and 10 points

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.
LOW – score at 1 to 3 points based on… < 5% affected
MEDIUM – score at 4 to 7 points based on… 5 - 25% affected
HIGH – score at 8 to 10 points based on… > 25% affected

History is the record of previous occurrences.
LOW – score at 1 to 3 points based on… 0 - 1 event past 100 years
MEDIUM – score at 4 to 7 points based on… 2 - 3 events past100 years
HIGH – score at 8 to 10 points based on… 4 or more events past100 years

The hazard risk analysis ratings, as determined by each participating Steering Committee, are shown in the following table. Within the table the probability and vulnerability scores are shown in **bold** if they are higher than in 2008, in normal text if the same or if not ranked in 2008, and with (parentheses) if they are lower than in 2008. Areas that were not rated in 2008 are denoted with an asterisk (*).

Table VE-1 Volcanic Event Hazard Risk Analysis

	Total Threat Score	Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	54	#10	Low	Low	Moderate	Low
Baker City	34	#10	Low*	Low*	Low	Low
Halfway	24	#8	Low*	Low*	Low	Low
Grant	129	#7	Low	High	High	Low
John Day	119	#8	Low*	Moderate*	High	Low
Union	24	#10	Low	Low	Low	Low
La Grande	24	#9	Low*	Low*	Low	Low
Wallowa	79	#8	Low	Low	Moderate	Low
Enterprise	79	#7	Low	Low	Moderate	Low

Source: County and City Steering Committee Meetings (2013)

Additionally, each of the county Steering Committees completed a "Relative Risk Assessment" that ranks "severity of impact" and "relative risk" for each hazard. For more information on these scores see Volume I, Section 2 of this NHMP. For additional information on participating city ratings see Volume III of this NHMP.

History Assessment

The only historical example of damage from a volcano is from the Mt. Saint Helens eruption's ash fallout.

Probability of Future Occurrence

Mt. Saint Helens remains a probable source of air borne tephra. It has repeatedly produced large amounts of this material and has erupted more frequently than any other Cascade volcano. Because wind direction and velocity vary with both time and altitude, it is impossible to predict the direction and speed of tephra transport more than a few hours in advance.[15] Mt. Saint Helens is about 250 miles from the City of Enterprise; consequently it may be greatest at risk.[16] The annual probability of 1 cm or more of tephra accumulation within Northeast Oregon from any Cascade volcano is about 1 in 5,000.[17]

Vulnerability Assessment

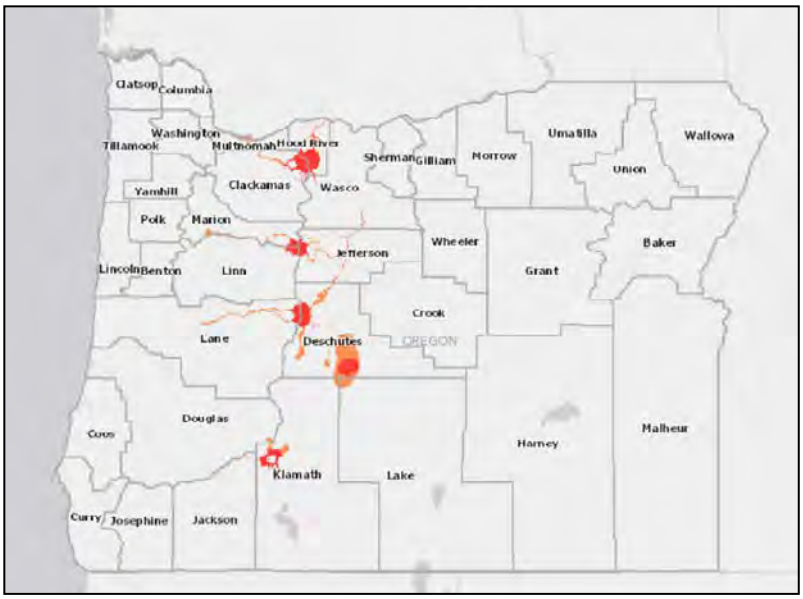
For Northeast Oregon, the largest vulnerability in terms of volcanic hazards lies in ash fallout from a volcanic event in the Cascades or in Mount St. Helens. Ash can disrupt the engines of motor vehicles and can affect vulnerable populations such as people with asthma.

While a quantitative vulnerability assessment (an assessment that describes number of lives or amount of property exposed to the hazard) has not yet been conducted for Northeast Oregon volcanic eruption events, there are many qualitative factors (issues relating to what is in danger within a community) that point to potential vulnerability.

Many parts of Oregon, including this region are susceptible to volcanic hazards, particularly in the portions closer to Mount St. Helens. Volcanoes can pose significant threats to people and infrastructure. As population growth continues to expand and development becomes closer to the potentially active volcanoes, greater losses from volcanic hazards are likely to result. The level of risk from volcanic hazards can be determined through the comparison of the overlap of hazard and exposure.

[15] USGS Open File Report 95-247 p. 6
[16] Oregon State NHMP Region 7 Hazard Analysis p. 23
[17] USGS Open File Report 97-513 p. 9

Figure VE-6 Map of Generalized Vulnerability of the Region



Source: DOGAMI HazVu: Statewide GeohazardsViewer

As Table VE-6 shows, no portion of Northeast Oregon is within a hazard zone from an (Oregon) volcano. There is also no present threats from a Washington or Idaho volcano.

Community Hazard Issues

What is susceptible to damage during a hazard event?

Volcanic eruptions can send ash airborne, spreading the ash for hundreds or even thousands of miles. An erupting volcano can also trigger flash floods, earthquakes, rockfalls, and mudflows. Volcanic ash can contaminate water supplies, cause electrical storms, and collapse roofs.[18]

Businesses and individuals can make plans to respond to volcano emergencies. Planning is prudent because once an emergency begins, public resources can often be overwhelmed, and citizens may need to provide for themselves and make informed decisions. Knowledge of volcano hazards can help citizens make a plan of action based on the relative safety of areas around home, school, and work.[19]

Building and Infrastructure Damage

Buildings and other property in the path of a flash flood, debris flow, or tephra fall can be damaged. Thick layers of ash can weaken roofs and cause collapse, especially if wet. Clouds of ash often cause electrical storms that start fires or damp ash can short-circuit electrical systems and disrupt radio communication.

[18]Dzurisin, Dan, Peter H. Stauffer, and James W. Hendley II, Living With Volcanic Risk in the Cascades, USGS Fact Sheet 165-97, (2000).
[19]Scott, W.E. et al, Volcano Hazards in the Three Sisters Region, Oregon, USGS Open-File Report 99-437, (2001).

Pollution and Visibility

Tephra fallout from an eruption column can blanket areas within a few miles of the vent with a thick layer of pumice. High-altitude winds may carry finer ash tens to hundreds of miles from the volcano, posing a hazard to flying aircraft, particularly those with jet engines. In an extreme situation, the airports would need to close to prevent the detrimental effect of fine ash on jet engines and for pilots to avoid total impaired visibility. Fine ash in water supplies will cause brief muddiness and chemical contamination.

Economic Impacts

Volcanic eruptions can disrupt the normal flow of commerce and daily human activity without causing severe physical harm or damage. Ash a few millimeters thick can halt traffic, possibly up to one week, and cause rapid wear of machinery, clog air filters, block drains and water intakes, and can kill or damage agriculture.

Transportation of goods between Northeast Oregon and nearby communities and trade centers could be deterred or halted. Subsequent airport closures can disrupt airline schedules for travelers. Ash can cause short circuits in electrical transformers, which in turn cause electrical blackouts. Volcanic activity can also force nearby recreation areas to close for safety precautions long before the activity ever culminates into an eruption.

Death and Injury

Inhalation of volcanic ash can cause respiratory discomfort, damage or result in death for sensitive individuals miles away from the cone of a volcano. Likewise, emitted volcanic gases such as fluorine and sulfur dioxide can kill vegetation for livestock or cause a burning discomfort in the lungs. Hazards to human life from debris flows are burial or impact by boulders and other debris.

Existing Hazard Mitigation Activities

A major existing strategy to address volcanic hazards is to publicize and distribute volcanic hazard maps through DOGAMI and USGS. The volcanoes most likely to constitute a hazard to Oregon communities have been the subject of USGS research. Open-file reports (OFR) address the geologic history of these volcanoes and lesser-known volcanoes in their immediate vicinity. These reports also cover associated hazards and possible mitigation strategies. They are available for volcanoes near Northeast Oregon including: Mount Saint Helens, Three Sisters, Newberry Volcano and Crater Lake.

Volcanic Event Mitigation Action Items

No actions have been identified at this time for any of the counties or cities in northeast Oregon.

WILDFIRE HAZARD ANNEX

Causes and Characteristics of Wildfire

The majority of wildfires primarily occur in Eastern and Southern Oregon. Fire is an essential part of Oregon's ecosystem, but it is also a serious threat to life and property particularly in the state's growing rural communities. Wildfires are defined as an uncontrollable burning of forest, brush, or grassland. The Oregon Department of Forestry has estimated that there are about 200,000 homes in areas of serious wildfire risk.

Wildfires threaten valued forest and agricultural lands and individual home sites. State or federal firefighters provide the only formal wildfire suppression service in some areas, and they do not protect structures as a matter of policy. As a result, many rural dwellings have no form of fire protection. Once a fire has started, homes and development in wildland settings complicate firefighting activities and stretch available human and equipment resources. The loss of property and life, however, can be minimized through cooperation, preparedness, and mitigation activities.

Oregon has a very lengthy history of wildfires in undeveloped wildlands but also in the developing wildland/urban interface (WUI), areas of forested land with residents and other structures within the reach of wildfire. There are large areas in this region that make up the WUI which is susceptible to wildfire. Other areas that are less forested or are covered by brush and grassland also create susceptibility. As the population in this region grows, development in the WUI increases, posing a larger threat to life and property.

To reduce the impact of wildfire on the county, each county in the region individually adopted County Community Wildfire Protection Plans (CWPPs). The CWPP provides detailed information on the vulnerability and history of wildfire in the County, and provides a series of mitigation actions the county can implement to reduce the impact of wildfire.

Communities located in areas near rangeland or forests or a WUI may be at risk to wildfire hazards. Based on historic data, wildfires have occurred in this region and are likely to happen again.

The impact on communities from wildfire can be huge. In 1990, Bend's Awbrey Hall Fire destroyed 21 homes, causing $9 million in damage and costing over $2 million to suppress. The 1996 Skeleton fire in Bend burned over 17,000 acres and damaged or destroyed 30 homes and structures. Statewide that same year, 218,000 acres were burned, 600 homes threatened and 44 homes were lost. The 2002 Biscuit fire in southern Oregon affected over 500,000 acres and cost $150 million to suppress. Wildfires that have the potential to affect Northeast Oregon can be divided into four categories: interface fires, wildland fires, firestorms, and prescribed fires.[1]

[1]Federal Emergency Management Agency, Multihazard, Identification and Risk Assessment Report, (1997), Washington, D.C.

Interface Fires

Essentially an interface fire occurs where wildland and developed areas come together with both vegetation and structural development combining to provide fuel. The wildland/urban interface (sometimes called rural interface in small communities or outlying areas) can be divided into three categories.

- The classic wildland/urban interface exists where well-defined urban and suburban development presses up against open expanses of wildland areas.
- The mixed wildland/urban interface is more typical of the problems in areas of exurban or rural development: isolated homes, subdivisions, resorts and small communities situated in predominantly in wildland settings.
- The occluded wildland/urban interface where islands of wildland vegetation exist within a largely urbanized area.

Wildland Fires

A wildland fire's main fuel source is natural vegetation. Often referred to as forest or rangeland fires, these fires occur in national forests and parks, private timberland, and on public and private rangeland. A wildland fire can become an interface fire if it encroaches on developed areas.

Firestorms

Firestorms are events of such extreme intensity that effective suppression is virtually impossible. Firestorms often occur during dry, windy weather and generally burn until conditions change or the available fuel is consumed. The disastrous 1991 East Bay Fire in Oakland, California is an example of an interface fire that developed into a firestorm. In 1987, widespread dry lightning in late August ignited fires throughout northern California and southwest Oregon. Two of these were over 10,000 acres, and according to the Oregon Department of Forestry, this series of events fits the definition of a firestorm. Resources were brought in from other states and Canada to fight them.

Prescribed Fires

Prescribed fires are intentionally set or are select natural fires that are allowed to burn for beneficial purposes. Before humans suppressed forest fires, small, low intensity fires cleaned the underbrush and fallen plant material from the forest floor while allowing the larger plants and trees to live through the blaze. These fires were only a few inches to two feet tall and burned slowly. Forest managers now realize that a hundred years of prevention has contributed to the unnatural buildup of plant material that can flare up into tall, fast moving wildfires. These can be impossible to control and can leave a homeowner little time to react.

Conditions Contributing to Wildfires

Ignition of a wildfire may occur naturally from lightning or from human causes such as debris burns, arson, careless smoking, and recreational activities or from an industrial accident. Once started, four main conditions affect the fire's behavior: fuel, topography, weather and development.

Fuel

Fuel is the material that feeds a fire. Fuel is classified by volume and type. Vegetation in Northeast Oregon varies from rangeland (sagebrush and grasses) to heavily forested areas.[2]Forested lands provide a larger fuel source to wildfires than other vegetated lands due to the presence of large amounts of timber and other dense vegetation in these areas. The agriculture in Northeast Oregon (e.g. wheat) and the rangelands used for livestock make it more prone to wildfires.[3]Overabundant, dense forest fuels are often a focus of public discussion.[4]These fuels are highly flammable and burn rapidly, particularly the dried grass and weeds.

Topography

Topography influences the movement of air and directs a fire's course. Slope and hillsides are key factors in fire behavior. Unfortunately, hillsides with steep topographic characteristics are also desirable areas for residential development.

In this region, much of the topography is hilly or mountainous which also can induce wildfire hazards. These areas can cause a wildfire to spread rapidly and burn larger areas in a shorter period of time, especially, if the fire starts at the bottom of a slope and migrates uphill as it burns. Wildfires tend to burn more slowly on flatter lying areas but this does not mean these areas are exempt from a rapidly moving or spreading fire. Other hazards that can affect these areas after the fire has been extinguished include wildfire events or debris flows and erosion.

Weather

Weather is the most variable factor affecting wildfire behavior. High risk areas in Oregon share a hot, dry season in late summer and early fall with high temperatures and low humidity. The majority of wildfires occur between June and October.[5]

The average annual precipitation is comparable at different NOAA stations throughout the region. Average annual precipitation ranges from nearly11 inches at Baker FAA AP NOAA Station in Baker County to approximately 24 inches at the Elgin NOAA Station in Union

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[2] Grant County CWPP 2013

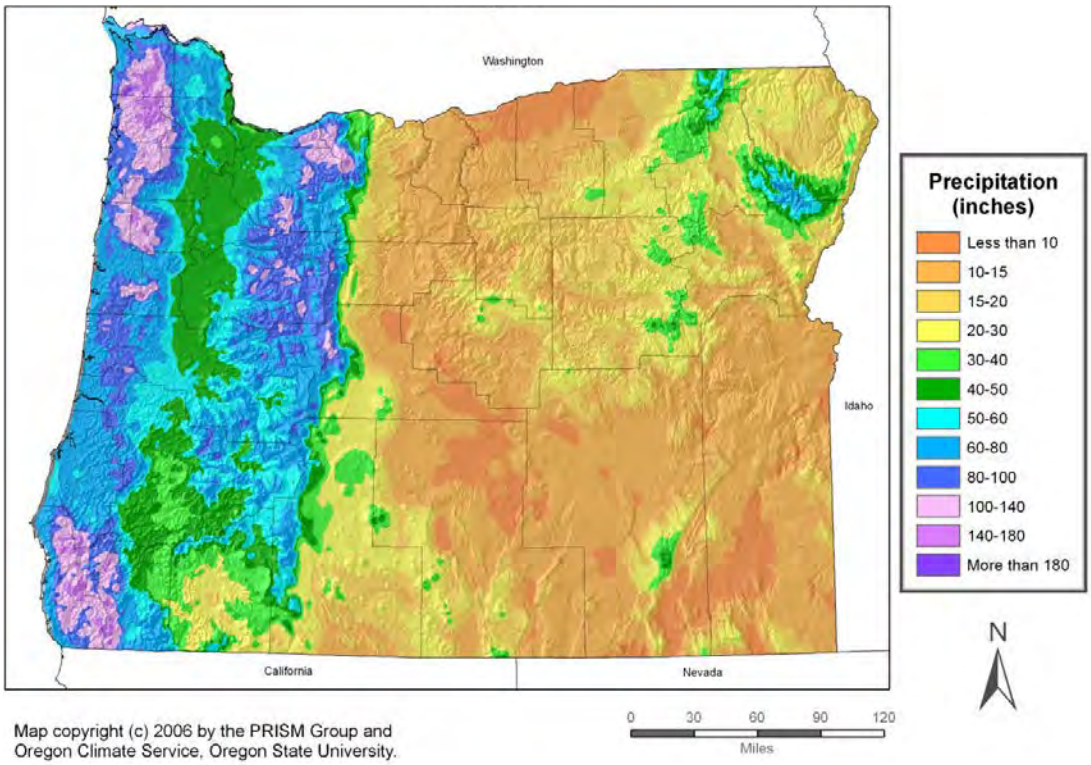
[3] Baker County CWPP (2006)

[4] Ibid

5Baker County CWPP (2006)

County. Annual precipitation for the four counties is almost always below 20 inches. Areas of higher elevation generally have larger annual rainfall and areas of lower elevation have smaller annual rainfall.[6] Higher precipitation tends to spike in spring and again in the late fall. Monthly distribution compared to the rest of Oregon is mostly uniform throughout the year, and well distributed across the months.

Figure WF-1 Oregon Average Annual Precipitation



Source: PRISM Group and Oregon Climate Service, Oregon State University "Oregon Average Annual Precipitation (1971-2000)" http://www.ocs.orst.edu/prism/index.phtml

The natural ignition of wildfires is largely a function of weather and fuel; human caused fires add another dimension to the probability. Lightning strikes in areas of forest or rangeland combined with any type of vegetative fuel source will always remain as a source for wildfire. Thousands of lightning strikes occur each year throughout much of the region. Fortunately, not every lightning strike causes a wildfire, though they are a major contributor.

Development

The increase in residential development in interface areas has resulted in greater wildfire risk. Fire has historically been a natural wildland element and can sweep through vegetation that is adjacent to a combustible home. New residents in remote locations are

6 Oregon Climate Services "Climate Division 8 – Northeast Oregon" http://www.ocs.orst.edu/county_climate/Baker_files/Baker.html

often surprised to learn that in moving away from built-up urban areas, they have also left behind readily available fire services providing structural protection.

History of Wildfire in Northeast Oregon

The table below provides the history of wildfires from 1960 to 2013 for fires of 1,000 acres and greater. The notable fires that have occurred since 1960 include the Rooster Peak fire in Union County in 1973 which significantly threatened the City of La Grande and destroyed structures nearby;[7] the Tower Fire in Grant County in 1996 and the Jim Creek/Eastside fire in Wallowa in 2000.

[7] Union County CWPP 2004

Table WF-1 Wildfire History (>1,000 acres) for the years 1960-2013

Fire Year	Fire Name	County	Report Date	General Cause	Total Acres
1960		Union	7/20/60	Lightning	2,938
1960	Anthony Creek	Baker	1960		15,015
1961		Union	7/19/61	Smoking	1,158
1973	Rooster Peak	Union	8/20/73	Lightning	6,400
1978	Ebell	Baker	8/11/78	Equipment Use	24,300
1986	Lost Cow	Baker	1986		10,318
1986	Cottonwood	Baker	8/2/86	Lightning	5,080
1986	Dry Creek	Baker	8/3/86	Railroad	2,280
1989	Dooley Mtn/ Juniper Hill	Baker	7/26/89	Lightning	20,123
1994	Twin Lakes	Baker	1994		21,957
1994	Little Malheur	Baker	1994		10,508
1995	Crawfish	Baker	1995		2,712
1996	Wildcat Fire	Grant	7/26/96	Lightning	10,303
1996	Sloans Ridge	Grant	8/8/96	Lightning	10,556
1996	Summit Fire	Grant	8/20/96	Lightning	37,842
1996	Tower Fire	Grant	8/26/96	Lightning	50,815
2000	Deep Creek/Eastside	Wallowa	8/24/200	Lightning	32,967
2000	Jim Creek/Eastside	Wallowa	8/24/00	Lightning	56,319
2001	Monument Complex	Grant	8/13/01	Lightning	32,352
2001	Horse Creek	Wallowa	8/14/01	Lightning	16,309
2002	Roberts Creek	Grant	7/12/02	Lightning	13,480
2002	Monument Rock	Baker	7/12/02	Lightning	25,000
2003	Lightning Creek Complex	Wallowa	8/20/03	Lightning	16,028
2005	Haas/ Tryon Complex	Wallowa	8/8/05	Lightning	42,700
2005	Spring Creek	Union	8/11/05	Recreationist	1,165
2006	McLean	Grant	7/25/06	Lightning	1,500
2006	Shake Table	Grant	8/22/06	Lightning	14,453
2006	Jim Creek	Wallowa	8/22/06	Lightning	12,946
2006	Twin Lakes Complex	Baker	9/4/06	Lightning	11,600

Source: Oregon Department of Forestry, Baker County CWPP 2006, Grant County CWPP 2013, Union County CWPP 2004, Wallowa County CWPP 2006

Table WF-1 Wildfire History (>1,000 acres) for the years 1960-2013 (continued)

Fire Year	Fire Name	County	Report Date	General Cause	Total Acres
2007	Battle Creek Complex	Wallowa	7/13/07	Lightning	79,299
2007	Monument Complex-Lovelett Ck	Grant	7/14/07	Lightning	53,556
2007	Irish Springs (Vale BLM)	Baker	8/14/07	Recreationist	45,743
2009	North Fork Complex	Grant	8/1/09	Lightning	14,000
2012	Cache Creek	Wallowa	8/20/12	Lightning	73,500

Source: Oregon Department of Forestry, Baker County CWPP 2006, Grant County CWPP 2013, Union County CWPP 2004, Wallowa County CWPP 2006

Pursuant to the Conflagration Act (ORS 476.510) Conflagrations are calls for assistance to other fire suppression authorities or equipment from around the state.[8] These are often extraordinary fires that can receive federal assistance and can only be issued by the governor. The table below includes a list of wildfire conflagrations since 1996.

Cache Creek Fire (August 22, 2012):

The Cache Creek Fire in Wallowa County burned over 73,000 acres over an eleven-day period near the confluence of the Snake River on its eastern border and the Grande Ronde River on its northern border. Starting on Monday August 20th the lightning caused fire started near Hells Canyon in the Cache Creek Area. The fire caused a temporary area closure in Hells Canyon.[9]

Figure WF-8 Hillside burning at the Cache Creek Fire



Source: Inciweb
http://www.inciweb.org/incident/article/3202/17145/

[8]Oregon State Police – Oregon Office of State Fire Marshal
http://www.oregon.gov/osp/SFM/Pages/Oregon_Mob_Plan.aspx

[9] Inciweb http://www.inciweb.org/incident/3202/

Table WF-2 Wildfire Conflagration History (1996-2013)

Fire Name	Date	Location	Comments
Wildcat/Prairie City Fire	Aug. 1996	Grant County	52 Structures threatened near Prairie City. Conflagration mobilization cost: $176,107
Cumming Creek Fire	Aug. 1999	Grant County	Executive Order NO. EO - 00 - 15. The Cummings Creek Fire is located 11 miles west of Mt. Vernon. 50 structures threatened, one structure lost. Conflagration mobilization costs: $52,296
Carrol Creek Fire/The Thorn Fire	Aug. 2000	Wallowa County	Executive Order NO. EO - 00 - 27. The Carrol Creek and the Thorn Fire were two of several fires near Enterprise and Imnaha. Carol Creek is 10 miles east of Wallowa Lake, Thorn Fire is 37 miles northeast of Enterprise.
Horse Creek Fire	Aug. 2001	Wallowa County	Executive Order NO. EO - 01 - 20. The Horse Creek Fire was caused by lightning and is located north of Imnaha; threatening the town of Imnaha and residences along the Imnaha River. Conflagration mobilization costs: $274,704
Monument Complex Fires	Aug. 2001	Grant County	Exective Order NO. EO - 01 - 21. The Monument Complex Fires were lightning caused fires. Three of the fires threatened the town of Monument. 28 structures threatened, zero structures lost. Conflagration mobilization costs: $229,717; federal funding: $229,717
Mahleur Complex/ Flagtail Fire	July 2002	Grant County	Executive Order NO. EO - 02 - 09. These fires were lightning caused and threatened large portions of Grant County near Austin Junction and Seneca. Two structures lost. Conflagration mobilization costs: $188,697; federal funding: $188,697.
Booth Fire	Aug. 2003	Union County	Both fire threatened the Bridge Creek Wildlife area south of Ukiah, threatening over 1,063 structures, 11 of which were lost. Conflagration mobilization costs: $1,124,630; federal funding $705,921
McLean Creek Fire (Foster Gulch Complex)	July 2006	Baker County	Executive Order NO. EO - 06 - 11. 60 homes near Pine Creek were threatened, more than 1,500 acres of grass and timber were burned. Conflagration mobilization costs: $703,102; federal funding: $478,693
Grouse Mountain Fire	Aug. 2013	Grant County	Threatened the town of John Day including approximately 400 residences and 11 structures, one structure was lost. Conflagration mobilization cost (as of 9-12-13): $17,084

Source: Governor's List of Executive Orders: http://www.oregon.gov/gov/Pages/exec_orders.aspx; Oregon Governor-Declared Conflagrations http://www.oregon.gov/osp/SFM/docs/ConflagrationHistory.pdf

The following provide brief narratives on significant fires that have affected the northeast Oregon counties in the ten years.

McLean Creek Fire (Foster Gulch Complex) (July 24, 2006): These lightning caused wildfires in Baker County ignited in July of 2006 and included the Foster Gulch Fire (three miles east of Richland) and the McLean Fire (12 miles northeast of Halfway). The fires required about 600 firefighters on the scene for containment.[10] The two fires tripled the City of Halfway's population with fire suppression authorities.[11] The fire grew to over 1,500 acres and threatened 60 homes in Pine Creek.

Figure WF-7 Protecting Residences

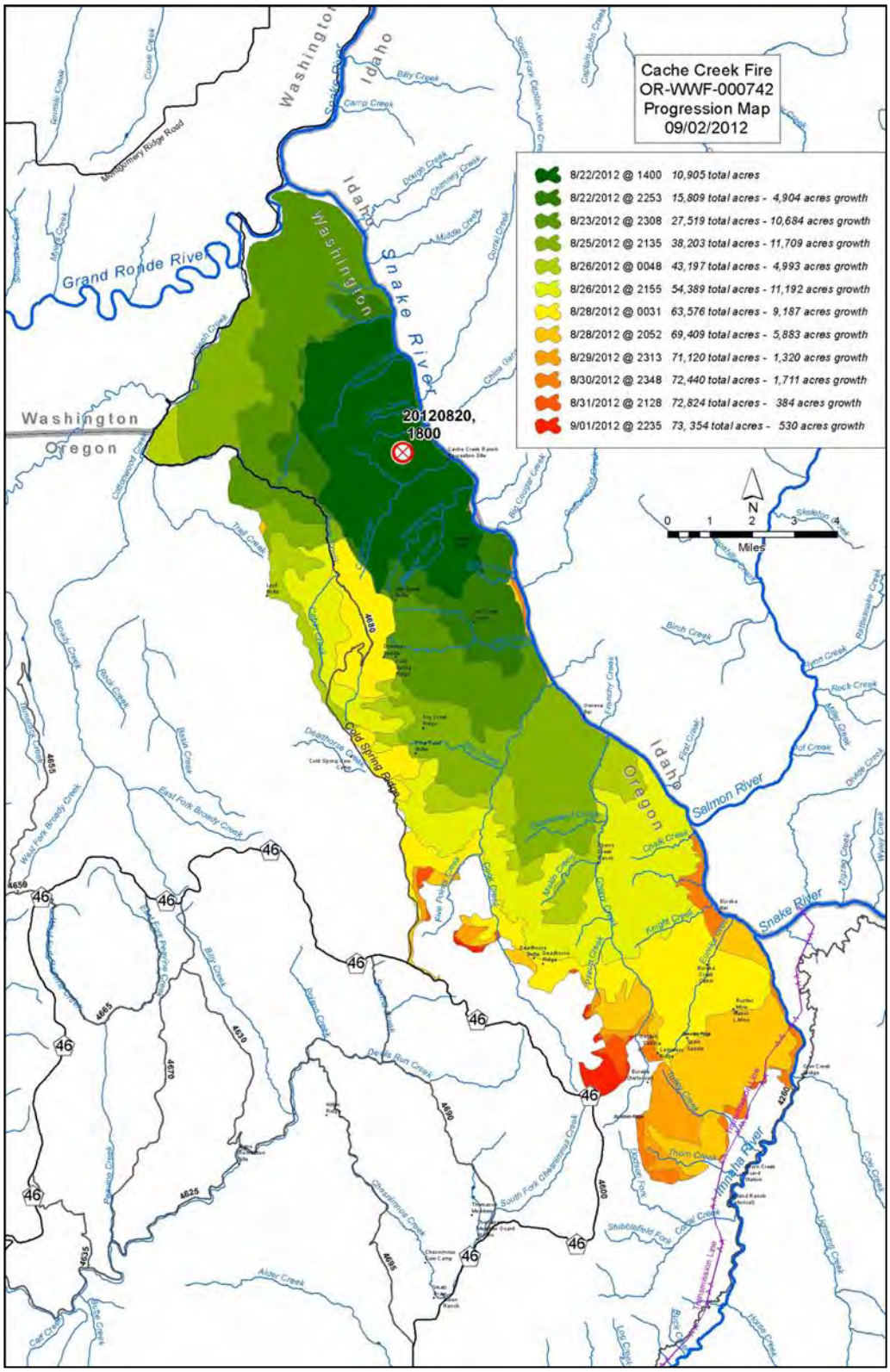


Source: State of Oregon

[10] Baker City Herald "Wildfire Threatens to Explode" July 29, 2006

[11] Baker City Herald "Foster Gulch: Fire Camp triples Halfway's population" August 7, 2006

Figure WF-8 Cache Creek Fire Progression Map



Source: Inciweb http://inciweb.nwcg.gov/photos/ORWWF/2012-08-22-15:24-cache-creek-fire/picts/pict-20120903-093703-0.jpeg

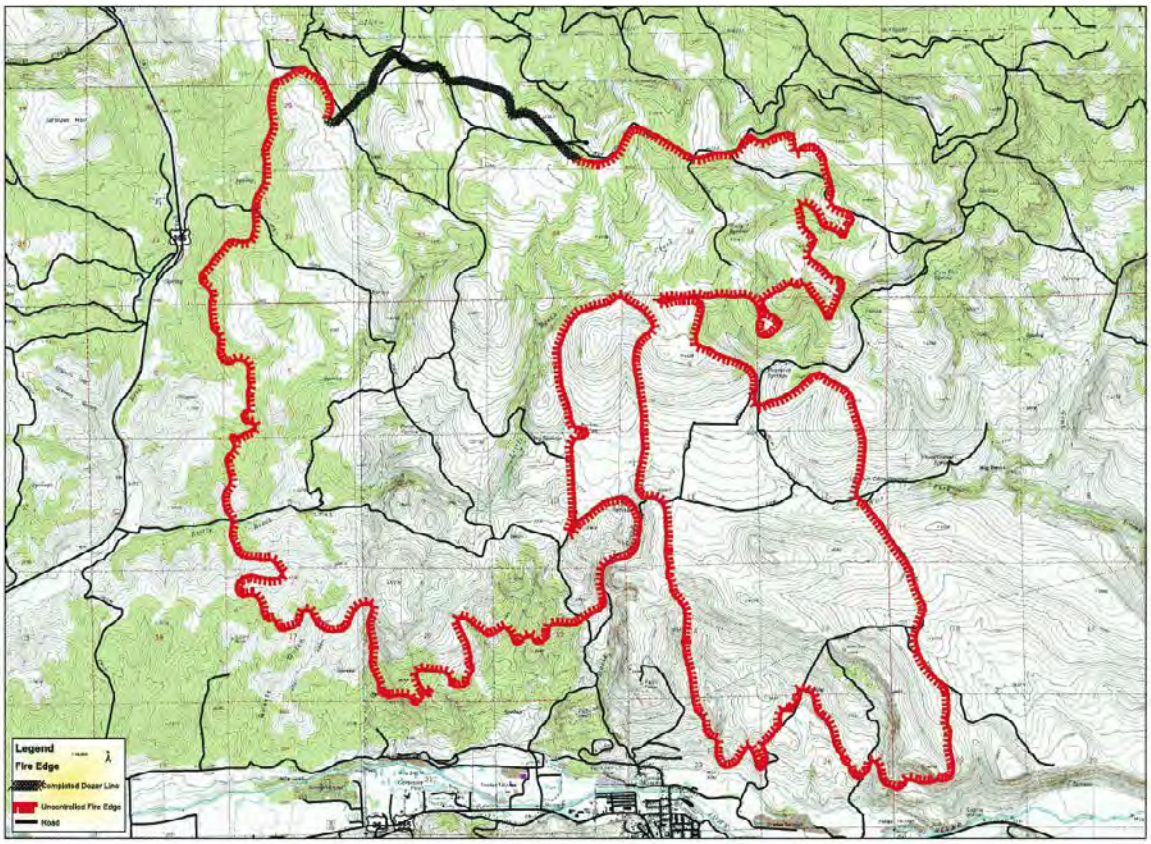
Grouse Mountain Fire (August 2013): The GC Complex Fire in Grant County includes both the Grouse Mountain Fire and the Starvation Fire. The Grouse Mountain Fire started around 7 miles north of John Day (Grant County) and made reached the northern edge of John Day. The Starvation Fire began 17 miles southeast of Prairie City.[12] The fire reached over 12,000 acres at its peak.

Figure WF-9 Grouse Mountain Fire near John Day



Source: GC Complex Blog Spot: http://www.gccomplex.blogspot.com/p/photos.html

Figure WF-10 Grouse Mountain Fire Boundaries



Source: Inciweb: Incident Information System

[12] Inciweb: Incident Information System http://inciweb.org/incident/3612/

Hazard Risk Analysis

The participating Steering Committees, during this update, completed jurisdiction specific hazard risk analyses, based upon the previous plan's analyses. Each hazard analysis, developed from a Federal Emergency Management Agency (FEMA) tool that has been refined by the Oregon Military Department – Office of Emergency Management (OEM), addresses and weights (shown as percent within parentheses) probability (29%), vulnerability (21%), maximum threat (42%) and the history (8%) of each natural hazard and attributes a final hazard analysis score. The methodology produces scores that range from 24 to 240. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation. The method provides the jurisdiction with a relative ranking from which to prioritize mitigation strategies, but does not predict the occurrence of a particular hazard (for more information on all scores see Volume I, Section 2 of this NHMP). Provided below are brief descriptions of each category:

Probability is the likelihood of future occurrence within a specified period of time.
LOW = one incident likely within 75 to 100 years scores between 1 and 3 points
MEDIUM = one incident likely within 35 to 75 years scores between 4 and 7 points
HIGH = one incident likely within 10 to 35 years scores between 8 and 10 points

Vulnerability includes the percentage of population and property likely to be affected under an "average" occurrence of the hazard.
LOW = less than 1% affected scores between 1 and 3 points
MEDIUM = between 1 and 10% affected scores between 4 and 7 points
HIGH = more than 10% affected scores between 8 and 10 points

Maximum threat is the highest percentage of population and property that could be impacted under a worst-case scenario.
LOW – score at 1 to 3 points based on… < 5% affected
MEDIUM – score at 4 to 7 points based on… 5 - 25% affected
HIGH – score at 8 to 10 points based on… > 25% affected

History is the record of previous occurrences.
LOW – score at 1 to 3 points based on… 0 - 1 event past 100 years
MEDIUM – score at 4 to 7 points based on… 2 - 3 events past100 years
HIGH – score at 8 to 10 points based on… 4 or more events past100 years

The hazard risk analysis ratings, as determined by each participating Steering Committee, are shown in the following table. Within the table the probability and vulnerability scores are shown in **bold** if they are higher than in 2008, in normal text if the same or if not ranked in 2008, and with (parentheses) if they are lower than in 2008. Areas that were not rated in 2008 are denoted with an asterisk (*).

Table WF-3 Wildfire Hazard Risk Analysis

	Total Threat Score	Hazard Rank	Probability	Vulnerability	Maximum Threat	History
Baker	220	#3	High	**High**	High	High
Baker City	223	#3	High*	High*	High	Moderate
Halfway	120	#5	Moderate*	Moderate*	Moderate	Moderate
Grant	240	#1	High	High	High	High
John Day	220	#4	High*	Moderate*	High	High
Union	210	#3	High	High	High	High
La Grande	205	#3	High*	Moderate*	High	Moderate
Wallowa	215	#1	High	(Moderate)	High	High
Enterprise	108	#6	Low	Low	Moderate	Low

Source: County and City Steering Committee Meetings (2013)

Additionally, each of the county Steering Committees completed a "Relative Risk Assessment" that ranks "severity of impact" and "relative risk" for each hazard. For more information on these scores see Volume I, Section 2 of this NHMP. For additional information on participating city ratings see Volume III of this NHMP.

History Assessment

Oregon has a very lengthy history of wildfires in undeveloped wildlands but also in the developing wildland/urban interface (WUI), areas of forested land with residents and other structures within the reach of wildfire. There are large areas in this region that make up the WUI which is susceptible to wildfire. Other areas that are less forested or are covered by brush and grassland also create susceptibility. As the population in this region grows, development in the WUI increases, posing a larger threat to life and property.

Probability of Future Occurrence

The composition of the Blue/Wallowa Mountain forests varies considerably, depending on altitude, exposure, depth of soil, etc. All things considered, moisture/precipitation is the predominant factor. Each forest is different. Consequently probability and management of wildfire would differ from place to place.

In Oregon, wildfires are inevitable. Although usually thought of as being a summer occurrence, wildland fires can occur during any month of the year. The vast majority of wildfires burn during June to October time period. Dry spells during the winter months, especially when combined with winds and dead fuels, may result in fires that burn with intensity and a rate of spread that surprises many people. Wildland fire is a common occurrence in Northeast Oregon. The threat of wildfire continues today. However, wildfire risk to human welfare and economic and ecological values is more serious today than in the past because of the buildup of hazardous fuels and the construction of houses in proximity to forests and rangelands.

The natural ignition of forest fires is largely a function of weather and fuel; human-caused fires add another dimension to the probability. Dry and diseased forests can be mapped

accurately and some statement can be made about the probability of lightning strikes. Each forest is different and consequently has different probability and recurrence estimates.

Wildfire has always been a part of these ecosystems and sometimes with devastating effects. The intensity and behavior of wildfire depends on a number of factors including fuel, topography, weather, and density of development. There are a number of often-discussed strategies to reduce the negative impacts of these phenomena. They include land-use regulations, management techniques, site standards, building codes, and the Oregon Forestland-Urban Interface Fire Protection Act (1997). All of these have bearing on a community's ability to prevent, withstand, and recover from wildfire event.

One of the main aspects of the probability of a future occurrence is its reliance on historic climate trends in order to predict future climate trends. Many counties in eastern Oregon are experiencing more frequent and intense rainfall and rapid snowmelt than is historically the norm and many climate predictions see this trend continuing into the future. Temperatures in the Pacific Northwest region increased in the 20th Century by about 1.5 degrees Fahrenheit and are projected to increasingly rise by an average of 0.2 degrees to 1.0 degrees Fahrenheit per decade.[13]

The National Wildland/Urban Fire Protection Program has developed a Wildland/Urban Fire Hazard Assessment Methodology tool for communities to assess their risk to wildfire. For more information on wildfire hazard assessment refer to www.Firewise.org.

Vulnerability Assessment

Wildfires are a natural part of forest and grassland ecosystems. Past forest practices included the suppression of all forest and grassland fires. This practice, coupled with hundreds of acres of dry brush or trees weakened or killed through insect infestation, has fostered a dangerous situation. Present state and national forest practices include the reduction of understory vegetation through thinning and prescribed (controlled) burning.

Wildfires pose a significant hazard to those living in or near a WUI and have caused damage and loss in the region and it is very likely that they will again. Each forest is different and consequently has different probability/recurrence estimates. As population growth continues to expand and development increases in the WUI, the threat to life and property increases and ultimately, greater losses to are likely to result. Each year a significant number of people build homes within or on the edge of the forest (urban/wildland interface), thereby increasing wildfire hazards. Wildfire risk is more serious today than in the past because of the construction of homes in proximity to forests and rangelands. Many Oregon communities (incorporated and unincorporated) are within or abut areas subject to serious wildfire hazards, complicating firefighting efforts and significantly increasing the cost of fire suppression.

[13] Climate Impacts Group, "Climate Change," http://cses.washington.edu/cig/pnwc/cc.shtml#anchor6 Accessed February 2013

Many interface areas, found at lower elevations and drier sites, are also desirable real estate. More people in Oregon are becoming vulnerable to wildfire by choosing to live in wildfire-prone areas.[14]

A community at risk is a geographic area within and surrounding permanent dwellings (at least one home per 40 acres) with basic infrastructure and services, under a common fire protection jurisdiction, government, or tribal trust or allotment, for which there is a significant threat due to wildfire.

Private Lands

Private development located outside of rural fire districts where structural fire protection is not provided is at risk. In certain areas fire trucks cannot negotiate steep grades, poor road surfaces, narrow roads, flammable or inadequately designed bridges, or traffic attempting to evacuate the area. Little water during the fire season and severe fuel loading problems add to the problem. In some areas, current protection resources are stretched thin, thus both property in the interface and traditionally protected property in the forests and cities are at greater risk from fire. While the Firewise program has increased knowledge of fire risk many property owners in the interface are not aware of the problems and threats that they face, and owners in some areas have done little to manage or offset fire hazards or risks on their own property.

[14] National Wildland/Urban Interface Fire Protection, Fire protection in the Wildland/Urban Interface: Everyone's responsibility, Washington D.C., (1998).

Table WF-4 Wildland/Urban Interface Communities

Baker County	Grant County	Union County	Wallowa County
Anthony Lakes Resort	Canyon City	Beaver Creek Watershed	Alder Slope
Auburn Gulch	Granite	Blue Springs	Bear Creek
Baker City WS/ Face of the Elkhorns	John Day	Catherine Creek	Hurricane Creek
Black Mountain	Long Creek	Cove	Imnaha River Woods
Bourne	Mt. Vernon	Kamela	Liberty
Cornucopia	Prairie City	Medical Springs	Troy
Eagle Creek	Seneca	Morgan	Wallowa Lake Basin
East Eagle/Main Eagle		Mt. Emily	
Elkhorn Estate/Deer Cr./ McEwen		Palmer	
Greenhorn		Perry/ Hilgard	
Huntington		Stubblefield	
Oxbow			
Rock Creek/ Bulger Flats			
Sparta			
Stices Gulch			
Sumpter/McCully Forks Watershed			
Surprise Valley			
Wood Tick Village/ Rattlesnake Est.			

Source: Baker County CWPP 2006, Grant County CWPP 2013, Union County CWPP 2004, Wallowa County CWPP 2006

Community Hazard Issues

What is susceptible to damage during a hazard event?

Threat to Life and Property

The interface between urban and suburban areas and these resource lands are producing increased exposure to life and property from wildfire. In many cases, existing fire protection services cannot adequately protect new development. Wildfires that also involve structures present complex and dangerous situations to firefighters.

The two largest agencies with authority over federal lands are the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS). Wildfire protection is critical to maintaining the federal lands for the benefit of the residents of the county and the State of Oregon.

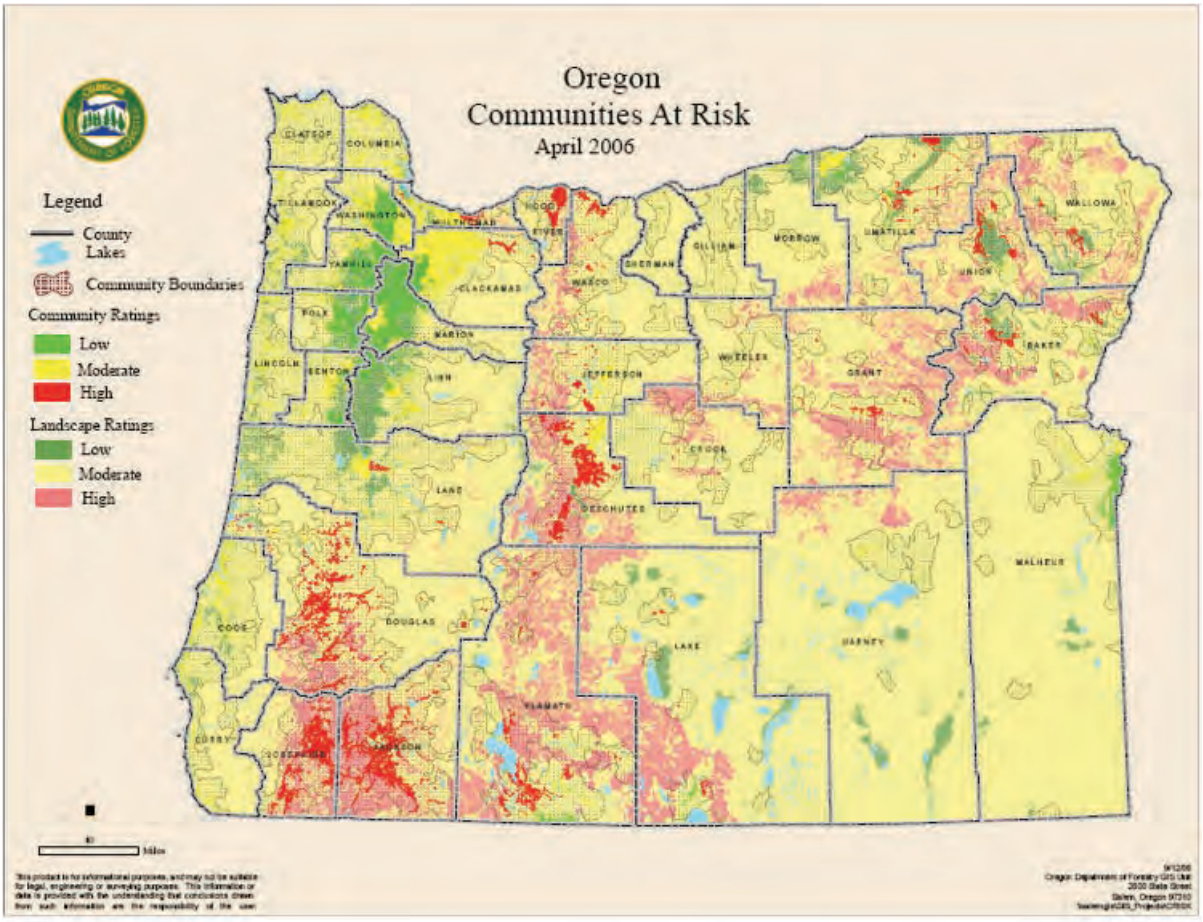
Personal Choices

Many interface areas, found at lower elevations and drier sites, are also desirable real estate. More people in Oregon are becoming vulnerable to wildfire by choosing to live in

wildfire-prone areas. The figure below illustrates the communities of highest risk in Oregon.

A community at risk is a geographic area within and surrounding permanent dwellings (at least one home per 40 acres) with basic infrastructure and services, under a common fire protection jurisdiction, government, or tribal trust or allotment, for which there is a significant threat due to wildfire. A statewide "Communities at Risk" map was created in 2006 in order to identify and assess communities at risk of wildfire in the state of Oregon; the map is used to establish wildland urban interface (WUI) boundaries in the absence of a CWPP.

Figure WF-11 Communities at Risk



Source: Oregon Department of Forestry

Private Lands

Private development in located outside of rural fire districts where structural fire protection is not provided is at risk. In certain areas fire trucks cannot negotiate steep grades, poor road surfaces, narrow roads, flammable or inadequately designed bridges, or traffic attempting to evacuate the area. Little water during the fire season, and severe fuel loading problems add to the problem. In some areas, current protection resources are stretched thin, thus both property in the interface and traditionally protected property in the forests

and cities are at greater risk from fire. While the Firewise program has increased knowledge of fire risk many property owners in the interface are not aware of the problems and threats that they face, and owners in some areas have done little to manage or offset fire hazards or risks on their own property.

Drought

Recent concerns about the effects of climate change, particularly drought, are contributing to concerns about wildfire vulnerability. Unusually dry winters and hot summers increase the likelihood of a wildfire event, and place importance on mitigating the impacts of wildfire before an event takes place.

Existing Hazard Mitigation Activities

Senate Bill 360

In 1997, the Legislature passed Senate Bill 360.

The Act recognized that "…forestland-urban interface property owners have a basic responsibility to share in a complete and coordinated protection system..." In addition, during the 1990s, prevention and mitigation of Wildland Urban Interface (WUI) fires included enactment of the Wildfire Hazard Zone process and the inclusion of defensible space requirements in the land use planning process. Significant efforts were made to increase voluntary landowner participation, through aggressive awareness campaigns, such as Fire Free, Project Wildfire, Project Impact, Firewise, and other locally driven programs.

Through the years, Oregon's wildfire suppression system continued to improve. Firefighters benefited from improved training, coordination, and equipment. Better interagency initial attack cooperation, the growth of private crew and fire engine wildfire suppression resources, formation of structural incident management teams, and regional coordination of fire suppression are additional examples of these continued improvements. Technology has improved as well with the addition of lightning tracking software and fire detection cameras to support or replace deteriorating lookout towers.

Nevertheless, the frequency of wildfires threatening WUI communities continues to underscore the need for urgent action. The summer of 2002 included eleven Emergency Conflagration Act incidents, with as many as five running concurrently. More than 50 structures burned and, at one point, the entire Illinois Valley in Josephine County seemed under siege from the Biscuit Fire. This wildfire threatened the homes of approximately 17,000 people, with over 4,000 homes under imminent evacuation alert. At almost 500,000 acres, it was the nation's largest wildfire of the year. Since 1996, Oregon has had 52 declared Conflagrations under the Act. Oregon's mitigation efforts since 2002 have influenced a dramatic decrease in these types of fires, resulting in none to three per year through 2011. (see Appendix F-4 for more information on Conflagration Fires from 1996 to 2011)

Existing Fire Suppression Authorities

The following are the existing fire suppression authorities within Baker County:[15]

- Baker City Fire Department
- Baker Rural Fire Protection District
- Greater Bowen Valley Rural Fire Protection District
- Haines Rural Fire Protection District
- City of Huntington Fire Department
- Medical Springs Rural Fire Protection District
- North Powder Rural Fire Protection District
- Powder River Rural Fire Protection District
- City of Richland Fire Department
- City of Sumpter Fire Department
- City of Unity Fire Department
- Bureau of Land Management (BLM)
- Oregon Department of Forestry (ODF)
- U.S. Forest Service (USFS)

The following are the existing fire suppression authorities within Grant County:[16]

- Canyon City Fire Department
- Dayville City Fire Department
- Granite Fire Department
- John Day Rural Fire Protection District
- John Day City Fire Department
- Long Creek City Fire Department
- Monument City Fire Department
- Monument Rural Fire District
- Mount Vernon Rural Fire Protection District
- Prairie City Rural Fire Protection District
- Prairie City Rural Fire District
- Seneca Volunteer Fire Department
- Bureau of Land Management (BLM)
- Oregon Department of Forestry (ODF)
- U.S. Forest Service (USFS)

The following are the existing fire suppression authorities within Union County:[17]

- Cove Rural Fire Protection District
- Elgin Rural Fire Protection District
- Imbler Rural Fire Protection District

[15]Baker County CWPP 2006

[16]Grant County CWPP 2013

[17]Wallowa County CWPP 2006

- Medical Springs Rural Fire Protection District
- La Grande Fire Department
- La Grande Rural Fire Protection District
- Union Rural Fire Protection District
- Oregon Department of Forestry (ODF)
- Bureau of Land Management (BLM)
- U.S. Forest Service (USFS)

The following are the existing fire suppression authorities within Wallowa County:[18]

- City of Enterprise Fire Department
- City of Joseph Fire Department
- City of Lostine Fire Department
- Wallowa Lake Rural Fire Protection District
- Wallowa Rural Fire Protection District
- Oregon Department of Forestry (ODF)
- U.S. Forest Service (USFS)

Mutual Aid Agreements exist among the fire authorities for mutual aid and support in the event of a wildfire event; however, each authority operates under regulations that dictate their area of responsibility and specify limitations.

Rangeland Fire Protection Associations

Rangeland Fire Protection Associations (RFPAs) provide wildfire protection of private land within Northeast Oregon. RFPAs (formed under ORS 477.315) protect over 3.2 million acres of private land in eastern Oregon with support from the Oregon Department of Forestry (ODF). RFPAs operate as independent associations of landowners that provide their own protection with the support of the ODF (chiefly technical support for grants, grant writing, procurement of equipment and fire fighting training)[19]. Mutual assistance agreements are currently established between the fire authorities for mutual aid and support during a wildfire event. The ODF provides a small source of funding for the RFPAs; however, the majority of funds come from federal grants (primarily Volunteer Fire Assistance and Rural Fire Assistance). Additional fees are collected from voluntary membership dues. The RFPA has a responsibility to protect private lands of members and non-members alike per the agreement formed with ODF when the RFPA is formed.

RFPAs are already well organized in nearby Harney and Malheur counties. The Burnt River RFPA supports Baker County and assisted in the recent Sardine Fire.[20]

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[18] Union County CWPP 2004

[19] Foster, Gordon. Oregon Department of Forestry. "Status of Rangeland Fire Protection Associations".2011. http://www.oregon.gov/odf/fire/fpfc/rfawhite.pdf. Accessed March 2013.

[20] Oregon Department of Forestry "Status of Rangeland Fire Protection Program" http://www.oregon.gov/odf/BOARD/docs/2012_November/BOFATTCH_20121107_8_1.pdf

Oregon Department of Forestry

ODF is involved with local fire chiefs and local fire departments to provide training. Local firefighters can get a range of experience from exposure to wildland firefighting. Local firefighters can also obtain their red card (wildland fire training documentation), and attend extensive workshops combining elements of structural and wildland firefighting, defending homes, and operations experience. For years, ODF has worked with industrial partners (big timber companies) to share equipment in the case of extremely large fires.

U.S. Forest Service

The U.S. Forest Service (USFS) is involved in a fuel-loading program implemented to assess fuels and reduce hazardous buildup on U.S. forestlands. The USFS is a cooperating agency and, it has an interest in preventing fires in the interface fires as they often burn up the hills and into the higher elevation U.S. forestlands.

Firewise

Developed by the National Fire Protection Association, the Firewise program features templates to help communities to reduce risk and protect property from the dangers of wildland fires. The program works in cooperation with LIFC, the RFPDs, and private landowners concerning wildfires. Firewise intends to provide community outreach through yearly meetings and newspaper releases to inform the public about wildfire information.

Baker County Interagency Fire Prevention Team

The mission of the Baker County Interagency Fire Prevention Team is to increase fire education and reduce human-caused fires. Work towards this mission includes educational campaigns, Wildfire Awareness Month, and community events and parades.[21]

Land Use Planning

Through the county comprehensive plans the participating counties can administer programs that require standards for new developments located within a certain distance of forestland to meet Fire Siting Standards. Fire example Union County through its Union County Zoning, Partition and Subdivision Ordinance can set these standards.[22]

Wildfire Mitigation Action Items

The following actions have been identified by the Baker County, Baker City, Halfway, Grant County, John Day, Union County, La Grande, Wallowa County, and Enterprise Steering Committees, and are recommended for mitigating the potential effects of wildfire in the various identified jurisdictions. Below you will find a brief description, title, of the action

[21] Baker County CWPP 2006

[22] Union County Zoning, Partition and Subdivision Ordinance, Siting Standards for Dwellings and Structures and Fire Siting Standards (Adopted November 2, 1983).

item, see the full action item worksheet in Appendix A or within the city addendum for a full description of the action item.

Table WF-5 Wildfire Mitigation Action Items

Action Item	Priority	Proposed Action Title	Action Item Form Page Number	Affected Jurisdictions								
				Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
WF #1	High (Baker City)	Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.	A-107	X	X		X		X		X	

Volume III:
Jurisdictional Addenda

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Volume III: Baker City Addendum

Purpose

This document serves as an update for Baker City's Addendum to the Northeast Oregon Natural Hazards Mitigation Plan (NHMP). Baker City's original addendum to Northeast Oregon's NHMP was completed in 2008. The city conducted an update to its original addendum in 2013, which coincided with the mitigation strategy stage of the Northeast Oregon NHMP update. The city's addendum is considered part of the region's multi-jurisdictional plan, and meets the following requirements: (1) Multi-jurisdictional Plan Adoption §201.6(c) (5), (2) Multi-jurisdictional Participation §201.6(a) (3), (3) Multi-Jurisdictional Risk Assessment §201.6(c) (2) (iii), and (4) Multi-jurisdictional Mitigation Strategy §201.6(c) (3) (IV).

A description of the city specific planning and adoption process follows, along with detailed community specific action items. Information about the city's risk relative to the county's risk to natural hazards is documented in the addendum's Hazard Analysis and Issue Identification section. The section considers how the city's risk differs from or matches that of the county's; additional information on Risk Assessment is provided within the Northeast Oregon NHMP's Section 2 – Risk Assessment and within the Hazard Annexes within Volume II of this NHMP.

Updates to Baker City's addendum are further discussed throughout the plan and in the Northeast Oregon NHMP Planning and Public Process Appendix (Appendix B), which provides an overview of alterations to the document that took place during the addendum update process.

How was the Plan Developed?

In fall 2005, the Oregon Natural Hazards Workgroup (ONHW, now the Oregon Partnership for Disaster Resilience) at the University of Oregon's Community Service Center partnered with the Department of Geology and Mineral Industries (DOGAMI) and the Northeast Oregon Region (Baker, Grant, Union, and Wallowa) counties to develop a Pre-Disaster Mitigation Planning Grant proposal. Each county joined the Partnership for Disaster Resistance and Resilience (The Partnership) by signing (through their County Commissions) a Memorandum of Understanding for this project. FEMA awarded the Northeast Oregon Region grant to support the development of the natural hazard mitigation plans for the four counties in the region. ONHW, DOGAMI and the communities were awarded the grant in the fall of 2005 and local planning efforts in this region began in the fall of 2006 with county and city meetings proceeding in 2007.

The Northeast Oregon Multi-jurisdictional NHMP was formally adopted by Baker County on June 18, 2008 and approved by FEMA on May 23, 2008 (Grant County was the first to

approve the regional NHMP on April 23, 2008). To maintain its compliance with the Disaster Mitigation Act of 2000 (DMA2K), the plan required an update by May 23, 2013. Baker City created an addendum to the Northeast Oregon NHMP and also needs to be updated in order to maintain compliance with DMA2K.

In fall 2012, Baker County initiated the update process in order to take advantage of grant funding and technical support currently available through the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Community Service Center (CSC). Updating the mitigation plan is a requirement for maintaining eligibility for the Federal Emergency Management Agency's Pre-Disaster Mitigation and Hazard Mitigation Grant Programs. By updating the plan and having it re-approved by FEMA, northeast Oregon will maintain its eligibility for FEMA Hazard Mitigation, Pre-Disaster Mitigation and Flood Mitigation Assistance grant program funds. This project is funded through the Federal Emergency Management Agency's (FEMA) FY12 Pre-Disaster Mitigation Competitive Grant Program (PDMC–PL-10-OR-2012-002).

The Northeast Oregon Regional Multi-jurisdictional Natural Hazards Mitigation Plan was updated and reapproved by FEMA Region X on **June 5, 2014**. The plan is effective through **June 4, 2019**. The City of Baker City adopted their addendum to the plan on **May 13, 2014**.

The Northeast Oregon Natural Hazard Mitigation Plan is the result of a collaborative effort among citizens, public agencies, non-profit organizations, the private sector and regional organizations. Several project steering committees guided the process of developing the plan. For more information on the composition of the steering committees see the Acknowledgements and Executive Summary section.

The Action Item MH #8 proposes a position for a regional natural hazards mitigation coordinator to be created and have shared responsibilities among the four counties. This plan could be implemented and maintained through this regional coordinator, pending approval by each county. Without the regional coordinator the plan will be implemented, maintained and updated by the designated local convener. More information about this position and the proposed Action Item can be found in Appendix A.

The Baker County Emergency Manager was designated as the plan's convener (for portions relevant to Baker County) and will take the lead in implementing, maintaining and updating the plan. Public participation played a key role in the development of goals and action items. Public participation was achieved with the establishment of the Northeast Oregon Natural Hazards Mitigation Steering Committees, which was comprised of community members representing different organizations and sectors in northeast Oregon. The steering committees were closely involved throughout the development of the plan and served as the local oversight body for the plan's development. In addition, community members outside of the steering committee were involved in the planning and review process (see Northeast Oregon NHMP Appendix B, Planning Process for more information).

How Were the Action Items Developed?

The City's action items were developed through a two-stage process. In stage one, OPDR facilitated a work session with the working group to discuss the city's risk and to identify potential issues. In the second stage, OPDR developed potential actions based on the hazards and the issues identified by the working group. During the 2013 update process

OPDR re-evaluated the Action Items with the local steering committee and updated actions, noting what accomplishments had been made and if the actions were still relevant; any new action items were identified at this time. OPDR also cross-walked the city's issues with region's action items to identify opportunities for partnership where issues were shared between jurisdictions. The City's actions are listed below. For more detailed information on each action, see the action forms within Appendix A.

Table BC-1 Baker City Action Items

Multi-Hazard Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
MH #1		Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties.	Interested City Managers and/or City Council; County Commissioners, Emergency Management	Relevant Public Works and Emergency Services / Emergency Management, Law Enforcement, Fire Department, Department of Homeland Security, County Roads Departments, ODOT, relevant private industries, OEM	Short Term	Deferred				X
MH #2		Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	County/ City Planning Department	Department of Land Conservation and Development, Oregon Office of Emergency Management, Federal Emergency Management Agency	Short Term	New Action Item				X
MH #3		Inform public officials about mitigation awareness and the Natural Hazards Mitigation Plan	County Steering Committee Convener	Counties and participating cities in Region 7	Short Term	Deferred			X	
MH #4		Develop and implement education and outreach programs to increase public awareness of the risk associated with natural hazards. Specifically target vulnerable populations	Emergency Services / Emergency Management; Baker City; City of La Grande, Relevant Public Health Department	Eastern Oregon Head Start, Chambers of Commerce, American Red Cross, Oregon Education Association, Families First, Grant and Harney County Casa, Oregon Rural Action, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA, Greater Prairie City Community Association, People Mover, Community Connections of Northeast Oregon	Ongoing	Ongoing	X		X	
Drought Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
DR #2	High	Identify incentive programs to Increase water efficiency among municipal water users	Participating Cities	Relevant utility companies, city public works departments, County, wastewater treatment facilities, Wallowa Lake County Service District, US Environmental Protection Agency's WAVE program	Ongoing	Ongoing	X			X
DR #4	High	Conduct an aquifer (groundwater) study for the Pine and Baker Valleys	Baker County Emergency Management, Powder River Watershed Council	Baker County Water Master, Baker County Planning Department, Baker County Public Works, Baker City, City of Halfway	Short Term	Deferred				X
Earthquake Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
EQ #1		Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Emergency Management	Eastern Oregon University, County Public Works Departments, Region 7 Counties, Interested Cities, Business Oregon, Relevant utility companies, DOGAMI	Long Term	New Action Item	X	X		
EQ #3		Seismically retrofit North Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #4		Seismically retrofit South Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #5		Seismically retrofit Baker High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			

Source: Baker NHMP Steering Committee and Baker City NHMP Working Group, 2007 (updated 2013)

Table BC-1 Baker City Action Items (continued)

Earthquake Action Items (continued)	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
EQ #6		Seismically retrofit Pine Eagle High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #7		Seismically retrofit Brooklyn Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Baker 5J School District, Emergency Management	County/City Public Works Departments, Baker City, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
Flood Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
FL #1		Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	Relevant City and County Public Works Departments / Emergency Services and Emergency Management	County Roads Departments, Public Works Departments, County Planning Departments; City of John Day, City of La Grande, Baker City, City of Halfway, Silver Jackets, Relevant water treatment facilities, Federal Emergency Management Agency, Homeowner, Army Corps of Engineers, Oregon Department of Fish and Wildlife, Department of State Lands, ODOT	Ongoing	Ongoing	X			
FL #2	High	Explore the costs and benefits for participation in the NFIP's Community Rating System	Interested Cities and Counties	County and city planning departments, county emergency services / emergency management, county public works, Silver Jackets, FEMA, DLCD	Short Term	Deferred	X	X		
FL #3	High	Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	Local flood plain managers, County Emergency Managers	City Planning Departments, Emergency Services / Emergency Management, NFIP Floodplain Coordinator (DLCD), insurers, realtors, FEMA, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA , Greater Prairie City Community Association, People Mover, Community Connections of NEOR (Any community organizations capable of distributing information), Blue Mountain Eagle, ACOE	Short Term	Deferred			X	X
FL #4	High	Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	Relevant City and County Public Works Departments, Emergency Management, City Managers, County Planning Departments	County Roads Departments, Public Works Departments, City of John Day, City of La Grande, Baker City, City of Halfway, Army Corps of Engineers, DOGAMI, DAS-GEO, elected officials	Long Term	New Action Item	X			
Wildfire Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
WF #1	High	Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.	County Steering Committee Convener, Emergency Management	County Emergency Services / Emergency Management, County Planning Departments, City of Baker City, City of Halfway, Local Public Safety Coordinating Council (LPSCC), Oregon Department of Forestry, Bureau of Land Management, local fire departments, OSU Extension Services, US Forest Service, Soil and Water Conservation Districts, Oregon Department of Fish and Wildlife; Homeowners in Wildland/Urban Interface zones; Hells Canyon Preservation Council	Ongoing	Ongoing	X			X

Source: Baker NHMP Steering Committee and Baker CityNHMP Working Group, 2007 (updated 2013)

Baker City Addendum Update

Representatives from Baker City served on the Northeast Oregon NHMP Update Steering Committee, and convened a working group meeting to update the Baker City addendum on September 13th, 2013 (see Appendix B for more information). During this meeting, the working group reviewed and revised the addendum, with particular focus on the plan's action items and mitigation strategy.

The current version of the addendum reflects changes decided upon at the plan update meeting and during subsequent work and communication with OPDR. The changes are highlighted with more detail throughout this document and within Appendix B, Planning and Public Process Appendix of the Northeast Oregon NHMP. Other documented changes include a revision of the city's Risk Assessment and Hazard Identification sections, Plan Goals (see Section 3, Mitigation Strategy), and Community Profile (see Appendix C, Community Profile).

How Will the Plan be Implemented?

The City Council will be responsible for adopting the Baker City Natural Hazards Mitigation Plan (NHMP) Addendum. This addendum designates a coordinating body and a convener to oversee the development and implementation of action items. Because the city addendum is considered part of the regional plan, the city will look for opportunities to partner with the region (in particular Baker County). The City's working group will convene semi-annually during the June and November department head meetings to discuss implementation and plan maintenance. The Public Works Director of Baker City will serve as the local convener and will be responsible for convening the working group. The local convener will also remain active in the County's planning process. Additionally, there are two action items identified in the NHMP, multi-hazard actions #7 and #8, which would create a regional natural hazards coordinator and coordinating body. If these actions are pursued and accomplished, the city may choose to coordinate action items with the assistance of the regional coordinator and may also participate as a member in the regional steering committee.

Implementation through Existing Programs

Many of the Natural Hazards Mitigation Plan's recommendations are consistent with the goals and objectives of the city's existing plans and policies. Where possible, Baker City will implement the Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, allowing them to adapt to changing conditions and needs. Implementing the Natural Hazard Mitigation Plan's action items through such plans and policies increases their likelihood of being supported and implemented.

Baker City currently has the following plans that relate to natural hazard mitigation:

- The Baker City Comprehensive Plan (1979) relates to natural hazard mitigation through its sections that outline Baker City's goals, policies, and implementation measures; especially within the Goal 7 "Areas Subject to Natural Disasters and Hazards" element.
- The recently adopted City of Baker City Water System Master Plan
- City Code Chapter 151 regulates development in the floodplain.

The working group and the community's leadership have the option to add or implement action items at any time. This allows the working group to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. When new actions are identified, they should be documented using the action item form. Once a proposed action form has been submitted to the convener, the action will become part of the city's addendum.

Continued Public Participation

Keeping the public informed of the city's efforts to reduce the city's risk to future natural hazards events is important for successful plan implementation and maintenance. The city is committed to involving the public in the plan review and updated process. The City Addendum along with the Regional Plan will be posted on-line on the University of Oregon's Scholars Bank accessible via the OPDR website (http://csc.uoregon.edu/opdr/plans/baker) so that the public may view the plan and submit electronic comments to the community at any time.

In addition, natural hazards information dissemination is conducted throughout the year when opportunities present themselves via the city offices and website.

Plan Maintenance

The Northeast Oregon Natural Hazard Mitigation Plan will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. During the regions' plan update process, the city will also review and update its addendum. The convener will be responsible for convening the working group to address the questions outlined below.

- Are there new partners that should be brought to the table?
- Are there new local, regional, state, or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Have new issues or problems related to hazards been identified in the community?
- Are the actions still appropriate given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Have there been any significant changes in the community's demographics that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?
- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

These questions will help the working group determine what components of the mitigation plan need updating. The working group will be responsible for updating any deficiencies found in the plan.

Baker City's Natural Hazards Mitigation Plan Addendum includes three sections:

1. A Community Profile: this section also refers to the Northeast Oregon NHMP Appendix C – Community Profile,
2. A revised summary of the city's Hazard Identification and Risk Assessment, and
3. A Mitigation Strategy section.

Baker City Community Profile Asset Identification

This section provides information city and county specific asset identification. For information on the characteristics of Baker City and Baker County, in terms of geography, environment, population, demographics, employment and economics, as well as housing and transportation see Appendix C, Community Profile. Many of these community characteristics can affect how natural hazards impact communities and how communities choose to plan for natural hazard mitigation. Considering the city specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Table BC-2 City of Baker City Asset Identification

Sector and Assets
Population
Elderly Population
Powder River Correctional Facility (vulnerable population type)
Critical Roads
Highway 7 critical and potential for risk due to dam
Redundant evacuation routes
Critical Infrastructure and Facilities
Fire Department
Police Department (adjacent to Powder River)
Water Treatment Facility
Sewer/Water
ST. Elizabeth Hospital
Fiber Optic, Natural Gas, Chevron go through City
Public Works Yard, adjacent to railroad tracks

Source: City of Baker City NHMP Steering Committee, 2013.

Introduction to Baker County

Baker County lies in northeast Oregon with Idaho to the east, Union and Wallowa counties to the north, Grant County to the west, and Malheur County to the south. Baker County spans 3,089 square miles and has a 2010 population of approximately 16,215, over half of

which is within Baker City.[1]Baker County relies on farming, ranching, logging, and recreation as their chief economic basis.[2]

Baker County Natural Environment Capacity

Table BC-3 shows the natural resources that were identified by the Baker County Steering Committee in 2007 and 2013. This table gives some indication of the intersection between the economy and the natural environment.

Table BC-3 Natural Resource Asset Identification

Natural Resources
Agriculture and timber resources provide for the County's largest source of revenue.
Fifty percent of Baker County is federally owned; the region depends on public lands for tourism, hunting, wildlife, watersheds, and grazing.
Mining remains an active venture in Baker County; it is a source of economic development, and it draws tourism as well.
Baker City has an anadromous fish population that could be weakened by natural and man-made hazards.
Communities rely on the following water resources: Eagle Creek, Pine Creek, Burnt River Watershed, Wolf Creek, North Powder Watershed, Powder Watershed, Mason Dam, Unity Dam, Phillips Reservoir, Brownlee Reservoir, McCulley Forks Watershed, Wolf Creek Reservoir, Pilcher Creek Reservoir, Thief Valley Reservoir, and the Hells Canyon Complex. The Baker City Watershed is unfiltered and thus particularly susceptible to contamination from wildfire.
The Hells Canyon National Recreational Area is a regional environmental attraction.
Regularly occurring droughts and unknown capacities within the Baker Valley aquifers may limit future development.

Source: Baker County NHMP Steering Committee, 2007, 2013

Climate

Baker County lies within Oregon Climate Services designated Climate Division 8 – Northeast Oregon. This Division is characterized by a semi-arid, low precipitation climate with warm summers and cool winters. Table BC-4 shows the mean monthly annual average temperature for Baker County. Temperatures can reach as low as -39° F and as high 104° F. There is over a 40 degree temperature swing between the mean temperature in January (25.7) and July (66.5).

Figure BC-1 shows the precipitation of Baker County. The locations on the valley floor receive less than 20 inches of precipitation per year, particularly those surrounded by high mountains which may receive less than 10 inches. The higher elevation locations receive

1 Oregon Blue Book, "Baker County" http://bluebook.state.or.us/local/counties/counties01.htm Accessed May 2013

2 Ibid

higher annual precipitation totals, generally in the form of snowfall. The precipitation for the region is evenly distributed throughout the seasons.[3]

Table BC-4 Mean Monthly and Annual Average Temperatures (deg F), 1971-2000

Month	Mean Maximum	Mean Minimum	Mean Temperature	Extreme Maximum	Extreme Minimum
January	34.4	17.0	25.7	57.0	-27.0
February	41.7	22.1	31.9	66.0	-28.0
March	51.0	27.1	39.1	78.0	1.0
April	59.2	31.3	45.3	89.0	15.0
May	67.0	38.3	52.7	94.0	17.0
June	75.2	44.3	59.8	99.0	27.0
July	84.5	48.4	66.5	102.0	31.0
August	84.9	47.4	66.2	104.0	27.0
September	75.5	39.0	57.0	101.0	19.0
October	62.7	30.0	47.0	89.0	9.0
November	44.9	24.0	35.0	72.0	-15.0
December	35.3	17.0	26.0	60.0	-39.0
Annual	*59.7*	*32.3*	*46.0*	*104.0*	*-39.0*

Sources: The Oregon Climate Service, NOAA Climate Station: Baker City. "Climate of Baker County." http://www.ocs.orst.edu/county_climate/Baker_files/Baker.html.

Figure BC-1 Mean Annual Precipitation



Source: The Oregon Climate Service. "Mean Annual Precipitation."http://www.ocs.oregonstate.edu/county_climate/fig2/baker.jpg

[3] The Oregon Climate Service "Climate of Baker County."

Land Ownership

Baker County spans 3,089 square miles.[4] Federal agencies own approximately 51.5% of the land in Baker County, comprising a total of 1,016,511 acres. The Baker County Natural Resources Plan references its land ownership: approximately one third of Baker is owned by the US Forest Service[5](USFS), 18.5% is owned by the Bureau of Land Management (BLM)and approximately 0.5% of Baker County, is managed by the State of Oregon.[6]The remaining 48.0% of the land in the county is privately owned. Land use in Baker County is predominately dedicated to agriculture and timber, as well as mining, and wilderness areas.[7] These natural resources also play an important part in Baker County's economy.[8]

The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table BC-5 Land Use Asset Identification

Land Use and Development
There are existing developments subject to wildfire in the wildland/urban interface. They are: Woodtick Village/Rattlesnake Estates, Stices Gulch, Bourne, Surprise Springs, Greenhorn, Auburn Gulch, Huntington, Oxbow, Rock Creek/Bulger Flats, Face of the Elkhorns, Sumpter/McCully Forks WS, Sparta, Elkhorn Estates/Deer Creek, Cornucopia, East Eagle/Main Eagle, Eagle Creek, Tamarack CG, Black Mountain, Anthony Lake, Whitney, Brownlee, and Carson/Pine Valley.
Current and future development trends are minimal; the population is expected to stay level until at least 2025.
The City of Halfway has identified Pine Creek as a continual flooding hazard.

Source: Baker County NHMP Steering Committee, 2007, 2013

Baker County Socio Demographic Capacity

Population

Baker County is the second most populated county in the region and has the second most populated city in the region in Baker City. Table BC-6 details some of the population assets from the NHMP Steering Committees in 2007 and 2013 including information on vulnerable population types, organizations that serve them, and large festivals/events.

4 Oregon Blue Book, "Baker County" http://bluebook.state.or.us/local/counties/counties01.htm Accessed May 2013

5 652,265 acres. USFS Northeast Oregon Land Zone Realty Specialist

6 10,067 Acres; Baker County Assessor's Office; to read more visit the Baker County Natural Resource Plan: http://www.bakercounty.org/natural_resources/docs/NRPlan_FINAL_12222010.pdf

7 Baker County Natural Resource Plan http://www.bakercounty.org/natural_resources/docs/NRPlan_FINAL_12222010.pdf; 1,129,662 acres could be used for agricultural production

8 For more information about the role of natural resources on Baker County's economy visit the Baker County Economic Capacity Section of the Community Profile

Table BC-6 Population Asset Identification

Population Assets
Baker County has eight distinct incorporated cities as well as eight unincorporated communities. Communities are geographically dispersed with limited communication or interaction if communities need to be warned of an event, or require disaster assistance, distance and dispersal will be communication barriers. There are no County radio or TV stations for alert or warning.
Head Start, a community organization in Northeast Oregon, has two concerns regarding natural hazards in Region 7: 1) children are left at Head Start centers for extended periods of time for weather-related hazards; 2) Head Start would like to have better communication with county emergency services.
Several of Baker County's communities have limited evacuation routes; typically, with the exception of Baker City, cities have one central route that crosses its boundaries. If road closures occur due to severe weather, landslide, or otherwise, populations may be isolated from emergency services.
Baker City is home to the State's Powder River Correctional Facility (PRCF). PRCF is a 286-bed adult male minimum-security facility. Inmates can serve on community work crews in support of the Oregon Department of Corrections.
Baker County has limited public transportation. Community Connection and Step Forward offer transportation options for elderly and disabled populations only. From Richland, a Community Connections bus transports seniors to Baker City once a week. Additionally, Community Connections provides meals for seniors one day a week in both Halfway and Richland (with transportation included).
The Red Cross maintains emergency shelters at various locations, including the fair grounds, YMCA, and schools.
Baker County is home to several organizations that provide services to vulnerable populations. As such, these organizations are ideally suited as partners for mitigation projects concerning senior and/or vulnerable populations in the county.
Vulnerable population types listed included: children, non-English speaking populations, elderly, and prsioners (PRC)
Large community events include: Cattlemen's Centennial, Sumpter Flea Markets, Memorial Day Weekend/Labor Day Weekend events; Haines Days, the 4th of July Celebrations, Rodeos, County Fair, Baker City - 4H Fair, the Elkhorn Bicycle Ride, the motorcycle rally, the Huntington Catfish Derby, Halfway's Annual Crab Feed, Baker County Fair and Panhandle Rodeo.

Source: Baker County NHMP Steering Committee, 2007, 2013

Table BC-7 shows the population of the incorporated cities in Baker County. The table also shows the population change between 2000 and2010 for Baker County and its incorporated cities. Baker City is the largest city in the county by a large margin (nearly 61% of county population) and from 2000-2010 it saw a two-percent increase in the share of the county's population despite an overall decrease in population. Communities that saw a notable drop in population include Halfway (-49), Unity (-60), and Huntington (-75).

Table BC-7 Incorporated Cities Population Change 2000-2010

	2000		2010		Population Change 2000-2010		
Jurisdiction	Population	Percent	Population	Percent	Population	Percent	AAGR
Baker City	9,860	58.9%	9,828	60.9%	-32	2.0%	0.0%
Haines	426	2.5%	416	2.6%	-10	0.0%	-0.2%
Halfway	337	2.0%	288	1.8%	-49	-0.2%	-1.6%
Huntington	515	3.1%	440	2.7%	-75	-0.3%	-1.6%
Richland	147	0.9%	156	1.0%	9	0.1%	0.6%
Sumpter	171	1.0%	204	1.3%	33	0.2%	1.8%
Unity	131	0.8%	71	0.4%	-60	-0.3%	-5.9%
Sub-Total	*11,587*	*69.2%*	*11,403*	*70.7%*	-184	1.5%	*-0.2%*
Not incorporated	5,154	30.8%	4,731	29.3%	-423	-1.5%	-0.9%
Total	16,741	100.0%	16,134	100.0%	-607	0.0%	-0.4%

Source: U.S. Census Bureau, Census 2000 Summary File 1, Table DP-1. U.S. Census Bureau, Census 2010 Summary File 1, Table DP-1. Note: AAGR = Average Annual Growth Rate

Age

Table BC-8 shows Baker County's population by age groups and age dependency ratio.[9] Baker County's age dependency ratio is over 13 percentage points higher than the State of Oregon's. Several of the smaller cities in Baker County have higher age-dependency ratios including Huntington (76.7%) and Richland (an estimated 100%).

Table BC-8 Population by Age Groups and Age Dependency Ratio (2010 and 2040)

2010		< 15 Years		15 to 64	> 64 Years		
Jurisdiction	**Total**	**Number**	**Percent**	**Number**	**Number**	**Percent**	**Age Dependency Ratio**
Oregon	3,831,074	717,323	18.7%	2,580,218	533,533	13.9%	48.5%
Baker County	16,134	2,610	16.2%	9,982	3,542	22.0%	61.6%
Baker City	9,828	1,717	17.5%	6,094	2,017	20.5%	61.3%
Haines	416	76	18.3%	276	64	15.4%	50.7%
Halfway	288	34	11.8%	187	67	23.3%	54.0%
Huntington	440	56	12.7%	249	135	30.7%	76.7%
Richland	156	3	1.9%	78	75	48.1%	100.0%
Sumpter	204	10	4.9%	124	70	34.3%	64.5%
Unity	71	10	14.1%	44	17	23.9%	61.4%
2040							
Oregon	5,425,408	958,949	17.7%	3,368,940	1,097,519	20.2%	61.0%
Baker County	17,460	2,428	13.9%	10,380	4,652	26.6%	68.2%

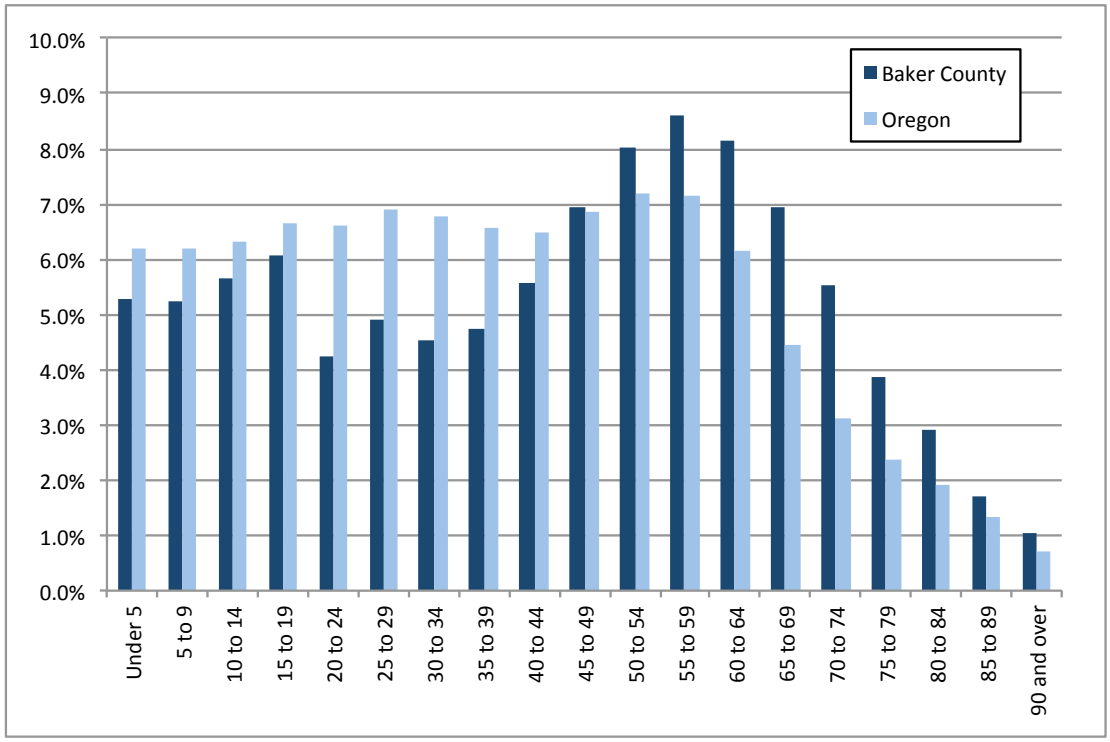
Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2013;

Figure BC-2 shows Baker County's population by age group as compared to Oregon. Baker County has an aging population that makes a distinct point of variation from Oregon starting

[9]The age dependency ratio is derived by dividing the combined under 15 and 65-and-over populations by the 15-to-64 population and multiplying by 100.

from the age cohort from 45-49 and up. Conversely, every five-year age bracket below 45 years old had relatively smaller representation in Baker County than in Oregon. More than one of every five Baker County residents was 65 or older in 2010. By contrast, fewer than one in seven Oregonians was at least 65.[10]

Figure BC-2 Population by Age Group – Baker County and Oregon



Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2012

Table BC-9 shows Baker County's median income difference between 2000 and 2011. There are variables for nominal (inflation adjusted) and real dollars (not adjusted for inflation) for the year 2000. Baker County increased its inflation adjusted median income by more than three percent between 2000 and 2011, faring better than the state's nearly seven percent decrease. However, some communities fared better than others, notably Huntington (-24.9%) and Unity (-29.7%) experienced the largest income loss.

[10] Oregon Employment Department "Senior Citizens are More Prominent in Eastern Oregon's Population Mix" found here: http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007019 Accessed May 2013

Income

Table BC-9 Baker County -- Median Household Income

Jurisdiction	2000 (Nominal $)	2000 (Real $)*	2011	Percent Change
Oregon	$40,916	$53,477	$49,850	-6.8%
Baker County	$30,367	$39,667	$40,989	3.3%
Baker City	$29,020	$37,908	$35,458	-6.5%
Haines	$25,000	$32,657	$38,056	16.5%
Halfway	$17,212	$22,483	$25,893	15.2%
Huntington	$25,132	$32,829	$24,659	-24.9%
Richland	$17,344	$22,656	$26,250	15.9%
Sumpter	$27,188	$35,515	$37,813	6.5%
Unity	$27,679	$36,156	$25,417	-29.7%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics"; U.S. Census Bureau, Table DP3 "Profile of Selected Economic Characteristics: 2000,"http://censtats.census.gov/cgi-bin/pct/pctProfile.pl, Accessed March 2013. *Note: 2000 figures are adjusted for inflation based on the CPI Calculator provided by the Bureau of Labor Statistics, http://www.bls.gov/data/inflation_calculator.htm Accessed May 2013.

Table BC-10 shows the poverty levels among all persons, those under 18, families, and families with children under 18. The communities of Huntington and Unity suffer from the highest overall poverty level, 41.6% and 31.5% respectively, making them the communities with the largest population loss, the largest decline in income, and the highest poverty levels in Baker County.

Table BC-10 Baker County -- Individuals and Families below Poverty Level

Jurisdiction	All People	People < 18	Families	Families with Children < 18
Oregon	14.8%	19.6%	10.2%	16.7%
Baker County	20.0%	32.5%	13.3%	27.3%
Baker City	23.3%	39.0%	15.8%	30.4%
Haines	10.1%	6.0%	5.7%	12.0%
Halfway	29.8%	43.6%	27.1%	54.2%
Huntington	41.6%	57.5%	31.1%	63.3%
Richland	na	na	na	na
Sumpter	na	na	na	na
Unity	31.5%	100.0%	28.6%	100.0%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics, "http, accessed March 2013.

Education

Table BC-11 shows the educational attainment rate in terms of high school and college graduation for Baker County. Baker County has a lower percentage of its population with a high school degree (86.5%) than the state average (88.2%). Notably the City of Haines

(74.3%) and Huntington (76.9%) were more than 10 percentage points below state averages.

Table BC-11 Baker County -- Educational Attainment

Jurisdiction	Total Population > 18 Years	No High School Degree	High School Graduate and Beyond	College Graduate and Beyond
Oregon	2,937,534	11.8%	88.2%	34.0%
Baker County	12,826	13.5%	86.5%	26.9%
Baker City	7,528	17.3%	82.7%	24.5%
Haines	237	25.7%	74.3%	11.8%
Halfway	242	12.4%	87.6%	25.2%
Huntington	412	23.1%	76.9%	12.1%
Richland	102	18.6%	81.4%	27.5%
Sumpter	137	1.5%	98.5%	13.1%
Unity	52	7.7%	92.3%	7.7%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B15001 "Sex by Age by Educational Attainment for the population 18 years and over, "http, accessed March 2013.

Baker County Economic Capacity

Baker County's assets are largely tied to its natural resources and recreation these assets may be more vulnerable to natural disasters and can suffer environmental damages. Table BC-12 describes some of these assets as well as some of the major employers in the county. The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table BC-12 Baker County Economic Asset Identification

Economic Assets
The County's economy is principally based on agriculture with support from tourism. Impacts to either of these industries, via natural hazard, will hurt Baker County's economy. Natural hazards can severely interrupt agriculture and damage the environmental resources that Baker County relies on to attract tourism.
Baker County's major employers include New Directions Northeast (largest employer in the County), ODOT, State of Oregon, BLM, Baker County, Baker City Government, Oregon Health and Services, 5J School District, Powder River Correctional Facility, Oregon Trail Electric Cooperative, Tasty Bake, Natural Structures, Sain Alphonsus Hospital, Behlen and Marvins.
Economic Assets include: agriculture, ranching, forestry, livestock, tourism, mining, and recreational opportunities, such as hunting, skiing, fishing, boating, and camping.
The mining potential in Baker County is potentially an untapped economic development resource.

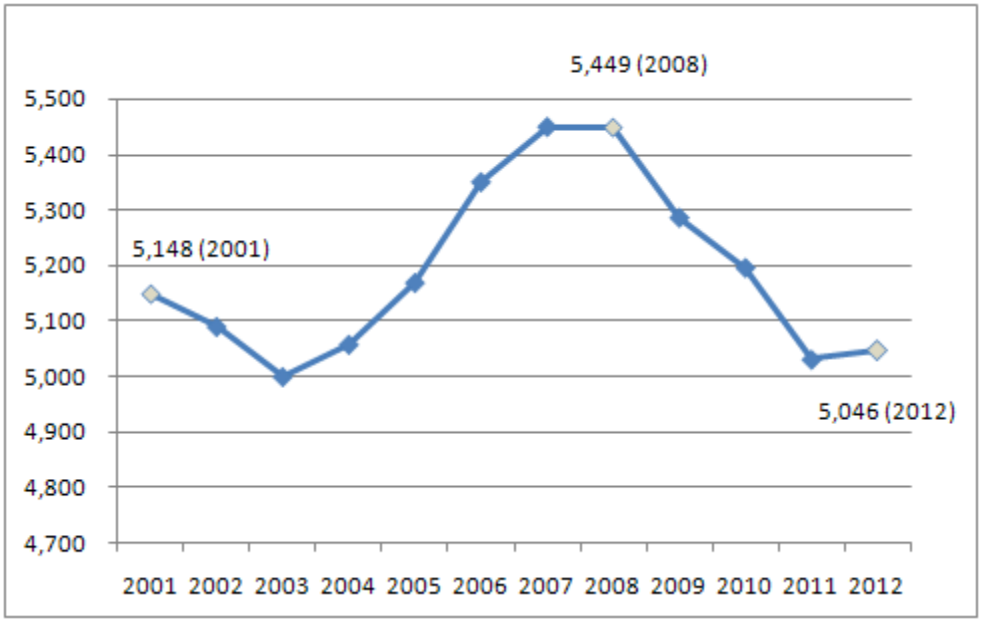
Source: Baker County NHMP Steering Committee, 2007, 2013

Industry

TOTAL EMPLOYMENT

Figure BC-3 shows Baker County's total non-farm employment which has decreased overall since 2001 and forming an arc which peaked in 2008. Total nonfarm payroll employment in Baker County increased in 2012 for the first time since 2008. 2012 numbers are still 102 jobs shy of the 2008 peak of 5,499.[11]

Figure BC-3 Baker County 2001-2012 Total Nonfarm Employment



Source: Oregon Employment Department, "2001-2012 Covered Employment and Wages Summary Reports". http://www.qualityinfo.org/olmisj/labforce; Accessed June 2013.

EMPLOYMENT BY INDUSTRY

Public-sector employment accounts for nearly one in every four non-farm jobs in Baker County (22.4%). Trade, transportation, and utilities had the largest share of private sector employment in 2012 at 20.0 percent, followed by educational and health services (14.5%) and leisure and hospitality (11.3%).

The educational and health services industry has been the largest industry of growth. As regional economist Jason Yohannan explains in a recent article:

> *"The educational and health services industry employed an average of 600 people in Baker County in 2001. Since then, the industry added workers every year without fail, in fact, over the past decade; the strongest year for employment growth in Baker County's health care industry was 2008, during the heart of the national economic downturn. Hiring by the educational and health services industry was the primary reason Baker County's total nonfarm payroll employment rose from 2007 to 2008*

[11] Oregon Employment Department "Eastern Oregon Job Trends in 2012: Only Pockets of Recovery" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008580 Accessed June 2013.

while corresponding figures for Oregon and the United States moved in the opposite direction. Educational and health services have been a growth industry throughout the country. But, from 2001 to 2009, the industry's job counts grew faster in Baker County (+27%) than in Oregon (+25%) or the United States (+23%). No other Baker County industry added as many jobs - or expanded as rapidly - in that time span."[12]

Table BC-13 2011 Total Employment by Industry

Jurisdiction	2012 Firms	2012 Employees	2012 Percent of Workforce	2012 Average Pay	Percent Change in Employment 2007-2012
Total	*641*	*5,046*	*100%*	*$31,242*	-7.4%
Total Private	566	3,917	77.6%	$28,882	-7.1%
Natural Resources and Mining	33	165	3.3%	$28,685	-11.8%
Construction	67	194	3.8%	$27,933	-32.4%
Manufacturing	29	485	9.6%	$36,701	-24.2%
Trade, Transportation & Utilities	125	1,008	20.0%	$30,146	5.1%
Wholesale	19	80	1.6%	$26,814	6.7%
Retail	75	697	13.8%	$22,401	2.2%
Information	11	75	1.5%	$40,197	-2.6%
Finance Activities	42	152	3.0%	$36,199	-18.3%
Professional & Business Services	63	303	6.0%	$29,928	2.7%
Education & Health Services	67	731	14.5%	$34,204	7.5%
Leisure & Hospitality	59	571	11.3%	$14,325	-10.8%
Other Services	71	234	4.6%	$17,183	-11.4%
Government	75	1,129	22.4%	$39,428	-8.5%
Federal	18	222	4.4%	$57,136	-7.1%
State	17	254	5.0%	$42,150	-3.1%
Local	40	653	12.9%	$32,349	-11.0%

Source: Oregon Employment Department "2007 and 2012 Covered Employment and Wages Summary Reports."http://www.qualityinfo.org/olmisj/labforce. Accessed June 2013.

HIGH REVENUE SECTORS

In 2007, the sectors with the highest reported revenue were retail trade (42.9% total revenue) and manufacturing (38.1% total revenue). Table BC-14 shows the revenue generated by each economic sector. Among the sectors that reported their revenue, combined for more than $362 million of revenue in the county.

12 Oregon Employment Department "Eastern Oregon Job Trends in 2012: Only Pockets of Recovery" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008580 Accessed June 2013

Table BC-14 Revenue of Top Sectors in Baker County

Sector Meaning (NAICS code)	Revenue ($1,000)	Percent of Total Revenue	Sector Ranking
Retail Trade	$155,456	42.9%	**1**
Manufacturing	$137,989	38.0%	**2**
Accomodation & Food Services	$25,659	7.1%	**3**
Wholesale Trade	$19,141	5.3%	**4**
Other Services (except Public Administration)	$12,061	3.3%	**5**
Real Estate & Rental & Leasing	$7,324	2.0%	**6**
Administrative & Support & Waste Management & Remediation Services	$5,052	1.4%	**7**
Health Care & Social Assistance	D		
Professional, Scientific & Technical Services	D		
Arts, Entertainment & Recreation	D		
Educational Services	D		
Information	N		
Total	$362,682		

Source: U.S. Census Bureau, 2007 Economic Census, Table EC0700A1 "All sectors: Geographic Area Series: Economy-Wide Key Statistics: 2007," http://factfinder2.census.gov/,*D = Withheld, N = No Data* accessed March 2013.

Baker County Community Connectivity

Civic Engagement

The 2012 Presidential General Election generated a turnout from 8,549 people in Baker County as of November 6th, 2012.[13] Other indicators such as volunteerism, participation in formal community networks and community charitable contributions are examples of other civic engagement that may increase community connectivity.

Cultural Resources

Historic Places

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources for tourism revenue. Protecting these resources from the impact of disasters is important because they have an important role in defining and supporting the community. Table BC-15 identifies the number of historical sites in Baker County. Overall, there are a total of 13 historically registered places in Baker County.

[13] Daily Ballot Return, http://www.bakercounty.org/elections/index_11062012.html, accessed September 2013.

Table BC-15 Baker County Historic Places

Type	Listed on the National Register
Archeological	0
Bridges	0
Cemetaries	0
Churches	0
Commercial	1
Districts	2
Houses, Hotels, Resorts and Cabins	3
Military Posts, Ranger Stations and Guard Lookouts	2
Municipal Buildings, Libraries and Schools	3
Parks, Campgrounds, Ranches, Barns, and Openspace	2
Total	**13**

Source: Oregon Historic Sites Database, http://heritagedata.prd.state.or.us/historic/index.cfm?do=v.dsp_main, accessed September 2013.

LIBRARIES AND MUSEUMS

Libraries and museums develop cultural capacity and community connectivity as they are places of knowledge and recognition, they are common spaces for the community to gather, and can serve critical functions in maintaining the sense of community during a disaster. They are recognized as safe places and reflect normalcy in times of distress. There are currently six community libraries in Baker County located in Baker City, Haines, Halfway, Huntington, Richland, and Sumpter.[14] There are approximately three museums in Baker County: Baker Heritage Museum, Alder House Museum, and the Eastern Oregon Museum.[15]

CULTURAL EVENTS

Other such institutions that can strengthen community connectivity are the presence of festivals and organizations that engage diverse cultural interests. Examples of events and institutions include Sumpter Flea Markets, Memorial Day Weekend & Labor Day Weekend events; Haines Days, the 4th of July Celebrations, Rodeos, County Fair, Baker City – 4H Fair, the Elkhorn Bicycle Ride (Last weekend in June), motorcycle rally is in July, the Huntington Catfish Derby, and other local events. Not only do these events bring revenue into the community, they have potential to improve cultural competence and enhance the sense of place. Cultural connectivity is important to community resilience, as people may be more inclined to remain in the community because they feel part of the community and culture.

14 Baker County Library Website http://bakerlib.org/about-us/branches.html Accessed September 2013

15 Base Camp Baker http://www.basecampbaker.com/museums-in-baker-county-oregon.html Accessed September 2013

Community Stability

Residential Geographic Stability

Community stability is a measure of rootedness in place. It is hypothesized that resilience to a disaster stems in part from familiarity with place, not only for navigating the community during a crisis, but also accessing services and other supports for economic or social challenges.[16] Table BC-16 estimates residential stability across the region. It is calculated by the number of people who have lived in the same house and those who have moved within the same county a year ago, compared to the percentage of people who have migrated into the region. Baker County overall has geographic stability rating of about 93% (i.e., 93% of the population lived in the same house or moved within the county).

Table BC-16 Regional Residential Stability

Jurisdiction	Population	Geographic Stability	Same House	Same County
Baker County	15,914	93.0%	84.4%	8.7%
Baker City	9,609	91.2%	80.7%	10.5%
Haines	287	100.0%	82.2%	17.8%
Halfway	336	100.0%	82.1%	17.9%
Huntington	535	99.1%	99.1%	0.0%
Richland	102	98.1%	96.1%	2.0%
Sumpter	137	100.0%	100.0%	0.0%
Unity	54	88.9%	77.8%	11.1%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B07003 "Geographical Mobility in the Past Year 5-Year Estimate," http://factfinder2.census.gov/, accessed September 2013.

Homeownership

Often homeownership is associated with greater resilience as it is a measure of place attachment and commitment. Homeownership is an indicator that residents will return to a community post-disaster, as these people are economically and socially invested in the community. Similar to communities with higher median household income, homeownership can reflect an increased resource vulnerability to prepare, respond and cope with a crisis situation.

Table BC-17 identifies housing tenure across the county. The table shows the home-ownership rate of occupied households is lowest in Haines, Baker City, and Huntington. There are approximately, 2,230 renters in Baker County. Renters are less likely to return after a disaster, since they are less economically invested in the community.

16Cutter, Susan, Christopher Burton, Christopher Emrich. "Disaster Resilience Indicators for Benchmarking Baseline Conditions." Journal of Homeland Security and Emergency Management.

Table BC-17 Homeownership

Jurisdiction	Occupied Households	Owner Occupied	Percent Owner Occupied	Renter Occupied	Percent Renter Occupied	Population Renter Occupied
Baker County	7,040	4,810	68.1%	2,230	31.7%	4,975
Baker City	4,212	2,665	63.3%	1,547	36.7%	3,383
Haines	125	77	61.6%	48	38.4%	88
Halfway	153	99	64.7%	54	35.3%	201
Huntington	211	137	64.9%	74	35.1%	156
Richland	93	66	71.0%	27	29.0%	49
Sumpter	119	106	89.1%	13	10.9%	21
Unity	36	25	69.4%	11	30.6%	27

Source: U.S. Census Bureau, American Community Survey 2007-2011 Table DP04 "Selected Housing Characteristics," http://factfinder2.census.gov, accessed September 2013.

Baker County Political Capacity

Government Structure

Baker County employs a County Clerk, District Attorney, Sheriff, Treasurer, Assessor, Justice of the Peace, Surveyor, and three County Commissioners, along with the following departments:

Economic Development

The Department of Economic Development is a joint venture between Baker County and Baker City, and provides a variety of services to existing and prospective businesses. The Department maintains demographic data, and labor/property information for both the city and county. In partnership with Leo Alder Memorial Parkway, Inc., the Department of Economic Development has undertaken the Downtown Jobs Initiative – Resort Street Area Improvement Project. A combination of several short and long-term plans, the initiative is working to improve streetscapes, establish a plaza at Court Street, and create a centrally located public park.

Emergency Management

The Baker County Department of Emergency Management assists in maintaining community well-being through disaster mitigation, preparedness, response, and recovery activities. The Department: 1) Serves as the point of contact for emergency and disaster questions or issues; 2) Provides hazard education and loss reduction program information; 3) Facilitates emergency and disaster planning efforts; 4) Promotes community disaster preparedness; 5) Coordinates and responds to emergency and disaster situations; 6) Assists in community disaster recovery opportunities; 7) Coordinates homeland security and county fire operations.

Health Department

The Baker County Health Department is responsible for providing community wide health promotion and disease prevention services to Baker County. Services offered by the department include vaccinations, pre- and post-natal care, immunizations, information on water and food safety, health insurance, and family health and nutritional programs.

PLANNING

The Baker County Planning Department provides planning and zoning information to the public and other government agencies. Additional responsibilities include reviewing development proposals, administering and enforcing land use laws, regulations, and ordinances, reviewing applications for land use actions, and conducting comprehensive planning studies and research.

ROAD DEPARTMENT

The Baker County Road Department works to provide roadways that are safe, efficient, and economical to maintain.

Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[17]

The Natural Hazards Mitigation Plan includes a range of recommended action items that, when implemented, will reduce the county's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the county's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the Plan. Implementing the natural hazards mitigation plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the county's resources.

Table BC-18 below is a list of plans and policies already in place in Baker County:[18]

17Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

18Oregon Blue Book. http://bluebook.state.or.us/local/counties/counties01.htm

Table BC-18 Existing Plans

Jurisdiction	Document	Year Acknowledged	Last Revision
Baker County	Emergency Operations Plan		2002
Baker County	Flood Insurance Study (FIS)		1996
Baker County	Baker County Land Use Ordinance		1983
Baker County	Baker County Comprehensive Land Use Plan		1978
Baker County	Baker County Community Wildfire Protection Plan		2005
Baker County	Baker City/County Economic Development Strategic Plan		
Baker County	Baker County Cultural Trust Plan		
Baker County	Baker County Transportation System Plan		1999
Baker City	**Transportation System Plan**		**2012**
Baker City	**Comprehensive Plan**	**1980**	**1997**
Baker City	**Water System Master Plan**		**2013**
Baker City	**Zoning Ordinance**		**2001**
Greenhorn	Comprehensive Plan		1986
Haines	Comprehensive Plan	1980	2003
Haines	Zoning Ordinance		2003
Halfway	Comprehensive Plan	1981	1992
Halfway	Zoning Ordinance		1992
Halfway	Water System Master Plan		2007
Halfway	Waste Water Facility Plan		2013
Huntington	Comprehensive Plan	1980	
Richland	Comprehensive Plan	1981	
Richland	Zoning Ordinance		2001
Sumpter	Comprehensive Plan	1984	
Sumpter	Zoning Ordinance		1984
Unity	Comprehensive Plan	1981	

Source: Oregon Blue Book

Community Organizations and Programs

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within the population (e.g. elderly, children, low income). The County can use existing social systems as resources for implementing such communication-related activities because these

service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

For a full list of community organizations that may be potential partners for implementing mitigation actions visit the Community Profile, Appendix C, Table C-28.

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.

Hazard Analysis and Issue Identification Update

On September 13th, 2013, the Baker City addendum update working group reviewed and revised the plan's Hazard Analysis and Risk Assessment section. Changes were made where appropriate to reflect changes in perception of risk from natural hazards to Baker City, which are discussed throughout this plan as well as in the Planning and Public Process Appendix of the Northeast Oregon NHMP. The following is a summary of input from the original city addendum working group, along with revisions and additions from the 2013 working group.

The table below presents the entire updated hazard analysis matrix for Baker City. The hazards are listed in order of rank from high to low and compare them to the county's ranking for each hazard. The table shows that hazard scores are influenced by each of the four categories combined. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities, but does not predict the occurrence of a particular hazard.

With considerations for past historical events, the probability or likelihood of a particular hazard event occurring, the vulnerability to the community, and the maximum threat or worst-case scenario, drought, winter storm, wildfire and flood were ranked as the top hazard threats to the city (Top Tier). Windstorm, extreme temperatures, earthquake (crustal) comprise the next highest ranked hazards (Middle Tier).Earthquake (Cascadia), landslide/ debris flow and volcanic event comprise the lowest ranked hazards (Bottom Tier).Baker City did not rank the dust storm hazard.

Table BC-19 Hazard Analysis Matrix – Baker City

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	County Hazard Rank
Drought	20	50	100	70	240	#1	#1
Winter Storm	18	45	100	70	233	#2	#2
Wildfire	8	45	100	70	223	#3	#3
Flood	10	30	100	70	210	#4	#5
Windstorm	16	30	90	56	192	#5	#4
Extreme Temperatures	10	25	80	56	171	#6	NR
Earthquake - Crustal	2	40	100	7	149	#7	#6
Earthquake - Cascadia	2	20	20	42	84	#8	#9
Landslide	6	10	20	28	64	#9	#7
Volcanic Event	2	5	20	7	34	#10	#10
Dust Storm	NR	NR	NR	NR	NR	NR	#8

Sources: Baker CityNHMP Steering Committee, September 13, 2013 and Baker County NHMP Steering Committee, Updated June 26, 2013.Note: NR = Not Ranked

The following table categorizes the probability and vulnerability scores from the hazard analysis for the city and compares the results to the assessment completed by the Baker County NHMP Steering Committee (areas of differences are noted with **bold** text within the city ratings). The table indicates that there is lower probability of landslide and winter storm in Baker City than in the county and lower vulnerability to landslide and windstorm than the county. Baker City did not rank the dust storm or extreme temperatures hazards.

Table BC-20 Probability and Vulnerability Comparison – Baker City and Baker County

	Baker City		Baker County	
Hazard	Probability	Vulnerability	Probability	Vulnerability
Drought	High	High	High	High
Dust Storm	NR	NR	Moderate	Moderate
Earthquake - Cascadia	Moderate	Moderate	Moderate	Moderate
Earthquake - Crustal	Low	High	Low	High
Extreme Temperatures	Moderate	High	NR	NR
Flood	High	Moderate	High	Moderate
Landslide	**Moderate**	**Low**	High	Moderate
Volcanic Eruption	Low	Low	Low	Low
Wildfire	High	High	High	High
Windstorm	High	**Moderate**	High	High
Winter Storm	**Moderate**	High	High	High

Sources: Baker CityNHMP Steering Committee, September 13, 2013 and Baker County NHMP Steering Committee, Updated June 26, 2013.Note: NR = Not Ranked

Drought

The Baker City Working Group determined that there is a **High** probability that the City will experience severe extended drought conditions. This rating is consistent with the 2008 Baker City Hazard Analysis and the 2013 Baker County Hazard Analysis. The City has recently completed and is now implementing their water conservation ordinance, which was noted in the 2008 City Addendum. In the 2008 Baker City Addendum it was also noted that: "Baker City is interested in gaining a better understanding of the valley's aquifer capacities."As such, the Baker City Working Group determined that the city has a drought vulnerability of **High**. This rating is consistent with the 2008 Baker City Hazard Analysis and the2013 Baker County Hazard Analysis.

Dust Storm

The dust storm hazard was not analyzed for Baker City.

Earthquake (Crustal and Cascadia)

Crustal Earthquake

The Baker City Working Group determined that there is a **Low** probability that a crustal earthquake event will affect the city. This rating is consistent with the 2008 Baker City Hazard Analysis and the 2013 Baker County Hazard Analysis. The history of recent earthquakes in the Baker City area is limited. The Steering Committee determined that there was a 4.0 earthquake near Baker City in 1984, which didn't cause any known structural

damage. There are historic buildings and critical facilities in Baker City that may have a high risk of collapse during extreme levels of seismic activity. The buildings that were considered to have a 'very high' collapse potential rating in the DOGAMI Rapid Visual Survey include North Baker Elementary School, South Baker Elementary School, Baker High School, Pine Eagle High School, and Brooklyn Elementary. The working group considered other older buildings that may have a high collapse potential not surveyed by DOGAMI these include city hall and the Carnegie Library. As such, the Baker City Working Group determined that the city has a **High** vulnerability to an earthquake hazard. This rating is consistent with the 2013 Baker County Hazard Analysis and higher than the 2008 Baker City Hazard Analysis score of Moderate.

CASCADIA SUBDUCTION ZONE EARTHQUAKE

The Baker City Working Group also considered the probability and vulnerability of a Cascadia Subduction zone earthquake event. Baker City relied on the Baker County rankings for this hazard, which are: **Moderate** probability and **Moderate** vulnerability.

Extreme Temperatures

The Baker City Working Group considers the city to have a **Moderate** probability to an extreme temperatures event. This hazard was unranked in the 2008 Baker City Hazard Analysis and the 2013 Baker County Hazard Analysis. Extreme temperatures events occur frequently in Baker City; of particular note are severe cold events when the temperature may reach below 20° F. The Working Group considered extreme cold events that could freeze water meters, one such event froze 150 water meters and caused a loss of drinking water to homes. The City recommends that people run water to prevent water meter freezes and provides emergency alerts for these extreme cold events. Additionally, water meter blankets are used on homes that are susceptible to freezes. The Working Group noted some concern of an extreme heat event but determined that the city is more vulnerable to extreme cold. As such, the Baker City Working Group considers the city to have a **High** vulnerability to an extreme temperatures event.

Flood

The Baker City Working Group considers the city to have a **High** probability of a flood event. This rating is higher than the 2008 Baker City Hazard Analysis score of low and is consistent with the 2013 Baker County Hazard Analysis. Flooding is generally localized and the Baker City is so small that the impacts are felt throughout.

Mason Dam was constructed in 1968 and contains Phillips Lake on the Powder River, 19 miles upstream from Baker City. The dam has served for irrigation purposes and flood control against the Powder River. The Working Group considered a breach in the dam as a worst-case-scenario type flood event and considered this scenario when assigning the maximum score to 'Maximum Threat' category of the Hazard Analysis.

The primary flooding sources for Baker City detailed in the Flood Insurance Study (1988) include Old Settler's Slough and the Powder River.[19] The working group indicated minor flooding may occur through a Smith Ditch breach, as in 2005 and 2012, and ice dam flooding.

19 FEMA, Baker County Flood Insurance Study, June 1988

The Baker County flood insurance rate maps (FIRMs) have not been updated since 1988. The City believes they are no longer accurate; since Mason Dam was built, flooding risks have diminished. DOGAMI did provide LIDAR for the county in 2012 as well as Baker City. Baker City currently has 43 NFIP policies, 29 of which predate the Flood Insurance Rate Maps. There have been two paid claims for the flood policies (see Volume II, Flood Hazard Annex, for more information).The Baker City floodplain ordinance was updated in 2012 to ensure participation with the National Flood Insurance Program (NFIP).[20]

The Baker City Working Group determined that the city's vulnerability to flood is **Moderate**. This ranking is consistent with the 2008 Baker City Hazard Analysis and the 2013 Baker County Hazard Analysis.

Landslide

There is little history and no steep slopes that would *directly* affect the Baker City; however, the 1984 'Hole in the Wall' incident caused an indirect commercial impact to the community via the Highway 86 closure, preventing travel for several months. As such the Baker City Working Group considers the city to have a **Moderate** probability to a landslide. This rating is higher than the 2008 Baker City Hazard Analysis score of Low and consistent with the 2013 Baker County Hazard Analysis. The Baker City Working Group considers the city to have a **Low** vulnerability to a landslide. This rating is consistent with the 2008 Baker City Hazard Analysis score and lower than the 2013 Baker County Hazard Analysis score of moderate.

Volcanic Event

Considering past history the probability of a volcanic event for Baker City and Baker County is **Low.** This hazard was not ranked in the 2008 Baker City Hazard Analysis. While a volcanic event may not have a direct impact on the city, the ash fallout from an event in the Cascades or Mount St. Helens could potentially affect Baker City, especially for people with respiratory problems. The Baker City Working Group determined that the city's vulnerability to a volcanic event is **Low**. This rating is consistent with the 2013 Baker County Hazard Analysis.

Wildfire

Most wildfires have been far away from the city limits. Smoke has been a concern for the city as wind patterns from central Oregon or Idaho come to Baker City. Due to the history of wildfire in the county and near Baker City the probability of a wildfire event is **High**. This hazard was unranked in the 2008 Baker City Hazard Analysis and is consistent with the 2013 Baker County Hazard Analysis score. The working group determined that the Baker City watershed was a very vulnerable area for the community. This assessment concurs with the 2006 Baker County Community Wildfire Protection Plan, which ranks the Baker City watershed as a 'High Priority.'[21] It was noted in the 2008 plan that the city would like to see an expansion of fuels reduction in the watershed, which was acknowledged in the 2013 City Addendum meeting. The working group determined that the city's vulnerability to wildfire is

20 More information about the floodplain ordinance can be found here: http://www.bakercity.com/departments/planning/313

[21]Baker County CWPP 2006.High priority with a total score of 15 out of a maximum 22.

High, due to the watershed concern. This rating is consistent with the 2013 Baker County Hazard Analysis score.

Windstorm

Windstorms occur frequently in the Baker City area therefore the Baker City Working Group determined that the probability of a windstorm event is **High**. This hazard was unranked in the 2008 Baker City Hazard Analysis and this score is consistent with the 2013 Baker County Hazard Analysis. Windstorms happen almost every year and result in tree limb falling, but there is no significant damage to structures, minor damage on homes, every year cars may have tree limbs fall on them. The regional plan also addresses the windstorm risks that the city faces. The Steering Committee determined that the city's vulnerability to a windstorm is **Moderate**. This rating is lower than the 2013 Baker County Hazard Analysis ranking of high.

Winter Storm

Considering the history of winter storms in the region the Baker City Working Group determined that the probability of a winter storm event is **Moderate**. This hazard was given a high score in the 2008 Baker City Hazard Analysis and the 2013 Baker County Hazard Analysis. The Baker City Working Group noted that the city is very capable of clearing snow quickly. The Baker City Working Group determined that the cities vulnerability to a winter storm is **High**. This ranking is consistent with the 2008 Baker City Hazard Analysis and the 2013 Baker County Hazard Analysis.

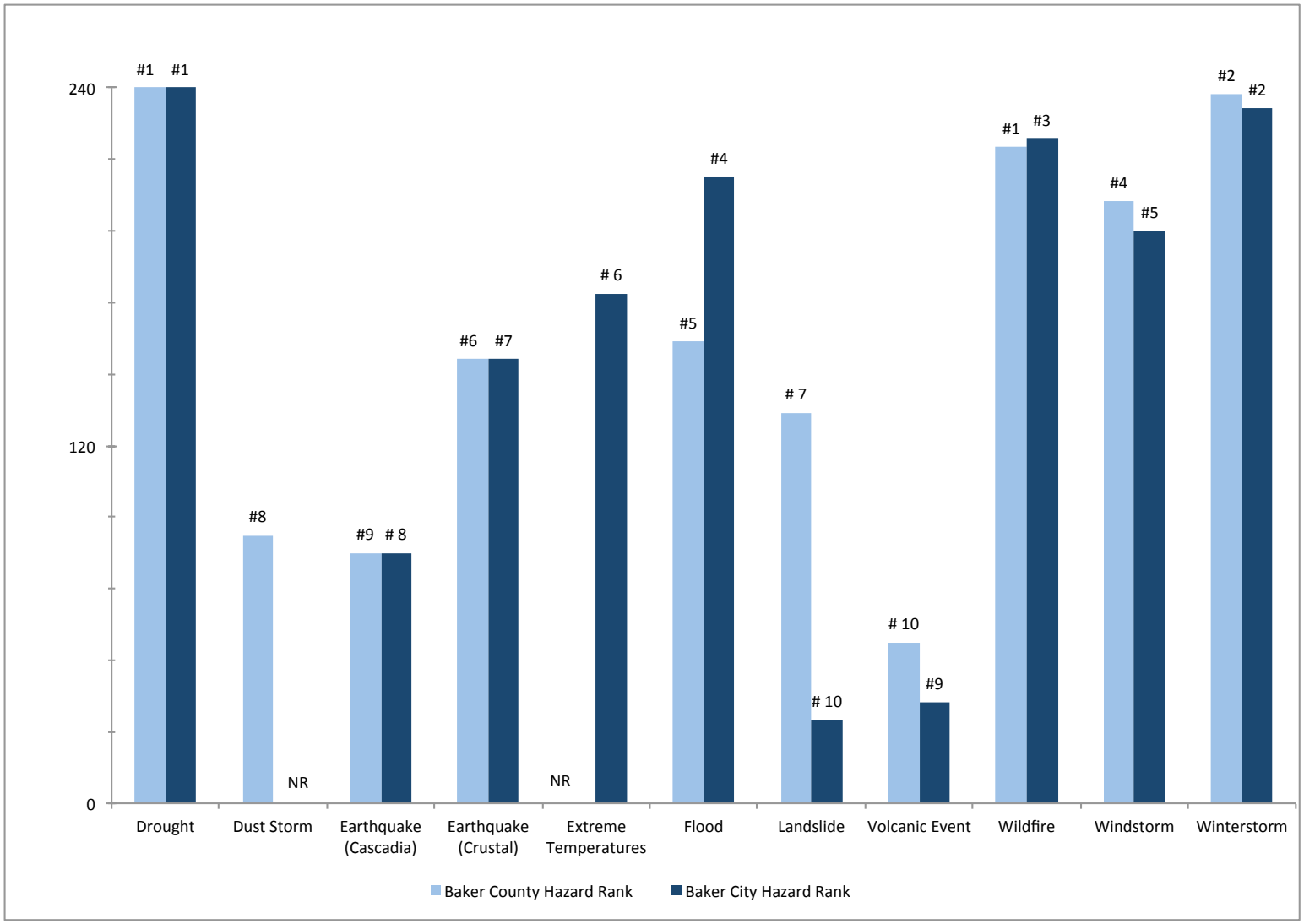
The figure below presents a summary of the hazard analysis for the Baker City and compares the results to the assessment completed by the Baker County NHMP Steering Committee.

In terms of probability, vulnerability, history, and maximum threat, the hazard analysis for the city overall rated their threat to drought, winter storm, and wildfire as greatest, similar to the county. The threat from flood was considered greater than the county's. Landslide was a considerably lesser threat to the city than the county.

The figure below presents a summary of the hazard analysis for the Baker City and compares the results to the assessment completed by the Baker County NHMP Steering Committee.

In terms of probability, vulnerability, history, and maximum threat, the hazard analysis for the city overall rated their threat to drought, winter storm, and wildfire as greatest, similar to the county. The threat from flood was considered greater than the county's. Landslide was a considerably lesser threat to the city than the county.

Figure BC-4 Overall Hazard Analysis Comparison (OEM: Total Threat Score) – Baker City and Baker County



Source: Baker City NHMP Steering Committee, September 13, 2013 and Baker County NHMP Steering Committee, Updated June 26, 2013. NR = Not Rated

Mitigation Strategy

Mitigation Plan Mission

The plan's mission states the purpose and defines the primary functions of the Northeast Oregon Natural Hazard Mitigation Plan. It is intended to be adaptable to any future changes made to the plan and need not change unless the community's environment or priorities change.

The 2013 plan update steering committee reviewed, and the Baker City Working Group accepted, the 2008 mission statement and agreed that the following statement best describes the over purpose and intent of this plan:

Mission: *To create a disaster-resilient Northeast Oregon*

Mitigation Plan Goals

Mitigation plan goals are more specific statements of direction that Northeast Oregon citizens, and public and private partners can take while working to reduce the county's risk from natural hazards. These statements of direction form a bridge between the broad mission statement and particular action items. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Goal 1: *Protect human welfare, property, and natural resources*

Goal 2*: Increase the resilience of local and regional economies*

Goal 3: *Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness*

Goal 4: *Strengthen organizational and community capacity*

Action Item Worksheets

Each action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below. These action item worksheets are located in Appendix A, *Action Items.*

PROPOSED ACTION TITLE

Each action item includes a brief description of the proposed action.

ALIGNMENT WITH PLAN GOALS

The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

ALIGNMENT WITH EXISTING PLANS/ POLICIES

Identify any existing community plans and policies where the action item can be incorporated. Incorporating the mitigation action into existing plans and policies, such as comprehensive plans, will increase the likelihood that it will be implemented.

RATIONALE OR KEY ISSUES ADDRESSED

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from a number of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in Section 2 and the Hazard Annexes.

IMPLEMENTATION THROUGH EXISTING PROGRAMS

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance process. Ideas for implementation could include: (1) collaboration with relevant organizations, (2) alignment with the community priority areas, and (3) applications to new grant programs. When an action is implemented, more work will probably be needed to determine the exact course of action.

The Northeast Oregon Natural Hazard Mitigation Plan includes a range of action items that, when implemented, will reduce loss from hazard events in the region. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. The northeast Oregon counties and their participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvements plans, strategic plans and mandated standards and building codes. To the extent possible, the jurisdictions will work to incorporate the recommended mitigation action items into existing programs and procedures.

Many of the Northeast Oregon Natural Hazard Mitigation Plan's recommendations are consistent with the goals and objectives of the existing plans and policies. Where possible, the northeast Oregon counties and the participating cities will implement the multi-jurisdictional Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[22] Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

[22] Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

Coordinating Organization

The coordinating organization is the public agency or non-profit organization with the regulatory responsibility to address natural hazards, or that is willing and able to organize resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

Internal and External Partners

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project Steering Committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the county or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

Potential Funding Sources

Where possible, identify potential funding sources for the action item. Example funding sources can include: the federal Pre-Disaster Mitigation and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

Estimated Cost

Where possible, an estimate of the cost for implementing the action item is included.

Timeline

Action items include both short and long-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term action items* (ST) are activities that may be implemented with existing resources and authorities in one to two years. *Long-term action items* (LT) may require new or additional resources and/or authorities, and may take from three to five years to implement. *Ongoing action items* are activities that are currently being performed and will continue into the foreseeable future.

Status

As action items are implemented or new ones are created during the plan maintenance process, it is important to indicate the status of the action item—whether it is new, ongoing, deferred, or complete. Documenting the status of the action will make reviewing and updating mitigation plan easier during the plan's five-year update, and can be used as a benchmark for progress. *Deferred* action items have yet to see any significant work begin on the particular action.

PRIORITY

The County Steering Committees and City working groups can designate action items with a 'High' priority, which indicates a higher level of importance than the other action items.

Baker City Action Items

The table below shows the action items that affect the city. Action items FL #2 and WF #1 are "high" priority actions for the city. To review the action item forms see Appendix A.

TableBC-21 Action Item timelines, status, priority and related hazards

				Jurisdiction			Related Hazards						
Action Item	Timeline	Status	Priority	Baker County	Halfway	Baker City	Drought	Earthquake*	Flood	Landslide	Severe Weather**	Volcano	Wildfire
MH #1	Short Term	Deferred		X	X	X	X	X	X	X	X	X	X
MH #2	Short Term	New		X	X	X	X	X	X	X	X	X	X
MH #3	Short Term	Deferred		X	X	X	X	X	X	X	X	X	X
MH #4	Ongoing	Ongoing		X		X	X	X	X	X	X	X	X
DR #2	Ongoing	Ongoing	High	X	X	X	X						
DR #4	Short Term	Deferred	High	X	X	X	X						
EQ #1	Long Term	NEW		X	X	X		X					
EQ #3	Long Term	NEW		X		X		X					
EQ #4	Long Term	NEW		X		X		X					
EQ #5	Long Term	NEW		X		X		X					
EQ #6	Long Term	NEW		X		X		X					
EQ #7	Long Term	NEW		X		X		X					
FL #1	Ongoing	Ongoing		X	X	X			X				
FL #2	Short Term	Deferred	High	X	X	X			X				
FL #3	Short Term	Deferred	High	X	X	X			X				
FL #4	Short Term	New	High	X	X	X			X				
WF #1	Ongoing	Ongoing	High	X	X	X							X

Source: Baker County NHMP Steering Committee, Baker City NHMP Steering Committee, Baker City NHMP Steering Committee.

*Earthquake includes crustal and Cascadia Subduction Zone events.

**Severe Weather includes dust storm, extreme temperatures, windstorm and winter storm events.

Volume III: Enterprise Addendum

Purpose

This document serves as Enterprise's Addendum to the Northeast Oregon Natural Hazards Mitigation Plan (NHMP). The city's addendum is considered part of the region's multi-jurisdictional plan, and meets the following requirements: (1) Multi-jurisdictional Plan Adoption §201.6(c) (5), (2) Multi-jurisdictional Participation §201.6(a) (3), (3) Multi-Jurisdictional Risk Assessment §201.6(c) (2) (iii), and (4) Multi-jurisdictional Mitigation Strategy §201.6(c) (3) (iv).

A description of the city specific planning and adoption process follows, along with detailed community specific action items. Information about the city's risk relative to the county's risk to natural hazards is documented in the addendum's Hazard Analysis and Issue Identification section. The section considers how the city's risk differs from or matches that of the county's; additional information on Risk Assessment is provided within the Northeast Oregon NHMP's Section 2 – Risk Assessment and within the Hazard Annexes within Volume II of this NHMP.

Elements of Enterprise's addendum are further discussed throughout the plan and in the Northeast Oregon NHMP Planning and Public Process Appendix (Appendix B), which provides an overview of alterations to the document that took place during the addendum update process.

How was the Plan Developed?

In fall 2012, the Oregon Partnership for Disaster Resilience at the University of Oregon's Community Service Center partnered with the Northeast Oregon Region (Baker, Grant, Union, and Wallowa) counties to develop a Pre-Disaster Mitigation Planning Grant proposal. Each county joined OPDR by signing a Memorandum of Understanding for this project. FEMA awarded the Northeast Oregon Region grant to support the update of the existing regional NHMP and to support the development of additional addenda for other cities that opted to join. The City of Enterprise decided to participate in 2013 by creating their addendum to the regional NHMP. OPDR and the communities were awarded the grant in the fall of 2012 and local planning efforts in this region began in the fall of 2012 with county and city meetings proceeding in 2013.

The Northeast Oregon Multi-jurisdictional NHMP was formally adopted by Wallowa County on July 7, 2008 and approved by FEMA on May 23, 2008 (Grant County was the first to approve the regional NHMP on April 23, 2008). To maintain its compliance with the Disaster Mitigation Act of 2000 (DMA2K), the plan required an update by May 23, 2013. Enterprise did not participate during the original plan creation; however, as such the city created their first addendum to the Northeast Oregon NHMP in 2013.

In fall 2012, Wallowa County initiated the update process in order to take advantage of grant funding and technical support currently available through the Oregon Partnership for

Disaster Resilience (OPDR) at the University of Oregon's Community Service Center (CSC). Updating the mitigation plan is a requirement for maintaining eligibility for the Federal Emergency Management Agency's Pre-Disaster Mitigation and Hazard Mitigation Grant Programs. By updating the plan and having it re-approved by FEMA, northeast Oregon will maintain its eligibility for FEMA Hazard Mitigation, Pre-Disaster Mitigation and Flood Mitigation Assistance grant program funds. This project is funded through the Federal Emergency Management Agency's (FEMA) FY12 Pre-Disaster Mitigation Competitive Grant Program (PDMC – PL-10-OR-2012-002).

The Northeast Oregon Regional Multi-jurisdictional Natural Hazards Mitigation Plan was updated and reapproved by FEMA Region X on **June 5, 2014**. The plan is effective through **June 4, 2019**. The City of Enterprise adopted their addendum to the plan on **June 9, 2014**.

The Northeast Oregon Natural Hazard Mitigation Plan is the result of a collaborative effort among citizens, public agencies, non-profit organizations, the private sector and regional organizations. Several project steering committees guided the process of developing the plan. For more information on the composition of the steering committees see the Acknowledgements and Executive Summary section.

The Action Item MH #8 proposes a position for a regional natural hazards mitigation coordinator to be created and have shared responsibilities among the four counties. This plan could be implemented and maintained through this regional coordinator, pending approval by each county. Without the regional coordinator the plan will be implemented, maintained and updated by the designated local convener. More information about this position and the proposed Action Item can be found in Appendix A.

The Wallowa County Emergency Manager was designated as the plan's convener (for portions relevant to Wallowa County) and will take the lead in implementing, maintaining and updating the plan. Public participation played a key role in the development of goals and action items. Public participation was achieved with the establishment of the Northeast Oregon Natural Hazards Mitigation Steering Committees, which was comprised of community members representing different organizations and sectors in northeast Oregon. The steering committees were closely involved throughout the development of the plan and served as the local oversight body for the plan's development. In addition, community members outside of the steering committee were involved in the planning and review process (see Northeast Oregon NHMP Appendix B, Planning Process for more information).

How Were the Action Items Developed?

During the 2013 process OPDR facilitated a work session with the working group to discuss the city's risk and to identify potential issues. During that work session the working group developed potential actions based on the hazards and the issues identified by the working group. The working group later reviewed the actions and refined their language as necessary. OPDR also cross-walked the city's issues with region's action items to identify opportunities for partnership where issues were shared between jurisdictions. The City's actions are listed below. Items in **bold** are specific to the city and can be found at the end of this addendum, all other action item forms are within Appendix A.

Table EP-1 Enterprise Action Items

Multi-Hazard Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
MH #1		Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties.	Interested City Managers and/or City Council; County Commissioners, Emergency Management	Relevant Public Works and Emergency Services / Emergency Management, Law Enforcement, Fire Department, Department of Homeland Security, County Roads Departments, ODOT, relevant private industries, OEM	Ongoing	New Action Item				X
MH #2		Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	County/ City Planning Department	Department of Land Conservation and Development, Oregon Office of Emergency Management, Federal Emergency Management Agency	Short Term	New Action Item				X
MH #3		Inform public officials about mitigation awareness and the Natural Hazards Mitigation Plan	County Steering Committee Convener	Counties and participating cities in Region 7	Short Term	New Action Item			X	
MH #4		Develop and implement education and outreach programs to increase public awareness of the risk associated with natural hazards. Specifically target vulnerable populations	Emergency Services / Emergency Management; Baker City; City of La Grande, Relevant Public Health Department	Eastern Oregon Head Start, Chambers of Commerce, American Red Cross, Oregon Education Association, Families First, Grant and Harney County Casa, Oregon Rural Action, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA, Greater Prairie City Community Association, People Mover, Community Connections of Northeast Oregon	Short Term	New Action Item	X		X	
MH #9		Develop a warning and emergency evacuation protocol for vulnerable populations	Emergency Services / Emergency Management	Community Connections of Northeast Oregon, American Red Cross, People Mover, Assisted living facilities, Elks lodge, public libraries, National Organization on Disability	Short Term	New Action Item				X
MH #17 (Enterprise)	High	Encourage ODOT to reclassify the Prairie Creek, Hwy 10 bridge near the Enterprise High School football field	Enterprise Public Works	ODOT	Long Term	New Action Item	X			
Drought Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
DR #2		Identify incentive programs to Increase water efficiency among municipal water users	Participating Cities	Relevant utility companies, city public works departments, County, wastewater treatment facilities, Wallowa Lake County Service District, US Environmental Protection Agency's WAVE program	Ongoing	New Action Item	X			X
DR #3		Develop community drought emergency plans and policies	County Emergency Services / Emergency Management; Interested Cities	Water Resources Departments, County and City Governments, County and City Planning Departments, Public Works Departments, Enterprise, City of La Grande, Baker City, John Day, Halfway, Natural Resources Conservation Service, Wallowa Lake Service District, Baker County Cattleman's Association, Relevant Irrigation Districts, OSU Extension Office, US Department of Agriculture	Ongoing	New Action Item				X
Earthquake Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
EQ #1		Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Emergency Management	Eastern Oregon University, County Public Works Departments, Region 7 Counties, Interested Cities, Business Oregon, Relevant utility companies, DOGAMI	Long Term	New Action Item	X	X		
EQ #27		Seismically retrofit the Enterprise Fire Department and City Hall to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	City of Enterprise, Emergency Management	County Public Works Departments, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			

Source: Wallowa NHMP Steering Committee and Enterprise NHMP Working Group, 2007 (updated 2013)

Table EP-1 Enterprise Action Items (continued)

Flood Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
FL #1		Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	Relevant City and County Public Works Departments / Emergency Services and Emergency Management	County Roads Departments, Public Works Departments, County Planning Departments; City of John Day, City of La Grande, Baker City, City of Halfway, Silver Jackets, Relevant water treatment facilities, Federal Emergency Management Agency, Homeowner, Army Corps of Engineers, Oregon Department of Fish and Wildlife, Department of State Lands, ODOT	Ongoing	New Action Item	X			
FL #2	High	Explore the costs and benefits for participation in the NFIP's Community Rating System	Interested Cities and Counties	County and city planning departments, county emergency services / emergency management, county public works, Silver Jackets, FEMA, DLCD	Short Term	New Action Item	X	X		
FL #3	High	Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	Local flood plain managers, County Emergency Managers	City Planning Departments, Emergency Services / Emergency Management, NFIP Floodplain Coordinator (DLCD), insurers, realtors, FEMA, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA , Greater Prairie City Community Association, People Mover, Community Connections of NEOR (Any community organizations capable of distributing information), Blue Mountain Eagle, ACOE	Short Term	New Action Item			X	X
FL #4		Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	Relevant City and County Public Works Departments, Emergency Management, City Managers, County Planning Departments	County Roads Departments, Public Works Departments, City of John Day, City of La Grande, Baker City, City of Halfway, Army Corps of Engineers, DOGAMI, DAS-GEO, elected officials	Long Term	New Action Item	X			
Wildfire Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
WF #1		Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.	County Steering Committee Convener, Emergency Management	County Emergency Services / Emergency Management, County Planning Departments, City of Baker City, City of Halfway, Local Public Safety Coordinating Council (LPSCC), Oregon Department of Forestry, Bureau of Land Management, local fire departments, OSU Extension Services, US Forest Service, Soil and Water Conservation Districts, Oregon Department of Fish and Wildlife; Homeowners in Wildland/Urban Interface zones; Hells Canyon Preservation Council	Ongoing	New Action Item	X			X

Source: Northeast Oregon NHMP Steering Committees, 2007 (updated in 2013) and Enterprise NHMP Working Group, 2013

Enterprise Addendum

Representatives from the City of Enterprise served on the Northeast Oregon NHMP Update Steering Committee, and convened a working group meeting to develop the Enterprise addendum on September 11th, 2013 (see Appendix B for more information). During this meeting, the working group: performed a hazards inventory, determined community assets and vulnerabilities, performed a hazard analysis (probability and vulnerability); reviewed the regional mission statement and goals, developed city specific actions and reviewed regional actions to determine applicability; discussed strategies for implementation and set a review and maintenance schedule.

For additional information on the regional changes to the NHMP see Appendix B.

How Will the Plan be Implemented?

The City Council will be responsible for adopting the Enterprise Natural Hazard Mitigation Plan (NHMP) Addendum. This addendum designates a coordinating body and a convener to oversee the development and implementation of action items. The City Administrator is to convene the city addendum meetings. The City's working group will convene semi-annually through department head meetings, and with their Risk Management Groups to discuss implementation and plan maintenance. Because the city addendum is considered part of the regional plan, the city will look for opportunities to partner with the region (in particular Wallowa County). The Emergency Manager will represent the city in cooperation with the County convener (Wallowa County Planning Director) at the county meetings. Additionally, there are two action items identified in the NHMP, multi-hazard actions #7 and #8, which would create a regional natural hazards coordinator and coordinating body. If these actions are pursued and accomplished, the city may choose to coordinate action items with the assistance of the regional coordinator and may also participate as a member in the regional steering committee.

Implementation through Existing Programs

Many of the Natural Hazards Mitigation Plan's recommendations are consistent with the goals and objectives of the city's existing plans and policies. Where possible, the City of Enterprise will implement the Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, allowing them to adapt to changing conditions and needs. Implementing the Natural Hazard Mitigation Plan's action items through such plans and policies increases their likelihood of being supported and implemented.

Enterprise currently has the following plans that relate to natural hazard mitigation:

- The Enterprise Comprehensive Plan (1997) relates to natural hazard mitigation through its sections that outline Enterprise's goals, policies, and implementation measures; especially within the Goal 7 "Areas Subject to Natural Disasters and Hazards" element.
- There have been recent updates to the development code which relate to regulation within the floodplain
- Transportation System Plan (1999)

The working group and the community's leadership have the option to add or implement action items at any time. This allows the working group to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. When new actions are identified, they should be documented using the action item form. Once a proposed action form has been submitted to the convener, the action will become part of the city's addendum.

Continued Public Participation

Keeping the public informed of the city's efforts to reduce the risk to future natural hazards events is important for successful plan implementation and maintenance. The city is committed to involving the public in the plan review and updated process. The City Addendum along with the Regional Plan will be posted online on the University of Oregon's Scholars Bank accessible via the OPDR website (http://csc.uoregon.edu/opdr/plans/wallowa) so that the public may view the plan and submit electronic comments to the community at any time. The plan may also be kept on the city's website.

In addition, natural hazards information dissemination is conducted throughout the year when opportunities present themselves via the city offices and website.

Plan Maintenance

The Northeast Oregon Natural Hazard Mitigation Plan will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. During the regions' plan update process, the city will also review and update its addendum. The convener will be responsible for convening the working group to address the questions outlined below.

- Are there new partners that should be brought to the table?
- Are there new local, regional, state, or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Have new issues or problems related to hazards been identified in the community?
- Are the actions still appropriate given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Have there been any significant changes in the community's demographics that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?
- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

These questions will help the working group determine what components of the mitigation plan need updating. The working group will be responsible for updating any deficiencies found in the plan.

Enterprise's Natural Hazards Mitigation Plan Addendum includes three sections:

1. A Community Profile: this section also refers to the Northeast Oregon NHMP Appendix C – Community Profile,
2. A summary of the city's Hazard Identification and Risk Assessment, and
3. A Mitigation Strategy section.

Enterprise Community Profile Asset Identification

This section provides information on city and county specific asset identification. For more information on the characteristics of Enterprise and Wallowa County, in terms of geography, environment, population, demographics, employment and economics, as well as housing and transportation see Appendix C, Community Profile. Many of these community characteristics can affect how natural hazards impact communities and how communities choose to plan for natural hazard mitigation. Considering the city specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

TableEP-2 City of Enterprise Asset Identification

Sector and Assets
Population
Senior age population
High concentration of population with mental disabillities
Residential Care Facility opened recently near the hospital
Some Spanish speaking population
Large tourist population
Critical Facilities
City Hall
Fire Department
Water supply comes from Joseph, gravity fed to Enterprise
Wallowa Memorial Hospital
Enterprise Elementary and High School
Airport is on a hill
Roads
Highway 82
Highway 3; landslide prone
Grocery Stores
Dollar Stretcher
Safeway

Source: City of Enterprise NHMP Steering Committee, 2013.

Introduction to Wallowa County

Wallowa County lies in the furthest corner of northeast Oregon with Idaho to the east, Washington to the north, Umatilla and Union counties to the west, and Baker County to the south. Wallowa County spans 3,153 square miles and has a 2010population of approximately 6,995, about a quarter of which is in the City of Enterprise.[1]The scenery in the

[1]Oregon Blue, Book "Wallowa County," http://bluebook.state.or.us/local/counties/counties32.htm

county serves as a magnet for tourism, which along with agriculture and forestry serve as the county's primary economic engines.[2]

Wallowa County Natural Environment Capacity

Table EP-3 shows the natural resources that were identified by the Wallowa County Steering Committee in 2007 and 2013. This table gives some indication of the intersection between the economy and the natural environment.

Table EP-3 Natural Resource Asset Identification

Natural Resources
Water issues, in both quality and quantity, are of concern. These issues include potential dam failure, increased demand, and regulations that could have a disproportionate effect on agricultural versus urban uses.
Wallowa County includes parts of the Wallowa-Whitman National Forest, the Eagle Cap Wilderness Area, and Hells Canyon Recreational Area. Wallowa Lake is a major tourist destination during late spring and summer months.
Wallowa Resources, a non-profit organization in Wallowa County, has identified forest health as a concern for wildfire – particularly the increase in standing and downed dead wood within the county's forests. According to the organization, Wallowa County has experience recurring large-scale wildfire events since 1986 that post threats to the area's natural resources, community, public health and safety, and economic development opportunities.

Source: Wallowa County NHMP Steering Committee, 2007, 2013

Climate

Wallowa County lies within Oregon Climate Services designated Climate Division 8 – Northeast Oregon. This Division is characterized by a semi-arid, low precipitation climate with warm summers and cool winters. Table EP-4 shows the mean monthly annual average temperature for Wallowa County. Temperatures can reach as low as -28° F and as high 106° F. There is nearly a 39 degree temperature swing between the mean temperature in January (27) and July (65.7).

Figure EP-1 shows the precipitation of Wallowa County. The locations on the valley floor receive less than 20 inches of precipitation per year, particularly those surrounded by high mountains which may receive less than 10 inches. The higher elevation locations receive higher annual precipitation totals, generally in the form of snowfall. The precipitation for the region is evenly distributed throughout the seasons.[3]

[2] Ibid

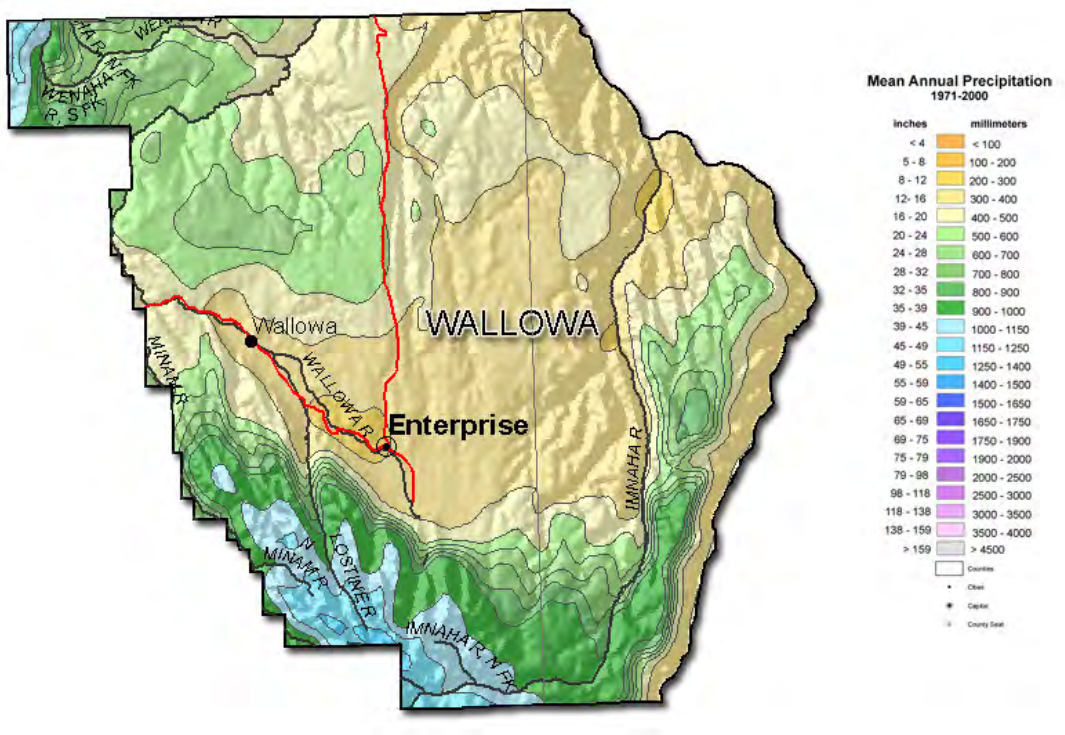
[3] The Oregon Climate Service "Climate of Wallowa County."

Table EP-4 Mean Monthly and Annual Average Temperatures (deg F), 1971-2000

Month	Mean Maximum	Mean Minimum	Mean Temperature	Extreme Maximum	Extreme Minimum
January	35.2	18.7	27.0	64.0	-24.0
February	42.4	22.2	32.3	67.0	-27.0
March	51.9	27.3	39.6	79.0	-5.0
April	60.2	31.7	46.0	90.0	15.0
May	68.3	37.5	52.9	95.0	19.0
June	76.6	42.9	59.8	101.0	26.0
July	85.4	46.0	65.7	106.0	29.0
August	85.7	44.7	65.2	104.0	25.0
September	76.7	37.3	57.0	100.0	17.0
October	63.1	30.2	46.7	89.0	6.0
November	45.1	26.6	35.6	74.0	-22.0
December	35.9	19.4	27.7	62.0	-28.0
Annual	*60.5*	*32.0*	*46.3*	*106.0*	*-28.0*

Sources: The Oregon Climate Service, NOAA Climate Station: Enterprise. "Climate of Wallowa County." http://www.ocs.orst.edu/county_climate/Baker_files/Baker.html.

Figure LG-1 Mean Annual Precipitation



Source: The Oregon Climate Service. "Mean Annual Precipitation."http://www.ocs.oregonstate.edu/county_climate/fig2/baker.jpg

Land Ownership

Wallowa County is approximately 3,153 square miles.[4] Approximately sixty percent of the land area is publicly owned and administered by various federal, state, and local agencies.[5] The Wallowa County Comprehensive Plan has recommendatory provisions for flood prone areas and claims that the "present flood plain maps are inadequate in detail to be used for zoning or other regulatory purposes."[6]

The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table EP-5 Land Use Asset Identification

Land Use and Development
"A lack of affordable housing is seen as a weakness in Baker, Union [and Wallowa] counties. Rents are increasing quickly in Wallowa County making rental housing difficult to afford for lower wage workers. Run-down areas in some communities are not being addressed through clean-up or improvement programs" – NEOEDD.
Personal homes at the head of Wallowa Lake (south end) have been destroyed by flooding from the Wallowa River.
The City of Enterprise has experienced flooding issues with both the Wallowa River and Prairie Creek. The city is concerned about potential damages to sewer lines.
The Grande Ronde River has caused flooding damage in the unincorporated town of Troy.

Source: Wallowa County NHMP Steering Committee, 2007, 2013

Wallowa County Socio Demographic Capacity

Population

Wallowa County is the fourth (and least) most populated county in the region and has the fourth most populated city in the region in Enterprise.[7] Table EP-6 details some of the population assets from the NHMP Steering Committees in 2007 and 2013 including information on vulnerable population types, organizations that serve them, and large festivals/events.

4 Oregon Blue Book "Wallowa County" http://bluebook.state.or.us/local/counties/counties32.htm Accessed May 2013

5 Wallowa County Community Wildfire Protection "Wallowa County Profile and Fire History" Plan 2006

6 Wallowa County Comprehensive Plan "VII: Areas Subject to Natural Disasters and Hazards" 1995

7 Behind La Grande, Baker City, and Union City

Table EP-6 Population Asset Identification

Population Assets
Community organizations that serve vulnerable populations are concerned with the lack of emergency transportation and services available to persons with special needs.
Wallowa Lake attracts tourists in both the summer and fall. Populations in Joseph and Enterprise temporarily increase during these seasons. Temporary increases in populations place heightened demands on emergency response systems; additionally, uninformed hikers and campers may increase the community's risk to wildfire.
Community events: Hells Canyon Mule Day, Bronze Blues and Brews, Celebration of Wallowa, Bronze Bikes, the Fourth of July brings a lot of people from outside the county. Vulnerable population types: mentally disabled people. Vulnerable communities – Wallowa and Enterprise (to flood). Hazard with the biggest economic potential is a fire at the head of Wallowa Lake, also has the potential for a huge loss of life.

Source: Wallowa County NHMP Steering Committee, 2007, 2013

Table EP-7 shows the population change between 2000-2010 for Wallowa County and its incorporated cities. Wallowa County shrank in population by three percent from 2000 to 2010. At the city level Lostine (-50) and Wallowa City (-61) shrank in population. The incorporated communities shrank a total of one percent over this time period, notably the unincorporated communities shrank by six percent.

Table EP-7 Wallowa County Incorporated Cities Population Change 2000-2010

	2000		2010		Population Change 2000-2010		
Jurisdiction	Population	Percent	Population	Percent	Population	Percent	AAGR
Enterprise	1,895	26.2%	1,940	27.7%	45	1.5%	0.2%
Joseph	1,054	14.6%	1,081	15.4%	27	0.8%	0.3%
Lostine	263	3.6%	213	3.0%	-50	-0.6%	-2.1%
Wallowa	869	12.0%	808	11.5%	-61	-0.5%	-0.7%
Sub-Total	*4,081*	*56.5%*	*4,042*	*57.7%*	-39	1.2%	*-0.1%*
Not incorporated	3,145	43.5%	2,966	42.3%	-179	-1.2%	-0.6%
Total	7,226	100.0%	7,008	100.0%	-218	0.0%	-0.3%

Source: U.S. Census Bureau, Census 2000 Summary File 1, "DP-1 Profile of General Demographic Characteristics" http://http://factfinder2.census.gov, accessed April 2013. U.S. Census Bureau, Census 2010 Summary File 1, "DP-1 Profile of General Population and Housing Characteristics" http://http://factfinder2.census.gov, accessed April 2013. Note: AAGR = Average Annual Growth Rate

Age

Table EP-8 shows Wallowa County's population by age groups and age dependency ratio.[8] Wallowa County has among the oldest populations in the state, and a high age dependency

[8]The age dependency ratio is derived by dividing the combined under 15 and 65-and-over populations by the 15-to-64 population and multiplying by 100.

ratio (64%) as well, marginally below Grant County's (64.1%). The State of Oregon's Office of Economic Analysis projects Wallowa County to have the largest age dependency ratio in the region in the year 2040 (70.5%).[9]

Table EP-8 Wallowa County Population by Age Groups and Age Dependency Ratio (2010 and 2040)

2010		< 15 Years		15 to 64	> 64 Years		
Jurisdiction	Total	Number	Percent	Number	Number	Percent	Age Dependency Ratio
Oregon	3,831,074	717,323	18.7%	2,580,218	533,533	13.9%	48.5%
Wallowa County	7,008	1,109	15.8%	4,273	1,626	23.2%	64.0%
Enterprise	1,940	342	17.6%	1,178	420	21.6%	64.7%
Joseph	1,081	156	14.4%	695	240	22.2%	57.0%
Lostine	213	42	19.7%	133	38	17.8%	60.2%
Wallowa	808	147	18.2%	491	170	21.0%	64.6%
2040							
Oregon	5,425,408	958,949	17.7%	3,368,940	1,097,519	20.2%	61.0%
Wallowa County	8,783	1,581	18.0%	5,153	2,050	23.3%	70.5%

Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2013;

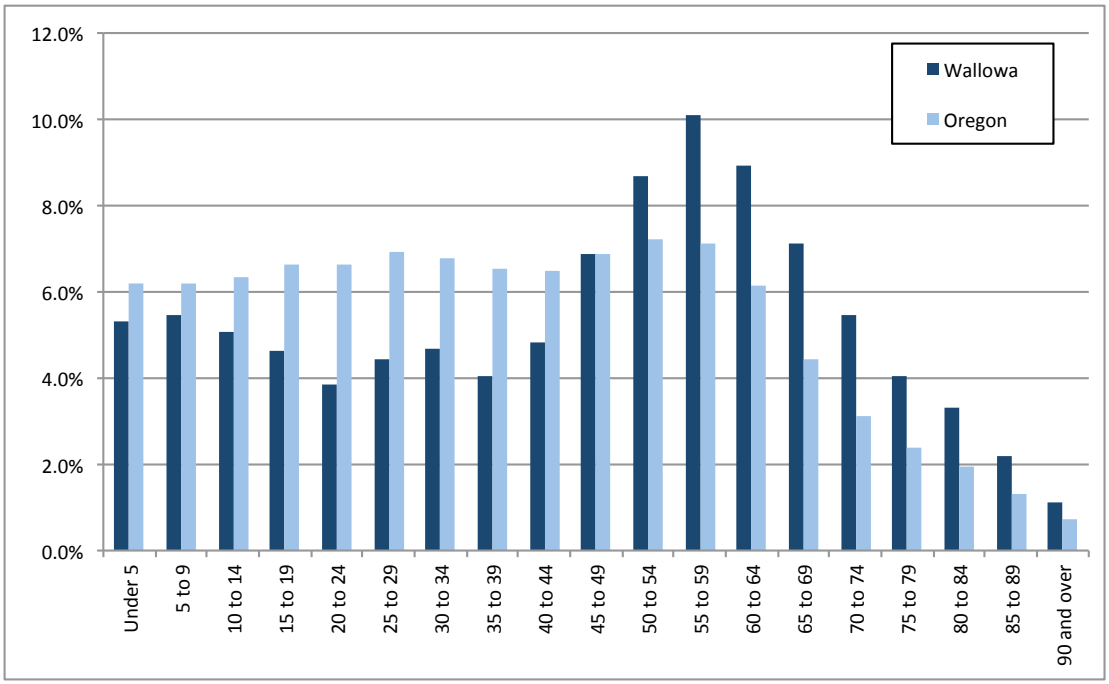
Figure EP-2 displays the age brackets for Wallowa County as they compare to the state. More than 10 percent of the population was between the ages of 55 and 59 in 2010. That's by far the greatest percentage for that age bracket of any county in Oregon. At the other extreme, Wallowa County had the lowest percentage in the state (4.5%) for people in the 40 to 44 age bracket. All age groups under 50 years old were underrepresented in Wallowa County's population.[10] Wallowa County's median age increased in 2010 to 50.5 years, making it Oregon's third-highest median age, behind only Curry County (53.5 years) and Wheeler County (53.0 years).[11]

9 Oregon Office of Economic Analysis, "Long Term County Forecast" http://www.oregon.gov/DAS/OEA/Pages/demographic.aspx#Long_Term_County_Forecast

10 Oregon Employment Department "Senior Citizens are More Prominent in Eastern Oregon's Population Mix" found here: http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007019 Accessed May 2013

11U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010," http://factfinder2.census.gov, accessed May 2013

Figure EP-2 Population by Age Group – Wallowa County and Oregon



Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2012;

The Wallowa Lake Census Designated Place (CDP), the 2010 median age was to 64.5 years. Wallowa Lake isn't an incorporated city, but it has a high concentration of senior citizens living there.[12]

Income

Table EP-9 shows Wallowa County's median income difference between 2000 and 2011. There are variables for real (inflation adjusted) and nominal dollars (not adjusted for inflation) for the year 2000. The real median income in Wallowa County shrank between 2000 and 2011. Lostine and Wallowa's median household income grew, while the rest of the communities declined. In 2000 the county had a higher median household income than every incorporated community. In 2011 the county's median household income was higher than many communities, but has declined in real dollars since 2000.

12 Oregon Employment Department "2010 Census Tells us How Old We Are" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007708 Accessed May 2013; U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010," http://factfinder2.census.gov, accessed May 2013

Table EP-9 Wallowa County -- Median Household Income

Source:

Jurisdiction	2000 (Nominal $)	2000 (Real $)	2011	Percent Change
Oregon	$40,916	$53,447	$49,850	-6.7%
Wallowa County	$32,129	$41,969	$39,556	-5.7%
Enterprise	$31,429	$41,055	$35,087	-14.5%
Joseph	$31,310	$40,899	$38,413	-6.1%
Lostine	$31,538	$41,197	$46,042	11.8%
Wallowa	$28,603	$37,363	$42,833	14.6%

U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics"; U.S. Census Bureau, Table DP3 "Profile of Selected Economic Characteristics: 2000,"http://censtats.census.gov/cgi-bin/pct/pctProfile.pl, Accessed March 2013. *Note: 2000 figures are adjusted for inflation based on the CPI Calculator provided by the Bureau of Labor Statistics, http://censtats.census.gov/cgi-bin/pct/pctProfile.pl, Accessed May 2013.

Table EP-10 shows the poverty levels among all persons, those under 18, families, and families with children under 18. The poverty level in Wallowa County is higher than the state average in every category. At the city level, Enterprise has significantly lower poverty, particularly among families, than state and county averages. Lostine and Joseph have much higher levels of poverty, particularly among people under 18.

Table EP-10 Wallowa County -- Individuals and Families below Poverty Level

Jurisdiction	All People	People < 18	Families	Families with Children < 18
Oregon	14.8%	19.6%	10.2%	16.7%
Wallowa County	15.9%	19.9%	11.3%	17.5%
Enterprise	12.0%	4.3%	3.8%	5.2%
Joseph	21.4%	41.2%	11.4%	25.6%
Lostine	23.8%	49.4%	17.9%	44.4%
Wallowa City	10.9%	11.2%	9.8%	19.8%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics, "http, accessed March 2013.

Education

Table EP-11 shows the educational attainment rate in terms of high school and college graduation for Wallowa County. Wallowa County ranked above state average in percentage of population with a high school degree, but below state average in percentage of population with a college degree. Education level can be an indication of preparation for a natural hazard event.

Table EP-11 Wallowa County -- Educational Attainment

Jurisdiction	Total Population > 18 Years	No Highschool Degree	High School Graduate and beyond	College Graduate and beyond
Oregon	2,937,534	11.8%	88.2%	34.0%
Wallowa County	5,712	8.0%	92.0%	29.6%
Enterprise	1,628	11.0%	89.0%	27.8%
Joseph	743	7.9%	92.1%	28.7%
Lostine	203	5.4%	94.6%	26.6%
Wallowa	670	12.5%	87.5%	26.1%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B15001 "Sex by Age by Educational Attainment for the population 18 years and over, "accessed March 2013.

Wallowa County Economic Capacity

Wallowa County's assets are largely tied to its natural resources and recreation; these assets may be more vulnerable to natural disasters and can suffer environmental damages. Table EP-12 describes some of these assets as well as some of the major employers in the county. The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table EP-12 Wallowa County Economic Asset Identification

Economic Assets
Many Wallowa Lake businesses profit from and rely on tourism to stay in businesses; both floods and wildfire threaten their ability to remain open. The area at the south end of the lake has not seen wildfire for 30-40 years, and the build-up of fuels will eventually ignite.
Major employers include the city school districts, the Wallowa County Chieftan, Wallowa Forest Products, and the Alpine House Center for Assisted Living, as well as the Hospital, USFS, and County and State Government.
Wallowa County supports a variety of small, locally-owned businesses through which a number of workers are employed. Small businesses are more susceptible to financial uncertainty than their larger counterparts. Natural disasters will thus have a bigger impact on smaller businesses, unless they preemptively and proactively increase resilience.

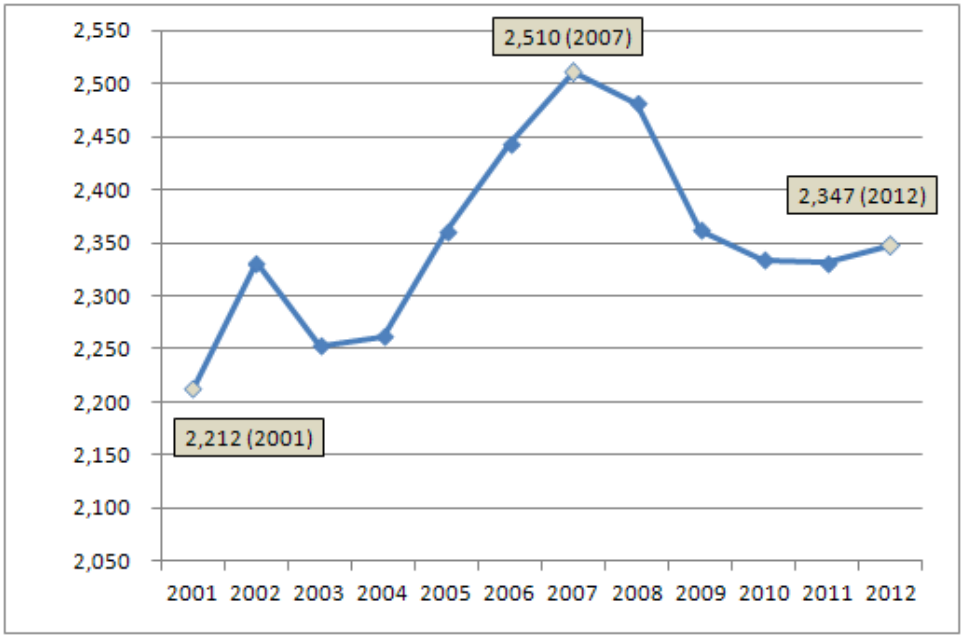
Source: Wallowa County NHMP Steering Committee, 2007, 2013

Industry

Total Employment

Figure EP-3 shows Wallowa County's total non-farm employment. In 2012, Wallowa County's total nonfarm workforce was 2,347.Thirty-six jobs were created since 2011, marking the first job growth since 2007. With the exception of this recent job growth, workforce numbers have remained relatively stable since 2009. Wallowa County is the only county in the region to increase its labor force from its2001 level, producing a slight upward job growth trend over the last 11 years.

Figure EP-3: Wallowa County 2001-2012 Total Nonfarm Employment



Source: Oregon Employment Department, "2001-2012 Covered Employment and Wages Summary Reports". http://www.qualityinfo.org/olmisj/labforce; Accessed June 2013.

EMPLOYMENT BY INDUSTRY

Table EP-13 shows the total employment by industry between 2007 and 2012. The sectors of growth within Wallowa County were Finance Activities (56.3%), Education and Health Services (36.8%), and Natural Resources and Mining (3.9%). The industries that suffered the greatest losses are Leisure and Hospitality (-20.3%), Retail (-28.7%), and Construction (-33.9%), which combined for a loss of 215 jobs.

Table EP-13 2011 Total Employment by Industry

Jurisdiction	2012 Firms	2012 Employees	2012 Percent Workforce	2012 Average Pay	Percent Change in Employment 2007-2012
Total	*417*	*2,347*	*100%*	*$29,728*	-6.5%
Total Private	371	1,682	71.7%	$26,237	-7.1%
Natural Resources and Mining	40	158	6.7%	$36,834	3.9%
Construction	48	123	5.2%	$30,727	-33.9%
Manufacturing	19	144	6.1%	$24,142	-23.0%
Trade, Transportation & Utilities	72	390	16.6%	$28,786	-17.5%
Wholesale*	c	c	0.0%	c	0.0%
Retail	46	236	10.1%	$22,085	-28.7%
Information	5	16	0.7%	$31,672	-38.5%
Finance Activities	25	186	7.9%	$29,050	56.3%
Professional & Business Services	34	95	4.0%	$31,155	-8.7%
Education & Health Services	35	249	10.6%	$24,610	36.8%
Leisure & Hospitality	54	224	9.5%	$12,429	-20.3%
Other Services	38	97	4.1%	$20,891	-2.0%
Government	47	664	28.3%	$38,615	-5.1%
Federal	9	95	4.0%	$54,866	-13.6%
State	13	101	4.3%	$29,478	-6.5%
Local	25	468	19.9%	$37,288	-2.9%

Source: Oregon Employment Department "2007 and 2012 Covered Employment and Wages Summary Reports." http://www.qualityinfo.org/olmisj/labforce. Accessed June 2013.

HIGH REVENUE SECTORS

Table EP-14 shows the *reported* revenue of top sectors in Wallowa County for the year 2007. In 2007, the three sectors with the highest revenue were *Retail Trade*, *Health Care and Social Assistance*, and *Other Services*. All of the sectors combined generated over $115 million in revenue for the County. However, noticeably the revenue of *Manufacturing, Administrative & Support & Waste Management & Remediation Services, Wholesale Trade, Arts, Entertainment, & Recreation, Educational Services, and Information* are unreported.

Table EP-14 Revenue of Top Sectors in Wallowa County

Sector Meaning (NAICS code)	Revenue ($1,000)	Percent of Total Revenue	Sector Ranking
Retail Trade	$82,730	61.5%	**1**
Health Care & Social Assistance	$24,218	18.0%	**2**
Other Services (except Public Administration)	$8,615	6.4%	**3**
Accomodation & Food Services	$7,350	5.5%	**4**
Professional, Scientific & Technical Services	$6,440	4.8%	**5**
Real Estate & Rental & Leasing	$5,268	3.9%	**6**
Manufacturing	D		
Administrative & Support & Waste Management & Remediation Services	D		
Wholesale Trade	D		
Arts, Entertainment & Recreation	D		
Educational Services	D		
Information	N		
Total	$134,621		

Source: U.S. Census Bureau, 2007 Economic Census, Table EC0700A1 "All sectors: Geographic Area Series: Economy-Wide Key Statistics: 2007," http://factfinder2.census.gov/, *D = Withheld, N = No Data* accessed March 2013.

Wallowa County Community Connectivity

Civic Engagement

The 2012 Presidential General Election generated a turnout from 87.7% of the people in the County as of November 6th, 2012.[13] These results are higher than the voter participation reported across the State (82.8%).[14] Other indicators such as volunteerism, participation in formal community networks and community charitable contributions are examples of other civic engagement that may increase community connectivity.

Cultural Resources

Historic Places

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources for tourism revenue. Protecting these resources from the impact of disasters is important because they have an important role in defining and supporting the community. Table EP-15 identifies the number of historical sites in Wallowa County. Overall, there are a total of 19 historically registered places in Wallowa County.

Table EP-15 Wallowa County Historic Places

Type	Listed on the National Register
Archeological	0
Bridges	0
Cemetaries	0
Churches	0
Commercial, Cultural Buildings	3
Districts	1
Houses, Hotels, Resorts and Cabins	7
Military Posts, Ranger Stations and Guard Lookouts	5
Municipal Buildings, Libraries and Schools	2
Parks, Campgrounds, Ranches, Barns, and Openspace	1
Total	**19**

Source: Oregon Historic Sites Database, http://heritagedata.prd.state.or.us/historic/index.cfm?do=v.dsp_main, accessed September 2013.

Libraries and Museums

Libraries and museums develop cultural capacity and community connectivity as they are places of knowledge and recognition, they are common spaces for the community to gather, and can serve critical functions in maintaining the sense of community during a disaster. They are recognized as safe places and reflect normalcy in times of distress. There are

13 Wallowa County Website General Election Results, http://www.co.wallowa.or.us/administration/clerk/election_results.html, accessed September 2013.

14Oregon Blue Book, Voter Participation.

currently three community libraries in Wallowa County located in Wallowa City, Enterprise, and Joseph.[15] There are two museums in Wallowa County: the Wallowa County Museum in Joseph and the Wallowa Band Nez Perce Trail Interpretive Center in Wallowa.[16]

Cultural Events

Other such institutions that can strengthen community connectivity are the presence of festivals and organizations that engage diverse cultural interests. Examples of events and institutions include Hells Canyon Mule Day, Bronze Blues and Brews, Celebration of Wallowa, Bronze Bikes, the Fourth of July brings a lot of people from outside the county. Not only do these events bring revenue into the community, they have potential to improve cultural competence and enhance the sense of place. Cultural connectivity is important to community resilience, as people may be more inclined to remain in the community because they feel part of the community and culture.

Community Stability

Residential Geographic Stability

Community stability is a measure of rootedness in place. It is hypothesized that resilience to a disaster stems in part from familiarity with place, not only for navigating the community during a crisis, but also accessing services and other supports for economic or social challenges.[17] Table EP-16 estimates residential stability across the region. It is calculated by the number of people who have lived in the same house and those who have moved within the same county a year ago, compared to the percentage of people who have migrated into the region. Wallowa County overall has geographic stability rating of about 95% (i.e., 95% of the population lived in the same house or moved within the county).

Table EP-16 Regional Residential Stability

Jurisdiction	Population	Geographic Stability	Same House	Same County
Wallowa County	6,908	94.7%	88.0%	6.7%
Enterprise	1,986	95.8%	87.7%	8.1%
Joseph	930	96.8%	94.3%	2.5%
Lostine	280	96.4%	87.5%	8.9%
Wallowa	886	95.1%	80.8%	14.3%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B07003 "Geographical Mobility in the Past Year 5-Year Estimate," http://factfinder2.census.gov/, accessed September 2013.

15 Libraries of Eastern Oregon http://librariesofeasternoregon.org/leo-libraries/ Accessed September 2013

16 Wallowa Nez Perce website http://www.wallowanezperce.org/ and the Wallowa County Museum website http://www.co.wallowa.or.us/museum/ Accessed September 2013

17Cutter, Susan, Christopher Burton, Christopher Emrich. "Disaster Resilience Indicators for Benchmarking Baseline Conditions." Journal of Homeland Security and Emergency Management.

HOMEOWNERSHIP

Often homeownership is associated with greater resilience as it is a measure of place attachment and commitment. Homeownership is an indicator that residents will return to a community post-disaster, as these people are economically and socially invested in the community. Similar to communities with higher median household income, homeownership can reflect an increased resource vulnerability to prepare, respond and cope with a crisis situation.

Table EP-17 identifies housing tenure across the county. The table shows the home-ownership rate of occupied households is lowest in Joseph and Enterprise. There are approximately 1,914 renters in Wallowa County. Renters are less likely to return after a disaster, since they are less economically invested in the community.

Table EP-17 Homeownership

Jurisdiction	Occupied Households	Owner Occupied	Owner Occupied	Renter Occupied	Percent Renter Occupied	Renter Occupied
Wallowa County	3,133	2,238	71.4%	895	28.6%	1,914
Enterprise	871	572	65.7%	299	34.3%	600
Joseph	509	331	65.0%	178	35.0%	394
Lostine	95	74	77.9%	21	22.1%	55
Wallowa	352	241	68.5%	111	31.5%	249

Source: U.S. Census Bureau, American Community Survey 2007-2011 Table DP04 "Selected Housing Characteristics," http://factfinder2.census.gov, accessed September 2013.

Wallowa County Political Capacity

Political capacity is recognized as the government and planning structures established within the community. In terms of hazard resilience, it is essential for political capital to encompass diverse government and non-government entities in collaboration; as disaster losses stem from a predictable result of interactions between the physical environment, social and demographic characteristics and the built environment.[18] Resilient political capital seeks to involve various stakeholders in hazard planning and works towards integrating the Natural Hazard Mitigation Plan with other community plans, so that all planning approaches are consistent.

Government Structure

Wallowa County employs a county clerk, District Attorney, Sheriff, Treasurer, and three commissioners, along with the following departments:

EMERGENCY SERVICES

The Wallowa County Department of Emergency Services assists in maintaining community well-being through disaster mitigation, preparedness, response, and recovery activities. The Department: 1) Serves as the point of contact for emergency and disaster questions or issues; 2) Provides hazard education and loss reduction program information; 3) Facilitates emergency and disaster planning efforts; 4) Promotes community disaster preparedness; 5)

[18]Mileti, D. 1999. Disaster by Design: a Reassessment of Natural Hazards in the United States. Washington D.C.: Joseph Henry Press.

Coordinates and responds to emergency and disaster situations; 6) Assists in community disaster recovery opportunities.

PLANNING

The Wallowa County Planning Department is responsible for preparation and maintenance of the county's land use plan and zoning ordinances, administration and implementation of the regulations, processing public requests for special district annexations, and road creations and vacations. The county land use plan is periodically reviewed and updated through a public review process. Department staff provides information, application assistance and documentation on the regulations to the general public. The department also provides assistance to the County Planning Commission and Board of Commissioners when they are involved in land use regulation decisions.

PUBLIC WORKS

The Wallowa County Public Works Department includes the Roads Department, Solid Waste Department, Parks Department, and Vegetation Department.

ROAD DEPARTMENT

The Road Department's goal is to ensure that the traveling public has a safe and efficient roadway system. The maintenance duties include, but are not limited to, asphalt and gravel road maintenance, snow removal, bridge maintenance and general right-of-way maintenance. The Solid Waste Department maintains the County's landfills; the Parks Department maintains Wallowa County Park and the north end of Wallowa Lake; The Vegetation Department serves to protect and conserve the County's agricultural lands, natural resources, wildlife habitat and wilderness areas from the invasion and proliferation of exotic noxious weeds.

TRAFFIC CONTROL DEPARTMENT

The Traffic Control Department installs and maintains the signs, signals, and pavement markings that provide information and guidance to commuters. The Department additionally regularly inspects bridges.

Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[19]

The Natural Hazards Mitigation Plan includes a range of recommended action items that, when implemented, will reduce the county's vulnerability to natural hazards. Many of these

[19] Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

recommendations are consistent with the goals and objectives of the county's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the Plan. Implementing the natural hazards mitigation plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the county's resources.

The table below is a list of plans and policies already in place in Wallowa County:[20]

Table EP-18 Existing Plans

Jurisdiction	Document	Year Acknowledged	Last Revision
Wallowa County	Comprehensive Land Use Plan		2003
Wallowa County	Community Wildfire Protection Plan		2005
Wallowa County	Land Development Ordinance		2003
Wallowa County	Salmon Recovery Plan		1993
Wallowa County	Grande Ronde Subbasin Plan		2004
Wallowa County	Imnaha Subbasin Management Plan		2004
Wallowa County	Transportation System Plan		2001
Wallowa County	Flood Insurance Study		
Enterprise	**Comprehensive Plan**	**1983**	**1997**
Enterprise	**Zoning Ordinance**		**1997**
Enterprise	**Transportation System Plan**		**1999**
Enterprise	**Development Code**		**2013**
Joseph	Comprehensive Plan	1979	1979
Joseph	Zoning Ordinance		2002
Lostine	Comprehensive Plan	1977	1977
Wallowa City	Comprehensive Plan	1983	1983
Wallowa City	Zoning Ordinance		2001

Source: Oregon Blue Book

Community Organizations and Programs

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within

[20] Oregon Blue Book

the population (e.g. elderly, children, low income). The County can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

For a full list of community organizations that may be potential partners for implementing mitigation actions visit the Community Profile, Appendix C: Table C-28

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.

Synthesis

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.

Hazard Analysis and Issue Identification

On September 11th, 2013, the Enterprise addendum update working group developed the plan's Hazard Analysis and Risk Assessment section. The following is a summary of input from the 2013 working group.

The table below presents the entire hazard analysis matrix for Enterprise. The hazards are listed in order of rank from high to low and compare them to the county's ranking for each hazard. The table shows that hazard scores are influenced by each of the four categories combined. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities, but does not predict the occurrence of a particular hazard.

With considerations for past historical events, the probability or likelihood of a particular hazard event occurring, the vulnerability to the community, and the maximum threat or worst-case scenario, flood winter storm and windstorm were ranked as the top three hazard threats to the city (Top Tier). Extreme Temperate (cold), earthquake (crustal) and wildfire, comprise the next three highest ranked hazards (Middle Tier).Volcanic event, drought and landslide/ debris flow comprise the lowest ranked hazards (Bottom Tier).Enterprise did not rank the dust storm and earthquake (Cascadia) hazards.

Table EP-19 Hazard Analysis Matrix – Enterprise

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	County Hazard Rank
Flood	18	45	100	63	226	#1	#5
Winter Storm	14	35	90	56	195	#2	#2
Windstorm	16	35	80	63	194	#3	#4
Extreme Temperatures	2	35	70	56	163	#4	NR
Earthquake - Crustal	6	25	90	7	128	#5	#7
Wildfire	2	15	70	21	108	#6	#1
Volcanic Event	2	10	60	7	79	#7	#8
Drought	2	10	10	28	50	#8	#3
Landslide	2	5	10	7	24	#9	#6
Dust Storm	NR	NR	NR	NR	NR	NR	NR
Earthquake - Cascadia	NR	NR	NR	NR	NR	NR	NR

Sources: Enterprise NHMP Steering Committee, September 11, 2013 and Wallowa County NHMP Steering Committee, Updated July 10, 2013.Note: NR = Not Ranked

The following table categorizes the probability and vulnerability scores from the hazard analysis for the city and compares the results to the assessment completed by the Wallowa County NHMP Steering Committee (areas of differences are noted with **bold** text within the city ratings). The table indicates that there is lower probability of landslide and wildfire in Enterprise than in the county and lower vulnerability to wildfire than the county. The City also has a higher vulnerability to earthquake – crustal and flood than the county

Table EP-20 Probability and Vulnerability Comparison – Enterprise and Wallowa County

Hazard	Enterprise		Wallowa County	
	Probability	Vulnerability	Probability	Vulnerability
Drought	Moderate	Low	High	Moderate
Dust Storm	NR	NR	NR	NR
Earthquake - Cascadia	NR	NR	NR	NR
Earthquake - Crustal	Low	**Moderate**	Low	Low
Extreme Temperatures	High	Moderate	NR	NR
Flood	High	**High**	High	Moderate
Landslide	**Low**	Low	Moderate	Low
Volcanic Eruption	Low	Low	Low	Low
Wildfire	**Low**	**Low**	High	Moderate
Windstorm	High	Moderate	High	Moderate
Winter Storm	High	Moderate	High	Moderate

Sources: Enterprise NHMP Steering Committee, September 11, 2013 and Wallowa County NHMP Steering Committee, Updated July 10, 2013.Note: NR = Not Ranked

Drought

The Enterprise Working Group determined that there is a **Moderate** probability that the City will experience severe extended drought conditions. This rating is lower than the 2013 Wallowa County Hazard Analysis score of high. The City of Enterprise considered their risk to long term drought (two to three years) which can decrease water tables and potentially impact the community. Historically there haven't been many of these long term drought events. The Working Group indicated that the city is not impacted as much as the county. As such, the Enterprise Working Group determined that the city has a drought vulnerability of **Low**. This rating is lower than the 2013 Wallowa County Hazard Analysis score of moderate.

Dust Storm

The dust storm hazard was not ranked by the City of Enterprise. For information on this hazard within the region see Section 3 and the hazard annex within Volume II.

Earthquake

Crustal Earthquake

The Enterprise Working Group determined that the city has a **Low** probability of being affected by a crustal earthquake event. This rating is consistent with the 2013 Wallowa County Hazard Analysis. The history of recent earthquakes in the Enterprise area is limited. Per comments from the Union County Steering Committee there may have been an Idaho event that affected Enterprise during the 1980's. There are historic buildings and critical facilities in Enterprise that may have a high risk of collapse during extreme levels of seismic activity. The buildings that were considered to have a 'very high' collapse potential rating in the DOGAMI Rapid Visual Survey include the Enterprise Fire Department (which includes City Hall). The working group considered other older buildings that may have a high collapse potential not surveyed by DOGAMI including several of the historic buildings, of which ten

are on the national historic register.[21]As such, the Enterprise Working Group determined that they have a **Moderate** vulnerability to an earthquake hazard. This rating is higher than the 2013Wallowa County Hazard Analysis score of low.

CASCADIA SUBDUCTION ZONE EARTHQUAKE

The Cascadia Subduction Zone Earthquake hazard was not ranked by the City of Enterprise. For information on this hazard within the region see Section 3 and the hazard annex within Volume II.

Extreme Temperatures

The City of Enterprise is not affected by extreme heat events; extreme cold, however, can be a concern. The Enterprise Working Group determined that the city has a **High** probability of being affected by an extreme temperature. This rating hazard was unranked the 2013 Wallowa County Hazard Analysis. The Working Group considered prolonged cold events from 0° F to -15° F. The biggest concern is events which cause power outages. In 2012-2013 water mains started to freeze with no snow on the ground for insulation. As such, the Enterprise Working Group determined that the city has a **Moderate** vulnerability to an extreme temperature event.

Flood

The Enterprise Working Group determined that the city has a **High** probability of a flood event. This rating is consistent with the 2013 Wallowa County Hazard Analysis. Flooding is generally localized and the City of Enterprise is so small that the impacts are felt throughout. This was the case with the flood in 1989.Silt and mud is considered to be the largest problem for the city.

The primary flooding sources for Enterprise detailed in the Flood Insurance Study (1988) include the Wallowa River tributaries Prairie Creek and Hurricane Creek.[22] The working group indicated that Prairie Creek is the largest flood hazard.

The Wallowa County flood insurance rate maps (FIRMs) have not been updated since 1988. The City believes they are no longer accurate. Enterprise currently has 68 NFIP policies, 48 of which predate the Flood Insurance Rate Maps. There have been zero paid claims for the flood policies. The Enterprise floodplain land-use code was updated in 2013.

The Enterprise Working Group determined that the city's vulnerability to flood is **High**. This ranking is higher than the 2013 Wallowa County Hazard Analysis score of moderate.

Landslide

There is little history and no steep slopes that would *directly* affect the Enterprise; however, a distant landslide incident can cause an indirect commercial impact to the community via the Highway 3 or 83closures. The Enterprise Working Group determined that the city has a

[21] These include the Burnaugh Building, Enterprise IOOF Hall, Enterprise Mercantile and Milling Company Building, Enterprise Public Library, Gotter Hotel, Lick Creek Guard Station, O.K. Theatre, Wallowa County Chieftain Building, Wallowa County Courthouse, and William P. Harnock House

[22] FEMA, Wallowa County Flood Insurance Study, 1988.

Low probability of a landslide. This rating is lower than the 2013 Wallowa County Hazard Analysis score of moderate. The Enterprise Working Group determined that the city has a **Low** vulnerability to a landslide. This rating is consistent with the 2013 Wallowa County Hazard Analysis score of moderate.

Volcanic Event

Considering past history the probability of a volcanic event for Enterprise and Wallowa County is **Low.** While a volcanic event may not have a direct impact on the city, the ash fallout from an event in Mount St. Helens could potentially affect Enterprise, especially for people with respiratory problems. The Enterprise Working Group also considered their vulnerability to be **Low**. This rating is consistent with the 2013 Wallowa County Hazard Analysis.

Wildfire

Due to the history of wildfire in the county and near Enterprise the probability of a wildfire event is **Low**. This rating is lower than the 2013 Wallowa County Hazard Analysis score of high. The working group determined that there is no major wildfire concern to the city, however, the surrounding wheat fields are potential concern. Smoke can also be a concern which has affected the city in the past. This assessment concurs with the 2006 Wallowa County Community Wildfire Protection Plan which does not rank Enterprise as a community at risk.[23]The working group determined that the city's vulnerability to wildfire is **Low**. This rating is lower than the 2013 Wallowa County Hazard Analysis score of moderate.

Windstorm

Windstorms occur frequently in the Enterprise area, as such the Enterprise Working Group determined that the probability of a windstorm event is **High**. This hazard is consistent with the 2013 Wallowa County Hazard Analysis. Every winter Enterprise receives windstorms and 50 to 100mph winds is not out of question. The city is often affected in the through roof damage, downed power lines, knocked over trees, etc. No major programs set up currently for mitigation. The regional plan also adequately the windstorm risks that the city faces. The Steering Committee determined that the city's vulnerability to a windstorm is **Moderate**. This ranking is lower than the 2013 Wallowa County Hazard Analysis ranking of high.

Winter Storm

Considering the history of winter storms in the region the Enterprise Working Group determined that the probability of a winter storm event is **Moderate**. This ranking is consistent with the 2013 Wallowa County Hazard Analysis Score of high. Winter storms are an annual event for the city. The Enterprise Working Group indicated that if there are a couple feet of snow, the working crews would find it difficult to move the snow.[24] The nearby Wallowa Mountains affect the city's snowpack and 6 inches of snowfall is common. The Enterprise Working Group determined that the cities vulnerability to a winter storm is **High**. This ranking is consistent with the 2013 Wallowa County Hazard Analysis.

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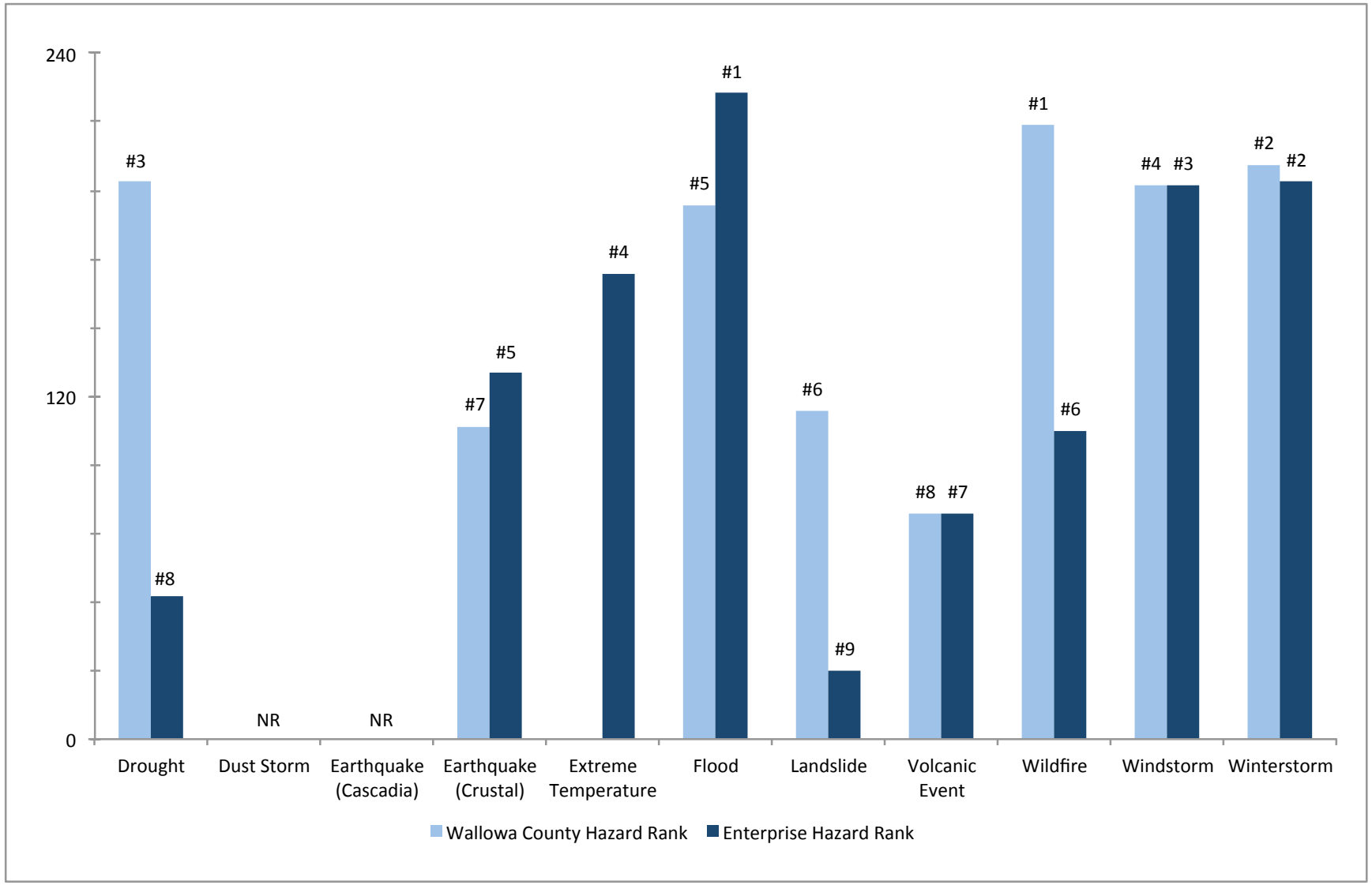
[23]Wallowa County CWPP 2006.WUI is up on slope well outside city limits.

[24]The Working Crews end up piling snow, dump in baseball fields or fairgrounds

The figure below presents a summary of the hazard analysis for the Enterprise and compares the results to the assessment completed by the Wallowa County NHMP Steering Committee.

In terms of probability, vulnerability, history, and maximum threat, the hazard analysis for the city is similar to the county in terms of earthquake (crustal), volcanic event, windstorm and winter storm events. There is dissimilarity in terms of drought, landslide, and wildfire, all of which have a much greater threat in the county that in the city.

Figure EP-4 Overall Hazard Analysis Comparison (OEM: Total Threat Score) – Enterprise and Wallowa County



Source: Enterprise NHMP Steering Committee, September 11, 2013 and Wallowa County NHMP Steering Committee, Updated July 10, 2013.Note: NR = Not Ranked

Mitigation Strategy

Mitigation Plan Mission

The plan mission states the purpose and defines the primary functions of the Northeast Oregon Natural Hazard Mitigation Plan. It is intended to be adaptable to any future changes made to the plan and need not change unless the community's environment or priorities change.

The 2013 regional NHMP update steering committee reviewed, and Enterprise Working Group accepted, the 2008 mission statement and agreed that the following statement best describes the over purpose and intent of this plan:

Mission: *To create a disaster-resilient Northeast Oregon*

Mitigation Plan Goals

Mitigation plan goals are more specific statements of direction that Northeast Oregon citizens, and public and private partners can take while working to reduce the county's risk from natural hazards. These statements of direction form a bridge between the broad mission statement and particular action items. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Goal 1: *Protect human welfare, property, and natural resources*

Goal 2*: Increase the resilience of local and regional economies*

Goal 3: *Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness*

Goal 4: *Strengthen organizational and community capacity*

Action Item Worksheets

Each action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below. These action item worksheets are located in Appendix A, *Action Items.*

Proposed Action Title

Each action item includes a brief description of the proposed action.

Alignment with Plan Goals

The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

ALIGNMENT WITH EXISTING PLANS/ POLICIES

Identify any existing community plans and policies where the action item can be incorporated. Incorporating the mitigation action into existing plans and policies, such as comprehensive plans, will increase the likelihood that it will be implemented.

RATIONALE OR KEY ISSUES ADDRESSED

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from a number of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in Section 2 and the Hazard Annexes.

IMPLEMENTATION THROUGH EXISTING PROGRAMS

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance process. Ideas for implementation could include: (1) collaboration with relevant organizations, (2) alignment with the community priority areas, and (3) applications to new grant programs. When an action is implemented, more work will probably be needed to determine the exact course of action.

The Northeast Oregon Natural Hazard Mitigation Plan includes a range of action items that, when implemented, will reduce loss from hazard events in the region. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. The northeast Oregon counties and their participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvements plans, strategic plans and mandated standards and building codes. To the extent possible, the jurisdictions will work to incorporate the recommended mitigation action items into existing programs and procedures.

Many of the Northeast Oregon Natural Hazard Mitigation Plan's recommendations are consistent with the goals and objectives of the existing plans and policies. Where possible, the northeast Oregon counties and the participating cities will implement the multi-jurisdictional Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[25] Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

COORDINATING ORGANIZATION

The coordinating organization is the public agency or non-profit organization with the regulatory responsibility to address natural hazards, or that is willing and able to organize

[25]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

INTERNAL AND EXTERNAL PARTNERS

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project Steering Committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the county or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

POTENTIAL FUNDING SOURCES

Where possible, identify potential funding sources for the action item. Example funding sources can include: the federal Pre-Disaster Mitigation and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

ESTIMATED COST

Where possible, an estimate of the cost for implementing the action item is included.

TIMELINE

Action items include both short and long-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term action items* (ST) are activities that may be implemented with existing resources and authorities in one to two years. *Long-term action items* (LT) may require new or additional resources and/or authorities, and may take from three to five years to implement. *Ongoing action items* are activities that are currently being performed and will continue into the foreseeable future.

STATUS

As action items are implemented or new ones are created during the plan maintenance process, it is important to indicate the status of the action item—whether it is new, ongoing, deferred, or complete. Documenting the status of the action will make reviewing and updating mitigation plan easier during the plan's five-year update, and can be used as a benchmark for progress. *Deferred* action items have yet to see any significant work begin on the particular action.

PRIORITY

The County Steering Committees and City working groups can designate action items with a 'High' priority which indicates a higher level of importance than the other action items.

City of Enterprise Action Items

The table below shows the action items that affect the city. Action item MH #17 is a "high" priority action for the city. To review the action item forms see Appendix A. The item in bold are specific to the city and can be found at the end of this addendum.

Table EP-21Action Item timelines, status, priority and related hazards

Action Item	Timeline	Status	Priority	Enterprise	Wallowa County	Drought	Earthquake*	Flood	Landslide	Severe Weather**	Volcanic Event	Wildfire
MH #1	Ongoing	New		X	X	X	X	X	X	X	X	X
MH #2	Short Term	New		X	X	X	X	X	X	X	X	X
MH #3	Short Term	New		X	X	X	X	X	X	X	X	X
MH #4	Short Term	New		X								
MH #9	Short Term	New		X	X							
MH #17	**Long Term**	**New**	**High**	**X**				**X**				
DR #2	Ongoing	New		X		X						
DR #3	Ongoing	New		X	X	X						
EQ #1	Long Term	New		X	X		X					
EQ #27	Long Term	New										
FL #1	Ongoing	New		X				X				
FL #2	Short Term	New	High	X				X				
FL #3	Short Term	New	High	X				X				
FL #4	Long Term	New		X				X				
WF #1	Ongoing	New		X	X							X

Source: Wallowa County NHMP Steering Committee, Enterprise NHMP Steering Committee. *Earthquake includes crustal and Cascadia Subduction Zone events. **Severe Weather includes dust storm, extreme temperature, windstorm and winter storm events.

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?
MH # 17 – Encourage ODOT to reclassify, and fix, the Prairie Creek, Hwy 10 bridge near the Enterprise High School football field	Goal 1	☒ Enterprise

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The 2012 Oregon Department of Transportation Bridge Condition Report has the bridge classified as "Not Distressed," the City of Enterprise Steering Committee believes that this classification should change.
- The bridge is in a critical location – near a school, serves as an evacuation route, and is at risk to flooding.
- There is concern that a potential build up of debris could lead to an eventual flood.

Ideas for Implementation:

- Explore strategies with ODOT for reclassification of the bridge with the intent of replacing or improving the bridge's condition.

Coordinating Organization:	Enterprise Public Works

Internal Partners:	External Partners:
	Oregon Department of Transportation

Potential Funding Sources:	Estimated cost:	Timeline:
		Long Term

Form Submitted by:	Wallowa County NHMP Steering Committee
Action Item Status:	New Action Item

VOLUME III:
HALFWAY ADDENDUM

Purpose

This document serves as an update for the City of Halfway's Addendum to the Northeast Oregon Natural Hazards Mitigation Plan (NHMP). The City of Halfway's original addendum to Northeast Oregon's NHMP was completed in 2008. The city conducted an update to its original addendum in 2013, which coincided with the risk assessment stage of the Northeast Oregon NHMP update. The city's addendum is considered part of the region's multi-jurisdictional plan, and meets the following requirements: (1) Multi-jurisdictional Plan Adoption §201.6(c) (5), (2) Multi-jurisdictional Participation §201.6(a) (3), (3) Multi-Jurisdictional Risk Assessment §201.6(c) (2) (iii), and (4) Multi-jurisdictional Mitigation Strategy §201.6(c) (3) (iv).

A description of the city specific planning and adoption process follows, along with detailed community specific action items. Information about the city's risk relative to the county's risk to natural hazards is documented in the addendum's Hazard Analysis and Issue Identification section. The section considers how the city's risk differs from or matches that of the county's; additional information on Risk Assessment is provided within the Northeast Oregon NHMP's Section 2 – Risk Assessment and within the Hazard Annexes within Volume II of this NHMP.

Updates to Halfway's addendum are further discussed throughout the plan and in the Northeast Oregon NHMP Planning and Public Process Appendix, which provides an overview of alterations to the document that took place during the addendum update process.

How was the Plan Developed?

In fall 2005, the Oregon Natural Hazards Workgroup (ONHW, now the Oregon Partnership for Disaster Resilience) at the University of Oregon's Community Service Center partnered with the Department of Geology and Mineral Industries (DOGAMI) and the Northeast Oregon Region (Baker, Grant, Union, and Wallowa) counties to develop a Pre-Disaster Mitigation Planning Grant proposal. Each county joined the Partnership for Disaster Resistance and Resilience (The Partnership) by signing (through their County Commissions) a Memorandum of Understanding for this project. FEMA awarded the Northeast Oregon Region grant to support the development of the natural hazard mitigation plans for the four counties in the region. ONHW, DOGAMI and the communities were awarded the grant in the fall of 2005 and local planning efforts in this region began in the fall of 2006 with county and city meetings proceeding in 2007.

The Northeast Oregon Multi-jurisdictional NHMP was formally adopted by Baker County on June 18, 2008 and approved by FEMA on May 23, 2008(Grant County was the first to approve the regional NHMP on April 23, 2008). To maintain its compliance with the Disaster Mitigation Act of 2000 (DMA2K), the plan required an update by May 23, 2013.The City of Halfway created an addendum to the Northeast Oregon NHMP and also needs to be updated in order to maintain compliance with DMA2K.

In fall 2012, Baker County initiated the update process in order to take advantage of grant funding and technical support currently available through the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Community Service Center (CSC). Updating the mitigation plan is a requirement for maintaining eligibility for the Federal Emergency Management Agency's Pre-Disaster Mitigation and Hazard Mitigation Grant Programs. By updating the plan and having it re-approved by FEMA, northeast Oregon will maintain its eligibility for FEMA Hazard Mitigation, Pre-Disaster Mitigation and Flood Mitigation Assistance grant program funds. This project is funded through the Federal Emergency Management Agency's (FEMA) FY12 Pre-Disaster Mitigation Competitive Grant Program (PDMC – PL-10-OR-2012-002).

The Northeast Oregon Regional Multi-jurisdictional Natural Hazards Mitigation Plan was updated and reapproved by FEMA Region X on **June 5, 2014**. The plan is effective through **June 4, 2019**. The City of Halfway adopted their addendum to the plan on **May 8, 2014**.

The Northeast Oregon Natural Hazard Mitigation Plan is the result of a collaborative effort among citizens, public agencies, non-profit organizations, the private sector and regional organizations. Several project steering committees guided the process of developing the plan. For more information on the composition of the steering committees see the Acknowledgements and Executive Summary section.

The Action Item MH #8 proposes a position for a regional natural hazards mitigation coordinator to be created and have shared responsibilities among the four counties. This plan could be implemented and maintained through this regional coordinator, pending approval by each county. Without the regional coordinator the plan will be implemented, maintained and updated by the designated local convener. More information about this position and the proposed Action Item can be found in Appendix A.

The Baker County Emergency Manager was designated as the plan's convener (for portions relevant to Baker County) and will take the lead in implementing, maintaining and updating the plan. Public participation played a key role in the development of goals and action items. Public participation was achieved with the establishment of the Northeast Oregon Natural Hazards Mitigation Steering Committees, which was comprised of community members representing different organizations and sectors in northeast Oregon. The steering committees were closely involved throughout the development of the plan and served as the local oversight body for the plan's development. In addition, community members outside of the steering committee were involved in the planning and review process (see Northeast Oregon NHMP Appendix B, Planning Process for more information).

How Were the Action Items Developed?

The City's action items were developed through a two-stage process. In stage one, OPDR facilitated a work session with the working group to discuss the city's risk and to identify potential issues. In the second stage, OPDR developed potential actions based on the hazards and the issues identified by the working group. During the 2013 update process OPDR re-evaluated the Action Items with the local steering committee and updated actions, noting what accomplishments had been made and if the actions were still relevant; any new action items were identified at this time. OPDR also cross-walked the city's issues with region's action items to identify opportunities for partnership where issues were shared

between jurisdictions. The City's actions are listed below. Items in **bold** are specific to the city and can be found at the end of this addendum, all other action item forms are within Appendix A.

Table HA-1 City of Halfway Action Items

Multi-Hazard Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
MH #1		Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties.	Interested City Managers and/or City Council; County Commissioners, Emergency Management	Relevant Public Works and Emergency Services / Emergency Management, Law Enforcement, Fire Department, Department of Homeland Security, County Roads Departments, ODOT, relevant private industries, OEM	Short Term	Deferred				X
MH #2		Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	County/ City Planning Department	Department of Land Conservation and Development, Oregon Office of Emergency Management, Federal Emergency Management Agency	Short Term	New Action Item				X
MH #3		Inform public officials about mitigation awareness and the Natural Hazards Mitigation Plan	County Steering Committee Convener	Counties and participating cities in Region 7	Short Term	Deferred			X	
MH #15 (Halfway)		**Complete and implement the Pine Creek Floodplain Management Plan**	**City of Halfway**	**Powder River Watershed Council**	**Long Term**	**In Process**	**X**			
Drought Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
DR #2		Identify incentive programs to Increase water efficiency among municipal water users	Participating Cities	Relevant utility companies, city public works departments, County, wastewater treatment facilities, Wallowa Lake County Service District, US Environmental Protection Agency's WAVE program	Ongoing	Ongoing	X			X
DR #4	High	Conduct an aquifer (groundwater) study for the Pine and Baker Valleys	Baker County Emergency Management, Powder River Watershed Council	Baker County Water Master, Baker County Planning Department, Baker County Public Works, Baker City, City of Halfway	Short Term	Deferred				X
Earthquake Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
EQ #1		Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Emergency Management	Eastern Oregon University, County Public Works Departments, Region 7 Counties, Interested Cities, Business Oregon, Relevant utility companies, DOGAMI	Long Term	New Action Item	X	X		

Source: Baker NHMP Steering Committee and City of Halfway NHMP Working Group, 2007 (updated 2013)

Table HA-1 City of Halfway Action Items (continued)

Flood Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
FL #1		Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	Relevant City and County Public Works Departments / Emergency Services and Emergency Management	County Roads Departments, Public Works Departments, County Planning Departments; City of John Day, City of La Grande, Baker City, City of Halfway, Silver Jackets, Relevant water treatment facilities, Federal Emergency Management Agency, Homeowner, Army Corps of Engineers, Oregon Department of Fish and Wildlife, Department of State Lands, ODOT	Ongoing	Ongoing	X			
FL #2		Explore the costs and benefits for participation in the NFIP's Community Rating System	Interested Cities and Counties	County and city planning departments, county emergency services / emergency management, county public works, Silver Jackets, FEMA, DLCD	Short Term	Deferred	X	X		
FL #3		Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	Local flood plain managers, County Emergency Managers	City Planning Departments, Emergency Services / Emergency Management, NFIP Floodplain Coordinator (DLCD), insurers, realtors, FEMA, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA , Greater Prairie City Community Association, People Mover, Community Connections of NEOR (Any community organizations capable of distributing information), Blue Mountain Eagle, ACOE	Short Term	Deferred			X	X
FL #4		Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	Relevant City and County Public Works Departments, Emergency Management, City Managers, County Planning Departments	County Roads Departments, Public Works Departments, City of John Day, City of La Grande, Baker City, City of Halfway, Army Corps of Engineers, DOGAMI, DAS-GEO, elected officials	Short Term	New Action Item	X			
FL #6 (Halfway)	**High**	**Seek Silver Jackets assistance to investigate opportunities to prevent large infiltration of flood waters into the wastewater treatment facility**	**County Public Works Department**	**ACOE (Portland – regulatory) (Walla Walla --Structural), Silver Jackets, Baker County Road Department, Adjacent land owners, ODOT**	**Short Term**	**New Action Item**				**X**
Wildfire Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
WF #1	High (Baker City)	Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.	County Steering Committee Convener, Emergency Management	County Emergency Services / Emergency Management, County Planning Departments, City of Baker City, City of Halfway, Local Public Safety Coordinating Council (LPSCC), Oregon Department of Forestry, Bureau of Land Management, local fire departments, OSU Extension Services, US Forest Service, Soil and Water Conservation Districts, Oregon Department of Fish and Wildlife; Homeowners in Wildland/Urban Interface zones; Hells Canyon Preservation Council	Ongoing	Ongoing	X			X

Source: Baker NHMP Steering Committee and City of Halfway NHMP Working Group, 2007 (updated 2013)

Halfway Addendum Update

Representatives from the City of Halfway served on the Northeast Oregon NHMP Update Steering Committee, and convened a working group meeting to update the Halfway addendum on June 27th, 2013 (see Appendix B for more information). During this meeting, the working group reviewed and revised the addendum, with particular focus on the plan's action items and mitigation strategy.

The current version of the addendum reflects changes decided upon at the plan update meeting and during subsequent work and communication with OPDR. The changes are highlighted with more detail throughout this document and within Appendix B, Planning and Public Process Appendix of the Northeast Oregon NHMP. Other documented changes include a revision of the city's Risk Assessment and Hazard Identification sections, Plan Goals (see Section 3, Mitigation Strategy), and Community Profile (see Appendix C, Community Profile).

How Will the Plan be Implemented?

The City Council will be responsible for adopting the Halfway Natural Hazards Mitigation Plan (NHMP) Addendum. This addendum designates a coordinating body and a convener to oversee the development and implementation of action items. Because the city addendum is considered part of the regional plan, the city will look for opportunities to partner with the region (in particular Baker County). The City's working group will convene semi-annually during the June and November department head meetings to discuss implementation and plan maintenance. The Public Works Director of Halfway will serve as the local convener and will be responsible for convening the working group. The local convener will coordinate annual meetings with the monthly city council meetings. Additionally, there are two action items identified in the NHMP, multi-hazard actions #7 and #8, which would create a regional natural hazards coordinator and coordinating body. If these actions are pursued and accomplished, the city may choose to coordinate action items with the assistance of the regional coordinator and may also participate as a member in the regional steering committee.

Implementation through Existing Programs

Many of the Natural Hazards Mitigation Plan's recommendations are consistent with the goals and objectives of the city's existing plans and policies. Where possible, the City of Halfway will implement the Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, allowing them to adapt to changing conditions and needs. Implementing the Natural Hazard Mitigation Plan's action items through such plans and policies increases their likelihood of being supported and implemented.

The City of Halfway currently has the following plans that relate to natural hazard mitigation:

- City of Halfway Comprehensive Plan (1979) relates to natural hazard mitigation through its sections that outline Halfway's goals, policies, and implementation measures; especially within the Goal 7 "Areas Subject to Natural Disasters and Hazards" element.
- The recently adopted City of Halfway Waste Water System Facility Plan

The working group and the community's leadership have the option to add or implement action items at any time. This allows the working group to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. When new actions are identified, they should be documented using the action item form. Once a proposed action form has been submitted to the convener, the action will become part of the city's addendum.

Continued Public Participation

Keeping the public informed of the city's efforts to reduce the city's risk to future natural hazards events is important for successful plan implementation and maintenance. The city is committed to involving the public in the plan review and updated process. The City Addendum along with the Regional Plan will be posted on-line on the University of Oregon's Scholars Bank accessible via the OPDR website (http://csc.uoregon.edu/opdr/plans/baker) so that the public may view the plan and submit electronic comments to the community at any time.

In addition, natural hazards information dissemination is conducted throughout the year when opportunities present themselves via the city offices and website.

Plan Maintenance

The Northeast Oregon Natural Hazard Mitigation Plan will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. During the regions' plan update process, the city will also review and update its addendum. The convener will be responsible for convening the working group to address the questions outlined below.

- Are there new partners that should be brought to the table?
- Are there new local, regional, state, or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Have new issues or problems related to hazards been identified in the community?
- Are the actions still appropriate given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Have there been any significant changes in the community's demographics that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?
- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

These questions will help the working group determine what components of the mitigation plan need updating. The working group will be responsible for updating any deficiencies found in the plan.

The City of Halfway Natural Hazard Mitigation Addendum includes three sections:

1) A Community Profile: this section primarily refers to the Northeast Oregon NHMP Appendix C – Community Profile,

2) A revised summary of the city's Hazard Identification and Risk Assessment, and

3) A Mitigation Strategy section.

HALFWAY COMMUNITY PROFILE ASSET IDENTIFICATION

This section provides information city and county specific asset identification. For information on the characteristics of Halfway and Baker County, in terms of geography, environment, population, demographics, employment and economics, as well as housing and transportation see Appendix C, Community Profile. Many of these community characteristics can affect how natural hazards impact communities and how communities choose to plan for natural hazard mitigation. Considering the city specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Table HA-2 City of Halfway Asset Identification

Sector and Assets
Population
Elderly Population
Recent minor change to UGB
Cultural and Historic Resources
Stockmen's Restaurant
U.S. Bank
Economy
Tourism
Hunting (though it has decreased recently)
Idaho Power
Pine Eagle School
Environmental Assets
Tourism
Hunting
Infrastructure and Facilities
Pine Eagle Clinic
Ambulance Station
Highway 86

Source: City of Halfway NHMP Steering Committee, 2013. City of Halfway Water and Wastewater Systems.

Introduction to Baker County

Baker County lies in northeast Oregon with Idaho to the east, Union and Wallowa counties to the north, Grant County to the west, and Malheur County to the south. Baker County spans 3,089 square miles and has a 2010 population of approximately 16,215, over half of

which is within Baker City.[1]Baker County relies on farming, ranching, logging, and recreation as their chief economic basis.[2]

Baker County Natural Environment Capacity

Table HA-3 shows the natural resources that were identified by the Baker County Steering Committee in 2007 and 2013. This table gives some indication of the intersection between the economy and the natural environment for the county as a whole.

Table HA-3 Natural Resource Asset Identification:

Natural Resources
Agriculture and timber resources provide for the County's largest source of revenue.
Fifty percent of Baker County is federally owned; the region depends on public lands for tourism, hunting, wildlife, watersheds, and grazing.
Mining remains an active venture in Baker County; it is a source of economic development, and it draws tourism as well.
Baker City has an anadromous fish population that could be weakened by natural and man-made hazards.
Communities rely on the following water resources: Eagle Creek, Pine Creek, Burnt River Watershed, Wolf Creek, North Powder Watershed, Powder Watershed, Mason Dam, Unity Dam, Phillips Reservoir, Brownlee Reservoir, McCulley Forks Watershed, Wolf Creek Reservoir, Pilcher Creek Reservoir, Thief Valley Reservoir, and the Hells Canyon Complex. The Baker City Watershed is unfiltered and thus particularly susceptible to contamination from wildfire.
The Hells Canyon National Recreational Area is a regional environmental attraction.
Regularly occurring droughts and unknown capacities within the Baker Valley aquifers may limit future development.

Source: Baker County NHMP Steering Committee, 2007, 2013

Climate

Baker County lies within Oregon Climate Services designated Climate Division 8 – Northeast Oregon. This Division is characterized by a semi-arid, low precipitation climate with warm summers and cool winters. Table HA-4 shows the mean monthly annual average temperature for Halfway. Temperatures can reach as low as -39° F and as high 104° F. There is over a 40 degree temperature swing between the mean temperature in January (25.7) and July (66.5).

Figure HA-1 shows the precipitation of Baker County. The locations on the valley floor receive less than 20 inches of precipitation per year, particularly those surrounded by high mountains which may receive less than 10 inches. The higher elevation locations receive

[1] Oregon Blue Book, "Baker County" http://bluebook.state.or.us/local/counties/counties01.htm Accessed May 2013

[2] Ibid

higher annual precipitation totals, generally in the form of snowfall. The precipitation for the region is evenly distributed throughout the seasons.[3]

Table HA-4 Mean Monthly and Annual Average Temperatures (deg F), 1981-2010

Month	Mean Maximum	Mean Minimum	Mean Temperature	Mean Precipitation	Mean Snowfall
January	33.5	16.2	24.8	3.41	26.3
February	39.7	18.1	28.9	2.25	11.3
March	52.4	27.2	39.8	1.83	2.4
April	63.0	31.7	47.4	1.63	0.5
May	71.7	37.9	54.8	1.81	0.0
June	79.8	43.7	61.8	1.37	0.0
July	89.6	48.5	69.0	0.54	0.0
August	88.9	46.4	67.7	0.56	0.0
September	79.2	38.6	58.9	0.72	0.0
October	64.6	30.4	47.5	1.21	0.0
November	46.3	24.8	35.5	2.96	9.9
December	34.1	16.7	25.4	3.58	25.3
Annual	*61.9*	*31.7*	*46.8*	*21.87*	*75.7*

Sources: U.S. Department of Commerce, NOAA National Environmental Satellite, Data and Information Service.

Figure HA-1 Mean Annual Precipitation



Source: The Oregon Climate Service. "Mean Annual Precipitation."http://www.ocs.oregonstate.edu/county_climate/fig2/baker.jpg

3 The Oregon Climate Service "Climate of Baker County."

Land Ownership

Baker County spans 3,089 square miles.[4] Federal agencies own approximately 51.5% of the land in Baker County, comprising a total of 1,016,511 acres. The Baker County Natural Resources Plan references its land ownership: approximately one third of Baker is owned by the US Forest Service[5](USFS), 18.5% is owned by the Bureau of Land Management (BLM)and approximately 0.5% of Baker County, is managed by the State of Oregon.[6]The remaining 48.0% of the land in the county is privately owned. Land use in Baker County is predominately dedicated to agriculture and timber, as well as mining, and wilderness areas.[7] These natural resources also play an important part in Baker County's economy.[8]

The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table HA-5 Land Use Asset Identification:

Land Use and Development
There are existing developments subject to wildfire in the wildland/urban interface. They are: Woodtick Village/Rattlesnake Estates, Stices Gulch, Bourne, Surprise Springs, Greenhorn, Auburn Gulch, Huntington, Oxbow, Rock Creek/Bulger Flats, Face of the Elkhorns, Sumpter/McCully Forks WS, Sparta, Elkhorn Estates/Deer Creek, Cornucopia, East Eagle/Main Eagle, Eagle Creek, Tamarack CG, Black Mountain, Anthony Lake, Whitney, Brownlee, and Carson/Pine Valley.
Current and future development trends are minimal; the population is expected to stay level until at least 2025.
The City of Halfway has identified Pine Creek as a continual flooding hazard.

Source: Baker County NHMP Steering Committee, 2007, 2013

Baker County Socio Demographic Capacity

Population

Baker County is the second most populated county in the region and has the second most populated city in the region in Baker City. Table HA-6 details some of the population assets from the NHMP Steering Committees in 2007 and 2013 including information on vulnerable population types, organizations that serve them, and large festivals/events.

4 Oregon Blue Book, "Baker County" http://bluebook.state.or.us/local/counties/counties01.htm Accessed May 2013

5 652,265 acres. USFS Northeast Oregon Land Zone Realty Specialist

6 10,067 Acres; Baker County Assessor's Office; to read more visit the Baker County Natural Resource Plan: http://www.bakercounty.org/natural_resources/docs/NRPlan_FINAL_12222010.pdf

7 Baker County Natural Resource Plan http://www.bakercounty.org/natural_resources/docs/NRPlan_FINAL_12222010.pdf; 1,129,662 acres could be used for agricultural production

8 For more information about the role of natural resources on Baker County's economy visit the Baker County Economic Capacity Section of the Community Profile

Table HA-6 Population Asset Identification

Population Assets
Baker County has eight distinct incorporated cities as well as eight unincorporated communities. Communities are geographically dispersed with limited communication or interaction if communities need to be warned of an event, or require disaster assistance, distance and dispersal will be communication barriers. There are no County radio or TV stations for alert or warning.
Head Start, a community organization in Northeast Oregon, has two concerns regarding natural hazards in Region 7: 1) children are left at Head Start centers for extended periods of time for weather-related hazards; 2) Head Start would like to have better communication with county emergency services.
Several of Baker County's communities have limited evacuation routes; typically, with the exception of Baker City, cities have one central route that crosses its boundaries. If road closures occur due to severe weather, landslide, or otherwise, populations may be isolated from emergency services.
Baker City is home to the State's Powder River Correctional Facility (PRCF). PRCF is a 286-bed adult male minimum-security facility. Inmates can serve on community work crews in support of the Oregon Department of Corrections.
Baker County has limited public transportation. Community Connection and Step Forward offer transportation options for elderly and disabled populations only. From Richland, a Community Connections bus transports seniors to Baker City once a week. Additionally, Community Connections provides meals for seniors one day a week in both Halfway and Richland (with transportation included).
The Red Cross maintains emergency shelters at various locations, including the fair grounds, YMCA, and schools.
Baker County is home to several organizations that provide services to vulnerable populations. As such, these organizations are ideally suited as partners for mitigation projects concerning senior and/or vulnerable populations in the county.
Vulnerable population types listed included: children, non-English speaking populations, elderly, and prsioners (PRC)
Large community events include: Cattlemen's Centennial, Sumpter Flea Markets, Memorial Day Weekend/Labor Day Weekend events; Haines Days, the 4th of July Celebrations, Rodeos, County Fair, Baker City - 4H Fair, the Elkhorn Bicycle Ride, the motorcycle rally, the Huntington Catfish Derby, Halfway's Annual Crab Feed, Baker County Fair and Panhandle Rodeo.

Source: Baker County NHMP Steering Committee, 2007, 2013

Table HA-7 shows the population of the incorporated cities in Baker County. The table also shows the population change between 2000 and2010 for Baker County and its incorporated cities. Baker City is the largest city in the county by a large margin (nearly 61% of county population) and from 2000-2010 it saw a two-percent increase in the share of the county's population despite an overall decrease in population. Communities that saw a notable drop in population include Halfway (-49), Unity (-60), and Huntington (-75).

Table HA-7 Baker County Incorporated Cities Population Change 2000-2010

	2000		2010		Population Change 2000-2010		
Jurisdiction	Population	Percent	Population	Percent	Population	Percent	AAGR
Baker City	9,860	58.9%	9,828	60.9%	-32	2.0%	0.0%
Haines	426	2.5%	416	2.6%	-10	0.0%	-0.2%
Halfway	337	2.0%	288	1.8%	-49	-0.2%	-1.6%
Huntington	515	3.1%	440	2.7%	-75	-0.3%	-1.6%
Richland	147	0.9%	156	1.0%	9	0.1%	0.6%
Sumpter	171	1.0%	204	1.3%	33	0.2%	1.8%
Unity	131	0.8%	71	0.4%	-60	-0.3%	-5.9%
Sub-Total	*11,587*	*69.2%*	*11,403*	*70.7%*	-184	1.5%	*-0.2%*
Not incorporated	5,154	30.8%	4,731	29.3%	-423	-1.5%	-0.9%
Total	16,741	100.0%	16,134	100.0%	-607	0.0%	-0.4%

Source: U.S. Census Bureau, Census 2000 Summary File 1, "DP-1 Profile of General Demographic Characteristics" http://http://factfinder2.census.gov, accessed April 2013. U.S. Census Bureau, Census 2010 Summary File 1, "DP-1 Profile of General Population and Housing Characteristics" http://http://factfinder2.census.gov, accessed April 2013. Note: AAGR = Average Annual Growth Rate

Age

Table HA-8 shows Baker County's population by age groups and age dependency ratio.[9] Baker County's age dependency ratio is over 13 percentage points higher than the State of Oregon's. Several of the smaller cities in Baker County have higher age-dependency ratios including Huntington (76.7%) and Richland (an estimated 100%).

Table HA-8 Baker County Population by Age Groups and Age Dependency Ratio (2010 and 2040)

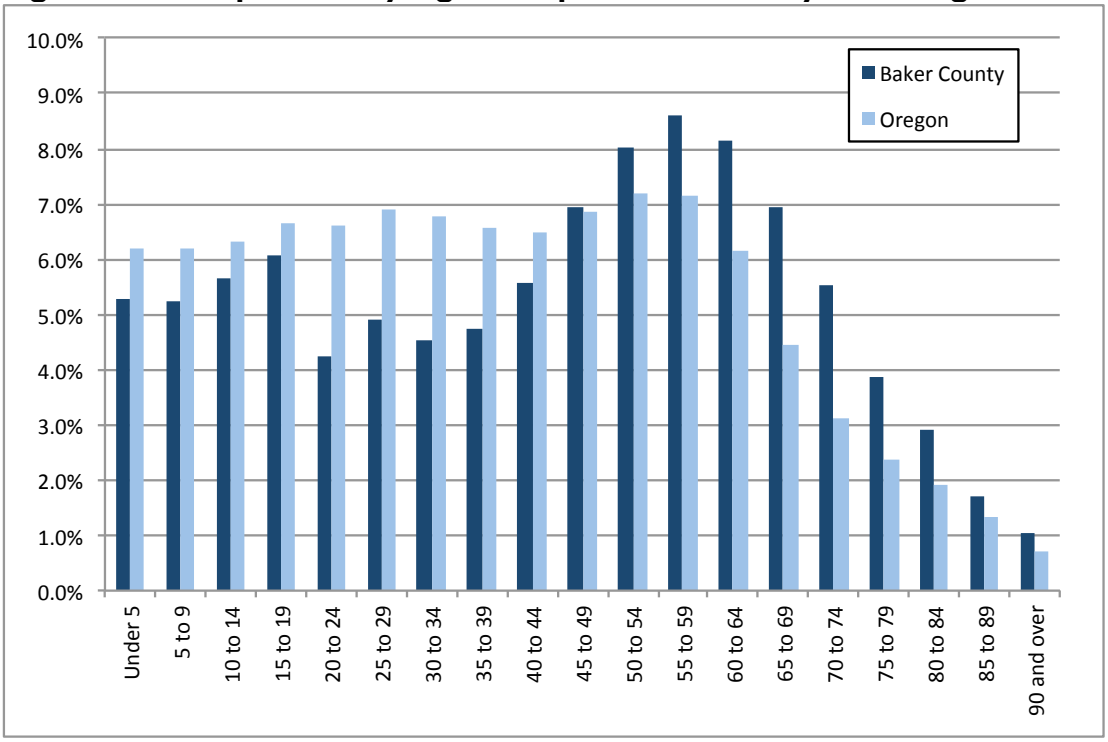
2010		< 15 Years		15 to 64	> 64 Years		
Jurisdiction	**Total**	**Number**	**Percent**	**Number**	**Number**	**Percent**	**Age Dependency Ratio**
Oregon	3,831,074	717,323	18.7%	2,580,218	533,533	13.9%	48.5%
Baker County	16,134	2,610	16.2%	9,982	3,542	22.0%	61.6%
Baker City	9,828	1,717	17.5%	6,094	2,017	20.5%	61.3%
Haines	416	76	18.3%	276	64	15.4%	50.7%
Halfway	288	34	11.8%	187	67	23.3%	54.0%
Huntington	440	56	12.7%	249	135	30.7%	76.7%
Richland	156	3	1.9%	78	75	48.1%	100.0%
Sumpter	204	10	4.9%	124	70	34.3%	64.5%
Unity	71	10	14.1%	44	17	23.9%	61.4%
2040							
Oregon	5,425,408	958,949	17.7%	3,368,940	1,097,519	20.2%	61.0%
Baker County	17,460	2,428	13.9%	10,380	4,652	26.6%	68.2%

[9]The age dependency ratio is derived by dividing the combined under 15 and 65-and-over populations by the 15-to-64 population and multiplying by 100.

Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2013;

Figure HA-2 shows Baker County's population by age group as compared to Oregon. Baker County has an aging population that makes a distinct point of variation from Oregon starting from the age cohort from 45-49 and up. Conversely, every five-year age bracket below 45 years old had relatively smaller representation in Baker County than in Oregon. More than one of every five Baker County residents was 65 or older in 2010. By contrast, fewer than one in seven Oregonians was at least 65.[10]

Figure HA-2 Population by Age Group – Baker County and Oregon



Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2012

Table HA-9 shows Baker County's median income difference between 2000 and 2011. There are variables for nominal (inflation adjusted) and real dollars (not adjusted for inflation) for the year 2000. Baker County increased its inflation adjusted median income by more than three percent between 2000 and 2011, faring better than the state's nearly seven percent decrease. However, some communities fared better than others, notably Huntington (-24.9%) and Unity (-29.7%) experienced the largest income loss.

10 Oregon Employment Department "Senior Citizens are More Prominent in Eastern Oregon's Population Mix" found here: http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007019 Accessed May 2013

Income

Table HA-9 Baker County -- Median Household Income

Jurisdiction	2000 (Nominal $)	2000 (Real $)*	2011	Percent Change
Oregon	$40,916	$53,477	$49,850	-6.8%
Baker County	$30,367	$39,667	$40,989	3.3%
Baker City	$29,020	$37,908	$35,458	-6.5%
Haines	$25,000	$32,657	$38,056	16.5%
Halfway	$17,212	$22,483	$25,893	15.2%
Huntington	$25,132	$32,829	$24,659	-24.9%
Richland	$17,344	$22,656	$26,250	15.9%
Sumpter	$27,188	$35,515	$37,813	6.5%
Unity	$27,679	$36,156	$25,417	-29.7%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics"; U.S. Census Bureau, Table DP3 "Profile of Selected Economic Characteristics: 2000,"http://censtats.census.gov/cgi-bin/pct/pctProfile.pl, Accessed March 2013. *Note: 2000 figures are adjusted for inflation based on the CPI Calculator provided by the Bureau of Labor Statistics, http://www.bls.gov/data/inflation_calculator.htm Accessed May 2013.

Table HA-10 shows the poverty levels among all persons, those under 18, families, and families with children under 18. The communities of Huntington and Unity suffer from the highest overall poverty level, 41.6% and 31.5% respectively, making them the communities with the largest population loss, the largest decline in income, and the highest poverty levels in Baker County.

Table HA-10 Baker County -- Individuals and Families below Poverty Level

Jurisdiction	All People	People < 18	Families	Families with Children < 18
Oregon	14.8%	19.6%	10.2%	16.7%
Baker County	20.0%	32.5%	13.3%	27.3%
Baker City	23.3%	39.0%	15.8%	30.4%
Haines	10.1%	6.0%	5.7%	12.0%
Halfway	29.8%	43.6%	27.1%	54.2%
Huntington	41.6%	57.5%	31.1%	63.3%
Richland	na	na	na	na
Sumpter	na	na	na	na
Unity	31.5%	100.0%	28.6%	100.0%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics, "http, accessed March 2013.

Education

Table HA-11 shows the educational attainment rate in terms of high school and college graduation for Baker County. Baker County has a lower percentage of its population with a high school degree (86.5%) than the state average (88.2%). Notably the City of Haines (74.3%) and Huntington (76.9%) were more than 10 percentage points below state averages.

Table HA-11 Baker County -- Educational Attainment

Jurisdiction	Total Population > 18 Years	No High School Degree	High School Graduate and Beyond	College Graduate and Beyond
Oregon	2,937,534	11.8%	88.2%	34.0%
Baker County	12,826	13.5%	86.5%	26.9%
Baker City	7,528	17.3%	82.7%	24.5%
Haines	237	25.7%	74.3%	11.8%
Halfway	242	12.4%	87.6%	25.2%
Huntington	412	23.1%	76.9%	12.1%
Richland	102	18.6%	81.4%	27.5%
Sumpter	137	1.5%	98.5%	13.1%
Unity	52	7.7%	92.3%	7.7%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B15001 "Sex by Age by Educational Attainment for the population 18 years and over, " accessed March 2013.

Baker County Economic Capacity

Baker County's assets are largely tied to its natural resources and recreation these assets may be more vulnerable to natural disasters and can suffer environmental damages. Table HA-12 describes some of these assets as well as some of the major employers in the county. The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table HA-12 Baker County Economic Asset Identification

Economic Assets
The County's economy is principally based on agriculture with support from tourism. Impacts to either of these industries, via natural hazard, will hurt Baker County's economy. Natural hazards can severely interrupt agriculture and damage the environmental resources that Baker County relies on to attract tourism.
Baker County's major employers include New Directions Northeast (largest employer in the County), ODOT, State of Oregon, BLM, Baker County, Baker City Government, Oregon Health and Services, 5J School District, Powder River Correctional Facility, Oregon Trail Electric Cooperative, Tasty Bake, Natural Structures, Sain Alphonsus Hospital, Behlen and Marvins.
Economic Assets include: agriculture, ranching, forestry, livestock, tourism, mining, and recreational opportunities, such as hunting, skiing, fishing, boating, and camping.
The mining potential in Baker County is potentially an untapped economic development resource.

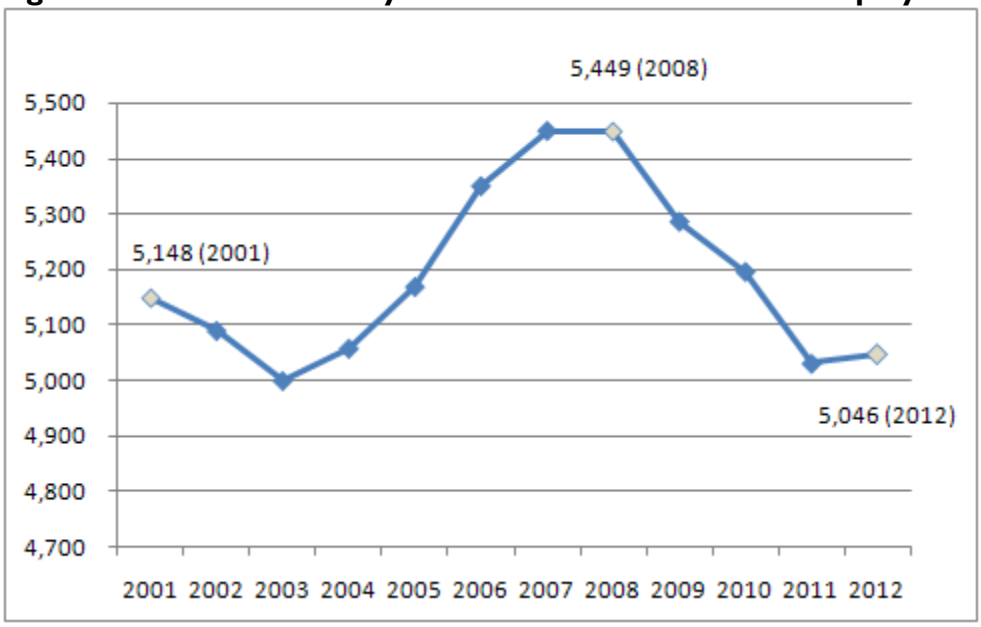
Source: Baker County NHMP Steering Committee, 2007, 2013

Industry

Total Employment

Figure HA-3 shows Baker County's total non-farm employment which has decreased overall since 2001 and forming an arc which peaked in 2008. Total nonfarm payroll employment in Baker County increased in 2012 for the first time since 2008. 2012 numbers are still 102 jobs shy of the 2008 peak of 5,499.[11]

Figure HA-3 Baker County 2001-2012 Total Nonfarm Employment



Source: Oregon Employment Department, "2001-2012 Covered Employment and Wages Summary Reports". http://www.qualityinfo.org/olmisj/labforce; Accessed June 2013.

Employment by Industry

Public-sector employment accounts for nearly one in every four non-farm jobs in Baker County (22.4%). Trade, transportation, and utilities had the largest share of private sector employment in 2012 at 20.0 percent, followed by educational and health services (14.5%) and leisure and hospitality (11.3%).

The educational and health services industry has been the largest industry of growth. As regional economist Jason Yohannan explains in a recent article:

> *"The educational and health services industry employed an average of 600 people in Baker County in 2001. Since then, the industry added workers every year without fail, in fact, over the past decade; the strongest year for employment growth in Baker County's health care industry was 2008, during the heart of the national economic downturn. Hiring by the educational and health services industry was the primary reason Baker County's total nonfarm payroll employment rose from 2007 to 2008*

11 Oregon Employment Department "Eastern Oregon Job Trends in 2012: Only Pockets of Recovery" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008580 Accessed June 2013.

while corresponding figures for Oregon and the United States moved in the opposite direction. Educational and health services have been a growth industry throughout the country. But, from 2001 to 2009, the industry's job counts grew faster in Baker County (+27%) than in Oregon (+25%) or the United States (+23%). No other Baker County industry added as many jobs - or expanded as rapidly - in that time span."[12]

Table HA-13 2011 Total Employment by Industry

Jurisdiction	2012 Firms	2012 Employees	2012 Percent of Workforce	2012 Average Pay	Percent Change in Employment 2007-2012
Total	*641*	*5,046*	*100%*	*$31,242*	-7.4%
Total Private	566	3,917	77.6%	$28,882	-7.1%
Natural Resources and Mining	33	165	3.3%	$28,685	-11.8%
Construction	67	194	3.8%	$27,933	-32.4%
Manufacturing	29	485	9.6%	$36,701	-24.2%
Trade, Transportation & Utilities	125	1,008	20.0%	$30,146	5.1%
Wholesale	19	80	1.6%	$26,814	6.7%
Retail	75	697	13.8%	$22,401	2.2%
Information	11	75	1.5%	$40,197	-2.6%
Finance Activities	42	152	3.0%	$36,199	-18.3%
Professional & Business Services	63	303	6.0%	$29,928	2.7%
Education & Health Services	67	731	14.5%	$34,204	7.5%
Leisure & Hospitality	59	571	11.3%	$14,325	-10.8%
Other Services	71	234	4.6%	$17,183	-11.4%
Government	75	1,129	22.4%	$39,428	-8.5%
Federal	18	222	4.4%	$57,136	-7.1%
State	17	254	5.0%	$42,150	-3.1%
Local	40	653	12.9%	$32,349	-11.0%

Source: Oregon Employment Department "2007 and 2012 Covered Employment and Wages Summary Reports." http://www.qualityinfo.org/olmisj/labforce. Accessed June 2013.

High Revenue Sectors

In 2007, the sectors with the highest reported revenue were retail trade (42.9% total revenue) and manufacturing (38.1% total revenue). Table HA-14 shows the revenue generated by each economic sector. Among the sectors that reported their revenue, combined for more than $362 million of revenue in the county.

12 Oregon Employment Department "Eastern Oregon Job Trends in 2012: Only Pockets of Recovery" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008580 Accessed June 2013

Table HA-14 Revenue of Top Sectors in Baker County

Sector Meaning (NAICS code)	Revenue ($1,000)	Percent of Total Revenue	Sector Ranking
Retail Trade	$155,456	42.9%	**1**
Manufacturing	$137,989	38.0%	**2**
Accomodation & Food Services	$25,659	7.1%	**3**
Wholesale Trade	$19,141	5.3%	**4**
Other Services (except Public Administration)	$12,061	3.3%	**5**
Real Estate & Rental & Leasing	$7,324	2.0%	**6**
Administrative & Support & Waste Management & Remediation Services	$5,052	1.4%	**7**
Health Care & Social Assistance	D		
Professional, Scientific & Technical Services	D		
Arts, Entertainment & Recreation	D		
Educational Services	D		
Information	N		
Total	$362,682		

Source: U.S. Census Bureau, 2007 Economic Census, Table EC0700A1 "All sectors: Geographic Area Series: Economy-Wide Key Statistics: 2007," http://factfinder2.census.gov/, *D = Withheld, N = No Data* accessed March 2013.

Baker County Community Connectivity

Civic Engagement

The 2012 Presidential General Election generated a turnout from 8,549 people in Baker County as of November 6th, 2012.[13] Other indicators such as volunteerism, participation in formal community networks and community charitable contributions are examples of other civic engagement that may increase community connectivity.

Cultural Resources

Historic Places

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources for tourism revenue. Protecting these resources from the impact of disasters is important because they have an important role in defining and supporting the community. Table HA-15 identifies the number of historical sites in Baker County. Overall, there are a total of 13 historically registered places in Baker County.

[13] Daily Ballot Return, http://www.bakercounty.org/elections/index_11062012.html, accessed September 2013.

Table HA-15 Baker County Historic Places

Type	Listed on the National Register
Archeological	0
Bridges	0
Cemetaries	0
Churches	0
Commercial	1
Districts	2
Houses, Hotels, Resorts and Cabins	3
Military Posts, Ranger Stations and Guard Lookouts	2
Municipal Buildings, Libraries and Schools	3
Parks, Campgrounds, Ranches, Barns, and Openspace	2
Total	**13**

Source: Oregon Historic Sites Database, http://heritagedata.prd.state.or.us/historic/index.cfm?do=v.dsp_main, accessed September 2013.

Libraries and Museums

Libraries and museums develop cultural capacity and community connectivity as they are places of knowledge and recognition, they are common spaces for the community to gather, and can serve critical functions in maintaining the sense of community during a disaster. They are recognized as safe places and reflect normalcy in times of distress. There are currently six community libraries in Baker County located in Baker City, Haines, Halfway, Huntington, Richland, and Sumpter.[14] There are approximately three museums in Baker County: Baker Heritage Museum, Alder House Museum, and the Eastern Oregon Museum.[15]

Cultural Events

Other such institutions that can strengthen community connectivity are the presence of festivals and organizations that engage diverse cultural interests. Examples of events and institutions include Sumpter Flea Markets, Memorial Day Weekend & Labor Day Weekend events; Haines Days, the 4th of July Celebrations, Rodeos, County Fair, Baker City – 4H Fair, the Elkhorn Bicycle Ride (Last weekend in June), motorcycle rally is in July, the Huntington Catfish Derby, Halfway's Annual Crab Feed, Baker County Fair and Panhandle Rodeo in Halfway and other local events. Not only do these events bring revenue into the community, they have potential to improve cultural competence and enhance the sense of place. Cultural connectivity is important to community resilience, as people may be more inclined to remain in the community because they feel part of the community and culture.

14 Baker County Library Website http://bakerlib.org/about-us/branches.html Accessed September 2013

15 Base Camp Baker http://www.basecampbaker.com/museums-in-baker-county-oregon.html Accessed September 2013

Community Stability

Residential Geographic Stability

Community stability is a measure of rootedness in place. It is hypothesized that resilience to a disaster stems in part from familiarity with place, not only for navigating the community during a crisis, but also accessing services and other supports for economic or social challenges.[16] Table HA-16 estimates residential stability across the region. It is calculated by the number of people who have lived in the same house and those who have moved within the same county a year ago, compared to the percentage of people who have migrated into the region. Baker County overall has geographic stability rating of about 93% (i.e., 93% of the population lived in the same house or moved within the county).

Table HA-16 Regional Residential Stability

Jurisdiction	Population	Geographic Stability	Same House	Same County
Baker County	15,914	93.0%	84.4%	8.7%
Baker City	9,609	91.2%	80.7%	10.5%
Haines	287	100.0%	82.2%	17.8%
Halfway	336	100.0%	82.1%	17.9%
Huntington	535	99.1%	99.1%	0.0%
Richland	102	98.1%	96.1%	2.0%
Sumpter	137	100.0%	100.0%	0.0%
Unity	54	88.9%	77.8%	11.1%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B07003 "Geographical Mobility in the Past Year 5-Year Estimate," http://factfinder2.census.gov/, accessed September 2013.

Homeownership

Often homeownership is associated with greater resilience as it is a measure of place attachment and commitment. Homeownership is an indicator that residents will return to a community post-disaster, as these people are economically and socially invested in the community. Similar to communities with higher median household income, homeownership can reflect an increased resource vulnerability to prepare, respond and cope with a crisis situation.

Table HA-17 identifies housing tenure across the county. The table shows the home-ownership rate of occupied households is lowest in Haines, Baker City, and Huntington. There are approximately, 2,230 renters in Baker County. Renters are less likely to return after a disaster, since they are less economically invested in the community.

16Cutter, Susan, Christopher Burton, Christopher Emrich. "Disaster Resilience Indicators for Benchmarking Baseline Conditions." Journal of Homeland Security and Emergency Management.

Table HA-17 Homeownership

Jurisdiction	Occupied Households	Owner Occupied	Percent Owner Occupied	Renter Occupied	Percent Renter Occupied	Population Renter Occupied
Baker County	7,040	4,810	68.1%	2,230	31.7%	4,975
Baker City	4,212	2,665	63.3%	1,547	36.7%	3,383
Haines	125	77	61.6%	48	38.4%	88
Halfway	153	99	64.7%	54	35.3%	201
Huntington	211	137	64.9%	74	35.1%	156
Richland	93	66	71.0%	27	29.0%	49
Sumpter	119	106	89.1%	13	10.9%	21
Unity	36	25	69.4%	11	30.6%	27

Source: U.S. Census Bureau, American Community Survey 2007-2011 Table DP04 "Selected Housing Characteristics," http://factfinder2.census.gov, accessed September 2013.

Baker County Political Capacity

Government Structure

Baker County employs a County Clerk, District Attorney, Sheriff, Treasurer, Assessor, Justice of the Peace, Surveyor, and three County Commissioners, along with the following departments:

Economic Development

The Department of Economic Development is a joint venture between Baker County and Baker City, and provides a variety of services to existing and prospective businesses. The Department maintains demographic data, and labor/property information for both the city and county. In partnership with Leo Alder Memorial Parkway, Inc., the Department of Economic Development has undertaken the Downtown Jobs Initiative – Resort Street Area Improvement Project. A combination of several short and long-term plans, the initiative is working to improve streetscapes, establish a plaza at Court Street, and create a centrally located public park.

Emergency Management

The Baker County Department of Emergency Management assists in maintaining community well-being through disaster mitigation, preparedness, response, and recovery activities. The Department: 1) Serves as the point of contact for emergency and disaster questions or issues; 2) Provides hazard education and loss reduction program information; 3) Facilitates emergency and disaster planning efforts; 4) Promotes community disaster preparedness; 5) Coordinates and responds to emergency and disaster situations; 6) Assists in community disaster recovery opportunities; 7) Coordinates homeland security and county fire operations.

Health Department

The Baker County Health Department is responsible for providing community wide health promotion and disease prevention services to Baker County. Services offered by the department include vaccinations, pre- and post-natal care, immunizations, information on water and food safety, health insurance, and family health and nutritional programs.

Planning

The Baker County Planning Department provides planning and zoning information to the public and other government agencies. Additional responsibilities include reviewing development proposals, administering and enforcing land use laws, regulations, and ordinances, reviewing applications for land use actions, and conducting comprehensive planning studies and research.

Road Department

The Baker County Road Department works to provide roadways that are safe, efficient, and economical to maintain.

Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[17]

The Natural Hazards Mitigation Plan includes a range of recommended action items that, when implemented, will reduce the county's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the county's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the Plan. Implementing the natural hazards mitigation plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the county's resources.

Table HA-18 below is a list of plans and policies already in place in Baker County:[18]

17Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

18Oregon Blue Book. http://bluebook.state.or.us/local/counties/counties01.htm

Table HA-18 Existing Plans

Jurisdiction	Document	Year Acknowledged	Last Revision
Baker County	Emergency Operations Plan		2002
Baker County	Flood Insurance Study (FIS)		1996
Baker County	Baker County Land Use Ordinance		1983
Baker County	Baker County Comprehensive Land Use Plan		1978
Baker County	Baker County Community Wildfire Protection Plan		2005
Baker County	Baker City/County Economic Development Strategic Plan		
Baker County	Baker County Cultural Trust Plan		
Baker County	Baker County Transportation System Plan		1999
Baker City	Transportation System Plan		2012
Baker City	Comprehensive Plan	1980	1997
Baker City	Water System Master Plan		2013
Baker City	Zoning Ordinance		2001
Greenhorn	Comprehensive Plan		1986
Haines	Comprehensive Plan	1980	2003
Haines	Zoning Ordinance		2003
Halfway	**Comprehensive Plan**	**1981**	**1992**
Halfway	**Zoning Ordinance**		**1992**
Halfway	**Water System Master Plan**		**2007**
Halfway	**Waste Water Facility Plan**		**2013**
Huntington	Comprehensive Plan	1980	
Richland	Comprehensive Plan	1981	
Richland	Zoning Ordinance		2001
Sumpter	Comprehensive Plan	1984	
Sumpter	Zoning Ordinance		1984
Unity	Comprehensive Plan	1981	

Source: Oregon Blue Book

Community Organizations and Programs

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within the population (e.g. elderly, children, low income). The County can use existing social systems as resources for implementing such communication-related activities because these

service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

For a full list of community organizations that may be potential partners for implementing mitigation actions visit the Community Profile, Appendix C: Table C-28

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.

HAZARD ANALYSIS AND ISSUE IDENTIFICATION UPDATE

On June 27th, 2013, the City of Halfway addendum update working group reviewed and revised the plan's Hazard Analysis and Risk Assessment section. Changes were made where appropriate to reflect changes in perception of risk from natural hazards to the City of Halfway, which are discussed throughout this plan as well as in the Planning and Public Process Appendix of the Northeast Oregon NHMP. The following is a summary of input from the original city addendum working group, along with revisions and additions from the 2013 working group.

The table below presents the entire updated hazard analysis matrix for the City of Halfway. The hazards are listed in order of rank from high to low and compare them to the county's ranking for each hazard. The table shows that hazard scores are influenced by each of the four categories combined. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities, but does not predict the occurrence of a particular hazard.

With considerations for past historical events, the probability or likelihood of a particular hazard event occurring, the vulnerability to the community, and the maximum threat or worst-case scenario, flood and landslide/ debris flow were ranked as the top hazard threats to the city (Top Tier). Earthquake (Crustal), windstorm, wildfire, and winter storm comprise the next highest ranked hazards (Middle Tier).Drought and volcanic event comprise the lowest ranked hazards (Bottom Tier). The City of Halfway did not rank the dust storm, earthquake (Cascadia) or extreme temperatures hazards.

Table HA-19 Hazard Analysis Matrix – City of Halfway

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	County Hazard Rank
Flood	20	50	100	70	240	#1	#5
Landslide	10	40	100	56	206	#2	#7
Earthquake - Crustal	16	40	100	14	170	#3	#6
Windstorm	16	35	50	56	157	#4	#4
Wildfire	10	25	50	35	120	#5	#3
Winter Storm	4	10	50	49	113	#6	#2
Drought	10	25	20	35	90	#7	#1
Volcanic Event	2	5	10	7	24	#8	#10
Dust Storm	NR	NR	NR	NR	NR	NR	#8
Earthquake - Cascadia	NR	NR	NR	NR	NR	NR	#9
Extreme Temperatures	NR	NR	NR	NR	NR	NR	NR

Sources: City of Halfway NHMP Steering Committee, June 27, 2013 and Baker County NHMP Steering Committee, Updated June 26, 2013.Note: NR = Not Ranked

The following table categorizes the probability and vulnerability scores from the hazard analysis for the city and compares the results to the assessment completed by the Baker County NHMP Steering Committee (areas of differences are noted with **bold** text within the city ratings). The table indicates that there is lower probability of drought, wildfire, and

winter storm in Halfway than in the county and lower vulnerability to drought and wildfire than the county while the vulnerability to flood and landslide is higher in Halfway than in the county. The City of Halfway did not rank the dust storm, extreme temperatures, or Cascadia Earthquake hazards.

Table HA-20 Probability and Vulnerability Comparison – Halfway and Baker County

Hazard	Halfway		Baker County	
	Probability	Vulnerability	Probability	Vulnerability
Drought	**Moderate**	**Moderate**	High	High
Dust Storm	NR	NR	Moderate	Moderate
Earthquake - Cascadia	NR	NR	Moderate	Moderate
Earthquake - Crustal	Low	High	Low	High
Extreme Temperatures	NR	NR	NR	NR
Flood	High	**High**	High	Moderate
Landslide	High	**High**	High	Moderate
Volcanic Event	Low	Low	Low	Low
Wildfire	**Moderate**	**Moderate**	High	High
Windstorm	High	Moderate	High	High
Winter Storm	**Moderate**	**Low**	High	High

Sources: City of Halfway NHMP Steering Committee, June 27, 2013 and Baker County NHMP Steering Committee, Updated June 26, 2013.Note: NR = Not Ranked

Drought

Droughts frequently that affect the region and county, however, they do not harm the city to the point of a disaster. Therefore, the Halfway Working Group determined that there is a **Moderate** probability that the City will experience severe extended drought conditions. This rating is lower than the 2008 Halfway City Hazard Analysis and 2013 Baker County Hazard Analysis scores of High. In the 2008 Halfway Addendum it was noted that: "the municipal water supply drops a couple of feet per year. In the last 10-15 years, water supply has dropped by 50 feet. Over exploitation of water resources may exceed practical sustained yield in the near future. However, a large amount of water passes through Pine Valley; future water-storage systems may be appropriately located in or near the City of Halfway." The City has recently completed and implemented their water system master plan, recommended in the 2008 City Addendum. As such, the City of Halfway Working Group determined that the city has a drought vulnerability of **Moderate**. This rating is lower than the 2013 Baker County Hazard Analysis score of high and the previous score of high in the 2008 City of Halfway Hazard Analysis.

Dust Storm

The City of Halfway Working Group did not rank the dust storm hazard.

Earthquake

Crustal Earthquake

The City of Halfway Working Group determined that there is a **Low** probability that a crustal earthquake event will affect the city. This rating is consistent with the 2008 Halfway Hazard

Analysis and the 2013 Baker County Hazard Analysis. The history of recent earthquakes in the Halfway area is limited. The Steering Committee determined that there was an earthquake near Halfway in the early 1990's, though the epicenter was likely near Oxbow, and it didn't cause any known structural damage. In 1965 there was a 4.3 magnitude earthquake in Halfway, and in 1966 there was a 4.2 magnitude earthquake in Halfway.[19] In 1913, there was reportedly an earthquake of over 6.0 magnitude in the Hells Canyon area which hugs the border between northeast Oregon and Idaho.[20] There are historic buildings and critical facilities in Halfway that may have a high risk of collapse during extreme levels of seismic activity. Building instabilities pose risks not only to human welfare and property, but to the local economy as well. The City of Halfway also has a risk of isolation with a potential closure of Highway 86. As such, the Halfway Working Group determined that the city has a **High** vulnerability to an earthquake hazard. This rating is consistent with the 2013 higher than the 2008 Halfway Hazard Analysis score of Low.

CASCADIA SUBDUCTION ZONE EARTHQUAKE

The City of Halfway Working Group did not rank the Cascadia Subduction zone earthquake hazard.

Extreme Temperatures

The City of Halfway Working Group did not rank the extreme temperatures hazard.

Flood

Flooding occurs fairly regularly near Halfway in the Pine Valley, as such the City of Halfway Working Group determined that the city has a **High** probability of a flood event. This rating is consistent with the 2008 Halfway Hazard Analysis and the 2013 Baker County Hazard Analysis. Flooding is generally localized and the city of Halfway is so small that the impacts are felt throughout.

Generally the Pine Valley and City of Halfway flood due to spring runoff, rain on snow, and summer thunderstorms. The movement of sediment in Pine Creek also is a significant contributor to flooding in Halfway. The City of Halfway operates a wastewater treatment facility where wastewater is treated and discharged to Pine Creek. In June 2010, a large infiltration of flood water climbed above the banks of Eagle Creek, Pine Creek, and their tributaries and caused damage to the City of Halfway, specifically threatening the city's wastewater treatment facility. A similar future event is possible and could be devastating to the facility.

The City of Halfway currently has three NFIP policies, all of which predate the Flood Insurance Rate Maps. There has yet to be any paid claims for the flood policies.

The Halfway Working Group determined that the city's vulnerability to flood is **High**. This ranking is consistent with the 2008 Halfway Hazard Analysis and higher than the 2013 Baker County Hazard Analysis score of moderate.

19University of Washington. List of Magnitude 4.0 or Larger Earthquakes in Washington and Oregon 1872-2002; and Wong and Bott, November 1995, A Look Back at Oregon's Earthquake History, 1841-1994, Oregon Geology.

20 Ibid

Landslide

There is little history and no steep slopes that would *directly* affect the City of Halfway; however, the 1984 'Hole in the Wall' incident which isolated Halfway from the rest of the community via Highway 86 caused a variety of indirect impacts including preventing travel for several months. The Hole in the Wall landslide required a 21 mile detour through Sparta for the City of Halfway as well as Richland, Oxbow, and Homestead, but this route was unsafe for traffic during winter months.[21]As such the City of Halfway Working Group determined that the city has a **High** probability to a landslide. This rating is higher than the 2008 Halfway Hazard Analysis score of Low and consistent with the 2013 Baker County Hazard Analysis. The City of Halfway Working Group determined the city has a **High** vulnerability to a landslide. This rating is consistent with the 2008 Hazard Analysis score and higher than the 2013 Baker County Hazard Analysis score of moderate.

Volcanic Event

Considering past history the probability of a volcanic event for Halfway and Baker County is **Low.** This hazard was not ranked in 2008. While a volcanic event may not have a direct impact on the city, the ash fallout from an event in the Cascades could potentially affect Halfway, especially for people with respiratory problems. As such, the Halfway Working Group determined that the city's vulnerability to a volcanic event is **Low**, which is the same as the county's risk.

Wildfire

Wildfires that impact Baker County are often in the valley and do not affect the City of Halfway. Historically wildfires have reached near the top of the city (such as in the Foster Gulch Fire, 2006) where the fire was visible from city, but have not reached the city limits. Due to the history of wildfire in the county and near Halfway the Working Group determined that the probability of a wildfire event is **Moderate**. This hazard was unranked in the 2008 Halfway Hazard Analysis and is lower than the 2013 Baker County Hazard Analysis score of high. The city's nearby fields are green, irrigated, and there is less of a chance of wildfire reaching the city as it would dissipate before it reaches to the city. As such, the Working Group determined that the city's to wildfire is **Moderate**. This ranking is lower than the 2013 Baker County Hazard Analysis score of high. During the creation of the 2006 Baker County Community Wildfire Protection Plan, the following were seen as at risk values to the City of Halfway: Carson as a major water source; the Pine Valley aquifer; the viewshed of Pine Valley; power lines/transmission lines; recreation; and ranching and agriculture.[22]

Windstorm

Windstorms occur frequently in the Halfway area as such, the Halfway Working Group determined that the probability of a windstorm event is **High**. This hazard was unranked in the 2008 Halfway Hazard Analysis and this score is consistent with the 2013 Baker County Hazard Analysis. The County's plan adequately addresses the windstorm risks that the city

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21 DOGAMI Oregon Geology Volume 47, Number 5 May 1985
http://www.oregongeology.com/pubs/og/OGv47n05.pdf

22 Baker County CWPP 2006, City of Halfway City Hall Meeting

faces. The city has experienced several windstorms in the previous three to four years (2009-2013). These storms typically occur between during the spring months. Approximately 10 years ago there was a tornado-like wind event that affected the city. The Working Group determined that the city's vulnerability to a windstorm is **Moderate**. This ranking is lower than the 2013 Baker County Hazard Analysis ranking of high.

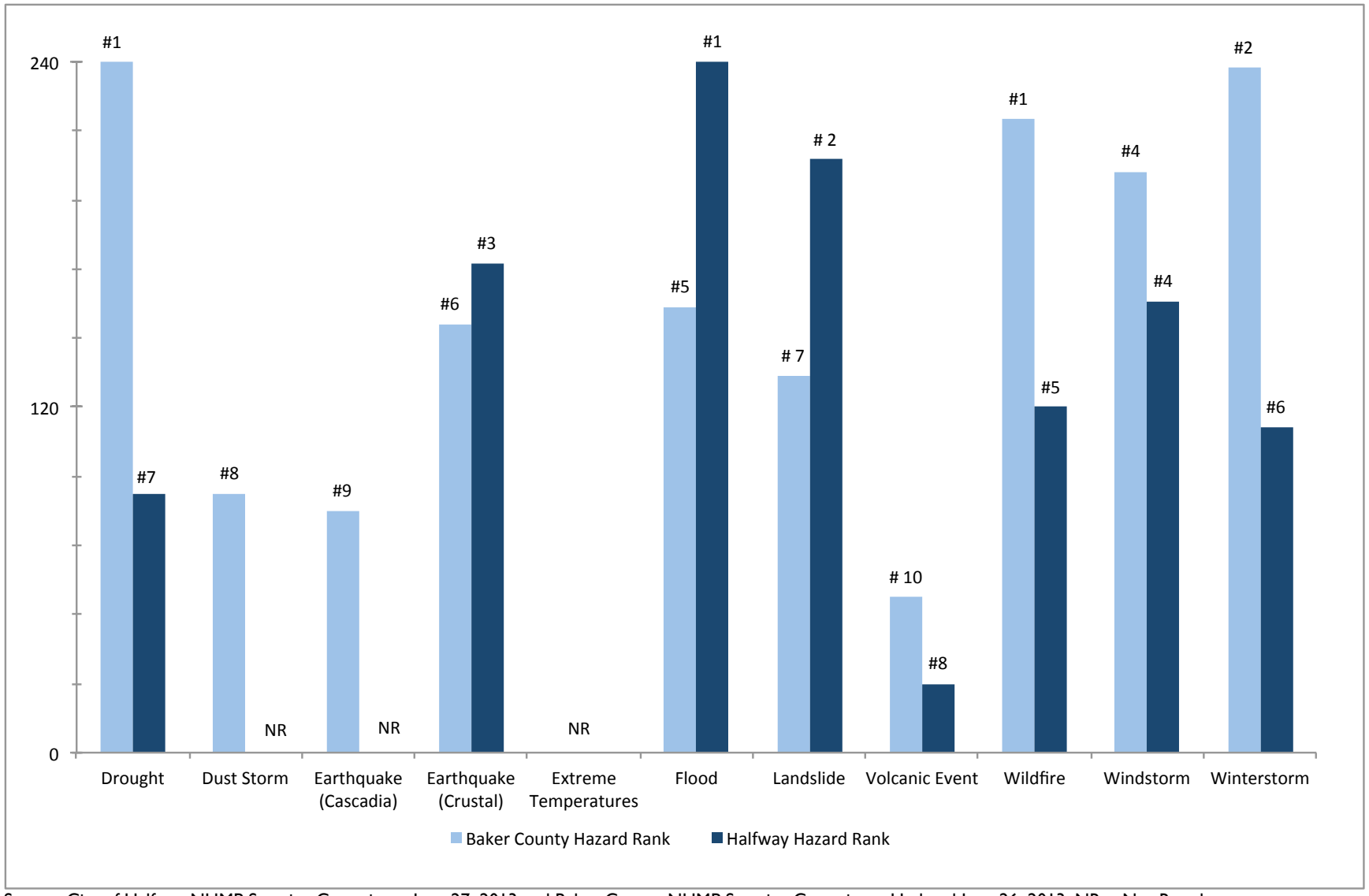
Winter Storm

Considering the history of winter storms in the region the Halfway Working Group determined that the probability of a winter storm event is **Moderate**. This hazard was unranked in the 2008 Halfway Hazard Analysis and this ranking is lower than the 2013 Baker County Hazard Analysis Score of high. The Halfway Working Group noted that the highway crew is very capable and can clear the highway quickly so as not to leave Halfway isolated for long. The Steering Committee noted that the City of Halfway residents are largely self sufficient and are less affected by winter storms than other parts of the state. This is due in part to city's familiarity with winter storm events. As such, the Halfway Working Group determined that the cities vulnerability to a winter storm is **Low**. This ranking is lower than the 2013 Baker County Hazard Analysis score of high.

The figure below presents a summary of the hazard analysis for the City of Halfway and compares the results to the assessment completed by the Baker County NHMP Steering Committee.

In terms of probability, vulnerability, history, and maximum threat, the hazard analysis for the city overall rated their threat to windstorm and winter storm as greatest, closely followed by flood. The threats from flood, wildfire, windstorm and winter storm were considered greater for the city than for the county.

Figure HA-4 Overall Hazard Analysis Comparison (OEM: Total Threat Score) – Halfway and Baker County



Source: City of Halfway NHMP Steering Committee, June 27, 2013 and Baker County NHMP Steering Committee, Updated June 26, 2013. NR = Not Rated

MITIGATION STRATEGY

Mitigation Plan Mission

The plan's mission states the purpose and defines the primary functions of the Northeast Oregon Natural Hazard Mitigation Plan. It is intended to be adaptable to any future changes made to the plan and need not change unless the community's environment or priorities change.

The 2013 plan update steering committee reviewed, and the City of Halfway Working Group accepted, the 2008 mission statement and agreed that the following statement best describes the over purpose and intent of this plan:

Mission: *To create a disaster-resilient Northeast Oregon*

Mitigation Plan Goals

Mitigation plan goals are more specific statements of direction that Northeast Oregon citizens, and public and private partners can take while working to reduce the county's risk from natural hazards. These statements of direction form a bridge between the broad mission statement and particular action items. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Goal 1: *Protect human welfare, property, and natural resources*

Goal 2*: Increase the resilience of local and regional economies*

Goal 3: *Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness*

Goal 4: *Strengthen organizational and community capacity*

Action Item Worksheets

Each action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below. These action item worksheets are located in Appendix A, *Action Items.*

Proposed Action Title

Each action item includes a brief description of the proposed action.

Alignment with Plan Goals

The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

Alignment with Existing Plans/ Policies

Identify any existing community plans and policies where the action item can be incorporated. Incorporating the mitigation action into existing plans and policies, such as comprehensive plans, will increase the likelihood that it will be implemented.

Rationale or Key Issues Addressed

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from a number of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in Section 2 and the Hazard Annexes.

Implementation through Existing Programs

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance process. Ideas for implementation could include: (1) collaboration with relevant organizations, (2) alignment with the community priority areas, and (3) applications to new grant programs. When an action is implemented, more work will probably be needed to determine the exact course of action.

The Northeast Oregon Natural Hazard Mitigation Plan includes a range of action items that, when implemented, will reduce loss from hazard events in the region. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. The northeast Oregon counties and their participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvements plans, strategic plans and mandated standards and building codes. To the extent possible, the jurisdictions will work to incorporate the recommended mitigation action items into existing programs and procedures.

Many of the Northeast Oregon Natural Hazard Mitigation Plan's recommendations are consistent with the goals and objectives of the existing plans and policies. Where possible, the northeast Oregon counties and the participating cities will implement the multi-jurisdictional Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[23] Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

Coordinating Organization

The coordinating organization is the public agency or non-profit organization with the regulatory responsibility to address natural hazards, or that is willing and able to organize

[23]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

Internal and External Partners

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project Steering Committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the county or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

Potential Funding Sources

Where possible, identify potential funding sources for the action item. Example funding sources can include: the federal Pre-Disaster Mitigation and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

Estimated Cost

Where possible, an estimate of the cost for implementing the action item is included.

Timeline

Action items include both short and long-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term action items* (ST) are activities that may be implemented with existing resources and authorities in one to two years. *Long-term action items* (LT) may require new or additional resources and/or authorities, and may take from three to five years to implement. *Ongoing action items* are activities that are currently being performed and will continue into the foreseeable future.

Status

As action items are implemented or new ones are created during the plan maintenance process, it is important to indicate the status of the action item—whether it is new, ongoing, deferred, or complete. Documenting the status of the action will make reviewing and updating mitigation plan easier during the plan's five-year update, and can be used as a benchmark for progress. *Deferred* action items have yet to see any significant work begin on the particular action.

Priority

The County Steering Committees and City working groups can designate action items with a 'High' priority which indicates a higher level of importance than the other action items.

City of Halfway Action Items

The table below shows the action items that affect the city. Action items FL #2 and FL #6 are "high" priority actions for the city. To review the action item forms see Appendix A. Items in **bold** are specific to the city and can be found at the end of this addendum.

Table HA-21 Action Item timelines, status, priority and related hazards

				Jurisdiction			Related Hazards						
Action Item	Timeline	Status	Priority	Baker County	Halfway	Baker City	Drought	Earthquake*	Flood	Landslide	Severe Weather**	Volcanic Event	Wildfire
MH #1	Short Term	Deferred		X	X	X	X	X	X	X	X	X	X
MH #2	Short Term	New		X	X	X	X	X	X	X	X	X	X
MH #3	Short Term	Deferred		X	X	X	X	X	X	X	X	X	X
MH #15	**Long Term**	**In Process**			**X**		**X**		**X**				
DR #2	Ongoing	Ongoing		X	X	X	X						
DR #4	Short Term	Deferred	High	X	X	X	X						
EQ #1	Long Term	NEW		X	X	X		X					
FL #1	Ongoing	Ongoing		X	X	X			X				
FL #2	Short Term	Deferred		X	X	X			X				
FL #3	Short Term	Deferred		X	X	X			X				
FL #4	Short Term	New		X	X	X			X				
FL #6	**Short Term**	**NEW**	**High**	**X**	**X**				**X**				
WF #1	Ongoing	Ongoing		X	X	X							X

Source: Baker County NHMP Steering Committee, Baker City NHMP Steering Committee, Halfway NHMP Steering Committee. *Earthquake includes crustal and Cascadia Subduction Zone events. **Severe Weather includes dust storm, extreme temperatures, windstorm and winter storm events.

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?
MH #15–Complete and implement the Pine Creek Floodplain Management Plan	Goal 1	

Affected Jurisdictions:			
☐ Baker County	☐ Grant County	☐ Union County	☐ Wallowa County
☐ Baker City	☐ John Day	☐ La Grande	☐ Enterprise
☒ Halfway			

Alignment with Existing Plans/Policies:

Pine Creek Floodplain Management Plan

Rationale for Proposed Action Item:

- The Disaster Mitigation Act of 2000 requires that mitigation plans provide a comprehensive range of actions and projects to mitigate against natural hazards [201.6(c)(3)(ii)], such as actions that protect natural resources. Encouraging the implementation of existing action items with the Pine Creek Floodplain Management Plan will help to ensure that flood mitigation remains a cooperative priority in Northeast Oregon
- The Pine Creek Floodplain Management Plan has been completed, the actions still need to be implemented.

Ideas for Implementation:

- Include persons who created and/or maintain the Pine Creek Floodplain Management Plan at semi-annual meetings.
- Incorporate the plan's actions into the project prioritization process.

Coordinating Organization:	The City of Halfway

Internal Partners:	External Partners:	
Powder Basin Watershed Council		
Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Long Term

Form Submitted by:	2008 Halfway NHMP Steering Committees; revised and confirmed in 2013
Action Item Status:	In Process

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?
FL #6– Seek Silver Jackets assistance to investigate opportunities to prevent large infiltration of flood waters into the Halfway wastewater treatment facility	Goal 1	☒ Halfway

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☒ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The City of Halfway operates a wastewater treatment facility where wastewater is treated and discharged to Pine Creek.
- In June 2010 a large infiltration of flood water climbed above the banks of Pine Creek and it's tributaries and caused damage to the City of Halfway area, specifically threatening the city's wastewater treatment facility. A similar future event is possible and could be devastating to the facility.
- The Silver Jackets is a state-led interagency team of multiple state and federal agencies that can leverage support to bring cohesive solutions to flood issues.

Ideas for Implementation:

- Coordinate with ODOT and the Silver Jackets to explore options, secure funding, and complete a potential project.

Coordinating Organization:	City of Halfway

Internal Partners:	External Partners:
Baker County Road Department, Adjacent land owners	ACOE (Portland – regulatory) (Walla Walla -- Structural), Silver Jackets, ODOT

Potential Funding Sources:	Estimated cost:	Timeline:
		Short Term

Form Submitted by:	
Action Item Status:	New Action Item

Volume III: John Day Addendum

Purpose

This document serves as an update for John Day's Addendum to the Northeast Oregon Natural Hazards Mitigation Plan (NHMP). John Day's original addendum to Northeast Oregon's NHMP was completed in 2008. The city conducted an update to its original addendum in 2013, which coincided with the mitigation strategy stage of the Northeast Oregon NHMP update. The city's addendum is considered part of the region's multi-jurisdictional plan, and meets the following requirements: (1) Multi-jurisdictional Plan Adoption §201.6(c) (5), (2) Multi-jurisdictional Participation §201.6(a) (3), (3) Multi-Jurisdictional Risk Assessment §201.6(c) (2) (iii), and (4) Multi-jurisdictional Mitigation Strategy §201.6(c) (3) (IV).

A description of the city specific planning and adoption process follows, along with detailed community specific action items. Information about the city's risk relative to the county's risk to natural hazards is documented in the addendum's Hazard Analysis and Issue Identification section. The section considers how the city's risk differs from or matches that of the county's; additional information on Risk Assessment is provided within the Northeast Oregon NHMP's Section 2 – Risk Assessment and within the Hazard Annexes within Volume II of this NHMP.

Updates to John Day's addendum are further discussed throughout the plan and in the Northeast Oregon NHMP Planning and Public Process Appendix (Appendix B), which provides an overview of alterations to the document that took place during the addendum update process.

How was the Plan Developed?

In fall 2005, the Oregon Natural Hazards Workgroup (ONHW, now the Oregon Partnership for Disaster Resilience) at the University of Oregon's Community Service Center partnered with the Department of Geology and Mineral Industries (DOGAMI) and the Northeast Oregon Region (Baker, Grant, Union, and Wallowa) counties to develop a Pre-Disaster Mitigation Planning Grant proposal. Each county joined the Partnership for Disaster Resistance and Resilience (The Partnership) by signing (through their County Commissions) a Memorandum of Understanding for this project. FEMA awarded the Northeast Oregon Region grant to support the development of the natural hazard mitigation plans for the four counties in the region. ONHW, DOGAMI and the communities were awarded the grant in the fall of 2005 and local planning efforts in this region began in the fall of 2006 with county and city meetings proceeding in 2007.

The Northeast Oregon Multi-jurisdictional NHMP was formally adopted by Grant County on April 23, 2008and approved by FEMA on May 23, 2008. To maintain its compliance with the Disaster Mitigation Act of 2000 (DMA2K), the plan required an update by May 23, 2013. John Day created an addendum to the Northeast Oregon NHMP and also needs to be updated in order to maintain compliance with DMA2K.

In fall 2012, Grant County initiated the update process in order to take advantage of grant funding and technical support currently available through the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Community Service Center (CSC). Updating the mitigation plan is a requirement for maintaining eligibility for the Federal Emergency Management Agency's Pre-Disaster Mitigation and Hazard Mitigation Grant Programs. By updating the plan and having it re-approved by FEMA, northeast Oregon will maintain its eligibility for FEMA Hazard Mitigation, Pre-Disaster Mitigation and Flood Mitigation Assistance grant program funds. This project is funded through the Federal Emergency Management Agency's (FEMA) FY12 Pre-Disaster Mitigation Competitive Grant Program (PDMC – PL-10-OR-2012-002).

The Northeast Oregon Regional Multi-jurisdictional Natural Hazards Mitigation Plan was updated and reapproved by FEMA Region X on **June 5, 2014**. The plan is effective through **June 4, 2019**. The City of John Day adopted their addendum to the plan on **April 22, 2014**.

The Northeast Oregon Natural Hazard Mitigation Plan is the result of a collaborative effort among citizens, public agencies, non-profit organizations, the private sector and regional organizations. Several project steering committees guided the process of developing the plan. For more information on the composition of the steering committees see the Acknowledgements and Executive Summary section.

The Action Item MH #8 proposes a position for a regional natural hazards mitigation coordinator to be created and have shared responsibilities among the four counties. This plan could be implemented and maintained through this regional coordinator, pending approval by each county. Without the regional coordinator the plan will be implemented, maintained and updated by the designated local convener.

The Grant County Judge was designated as the plan's convener (for portions relevant to Grant County) and will take the lead in implementing, maintaining and updating the plan. Public participation played a key role in the development of goals and action items. Public participation was achieved with the establishment of the Northeast Oregon Natural Hazards Mitigation Steering Committees, which was comprised of community members representing different organizations and sectors in northeast Oregon. The steering committees were closely involved throughout the development of the plan and served as the local oversight body for the plan's development. In addition, community members outside of the steering committee were involved in the planning and review process (see Northeast Oregon NHMP Appendix B, Planning Process for more information).

How Were the Action Items Developed?

The City's action items were developed through a two-stage process. In stage one, OPDR facilitated a work session with the working group to discuss the city's risk and to identify potential issues. In the second stage, OPDR developed potential actions based on the hazards and the issues identified by the working group. During the 2013 update process OPDR re-evaluated the Action Items with the local steering committee and updated actions, noting what accomplishments had been made and if the actions were still relevant; any new action items were identified at this time. OPDR also cross-walked the city's issues with region's action items to identify opportunities for partnership where issues were shared between jurisdictions. The City's actions are listed below. For more detailed information on each action, see the action item forms within Appendix A.

Table JD-1 John Day Action Items

Multi-Hazard Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
MH #1		Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties.	Interested City Managers and/or City Council; County Commissioners, Emergency Management	Relevant Public Works and Emergency Services / Emergency Management, Law Enforcement, Fire Department, Department of Homeland Security, County Roads Departments, ODOT, relevant private industries, OEM	Ongoing	Deferred				X
MH #2		Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	County/ City Planning Department	Department of Land Conservation and Development, Oregon Office of Emergency Management, Federal Emergency Management Agency	Short Term	New Action Item				X
MH #3		Inform public officials about mitigation awareness and the Natural Hazards Mitigation Plan	County Steering Committee Convener	Counties and participating cities in Region 7	Short Term	Deferred			X	
MH #4		Develop and implement education and outreach programs to increase public awareness of the risk associated with natural hazards. Specifically target vulnerable populations	Emergency Services / Emergency Management; Baker City; City of La Grande, Relevant Public Health Department	Eastern Oregon Head Start, Chambers of Commerce, American Red Cross, Oregon Education Association, Families First, Grant and Harney County Casa, Oregon Rural Action, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA, Greater Prairie City Community Association, People Mover, Community Connections of Northeast Oregon	Ongoing	Ongoing	X		X	
MH #9		Develop a warning and emergency evacuation protocol for vulnerable populations	Emergency Services / Emergency Management	Community Connections of Northeast Oregon, American Red Cross, People Mover, Assisted living facilities, Elks lodge, public libraries, National Organization on Disability	Short Term	Deferred				X
MH #10		Ensure that critical airport services are available in the event of an emergency. Critical elements include: adequate fuel systems, appropriate lighting, functioning weather services, ground-access to the airport, and safe runways/taxiway infrastructure	Grant County Regional Airport	Grant County, USFS, City of John Day, Oregon Trail Electric, Blue Mountain Hospital, St. Charles Hospital, Oregon Dept. of Aeronautics, FAA	Short Term	Ongoing	X			
Drought Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
DR #2		Identify incentive programs to Increase water efficiency among municipal water users	Participating Cities	Relevant utility companies, city public works departments, County, wastewater treatment facilities, Wallowa Lake County Service District, US Environmental Protection Agency's WAVE program	Ongoing	Ongoing	X			X
DR #3		Develop community drought emergency plans and policies	County Emergency Services / Emergency Management; Interested Cities	Water Resources Departments, County and City Governments, County and City Planning Departments, Public Works Departments, Enterprise, City of La Grande, Baker City, John Day, Halfway, Natural Resources Conservation Service, Wallowa Lake Service District, Baker County Cattleman's Association, Relevant Irrigation Districts, OSU Extension Office, US Department of Agriculture	Long Term	Deferred				X

Source: Grant NHMP Steering Committee and John Day NHMP Working Group, 2007 (updated 2013)

Table JD-1 John Day Action Items (continued)

Earthquake Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
EQ #1		Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Emergency Management	Eastern Oregon University, County Public Works Departments, Region 7 Counties, Interested Cities, Business Oregon, Relevant utility companies, DOGAMI	Long Term	New Action Item	X	X		
EQ #9		Seismically retrofit the John Day Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	The City of John Day, Emergency Management	County Public Works Departments, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
Flood Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
FL #1		Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	Relevant City and County Public Works Departments / Emergency Services and Emergency Management	County Roads Departments, Public Works Departments, County Planning Departments; City of John Day, City of La Grande, Baker City, City of Halfway, Silver Jackets, Relevant water treatment facilities, Federal Emergency Management Agency, Homeowner, Army Corps of Engineers, Oregon Department of Fish and Wildlife, Department of State Lands, ODOT	Ongoing	Ongoing	X			
FL #2		Explore the costs and benefits for participation in the NFIP's Community Rating System	Interested Cities and Counties	County and city planning departments, county emergency services / emergency management, county public works, Silver Jackets, FEMA, DLCD	Short Term	Deferred	X	X		
FL #3	High	Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	Local flood plain managers, County Emergency Managers	City Planning Departments, Emergency Services / Emergency Management, NFIP Floodplain Coordinator (DLCD), insurers, realtors, FEMA, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA , Greater Prairie City Community Association, People Mover, Community Connections of NEOR (Any community organizations capable of distributing information), Blue Mountain Eagle, ACOE	Short Term	Deferred			X	X
FL #4	High	Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	Relevant City and County Public Works Departments, Emergency Management, City Managers, County Planning Departments	County Roads Departments, Public Works Departments, City of John Day, City of La Grande, Baker City, City of Halfway, Army Corps of Engineers, DOGAMI, DAS-GEO, elected officials	Short Term	New Action Item	X			
Wildfire Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
WF #1		Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.	County Steering Committee Convener, Emergency Management	County Emergency Services / Emergency Management, County Planning Departments, City of Baker City, City of Halfway, Local Public Safety Coordinating Council (LPSCC), Oregon Department of Forestry, Bureau of Land Management, local fire departments, OSU Extension Services, US Forest Service, Soil and Water Conservation Districts, Oregon Department of Fish and Wildlife; Homeowners in Wildland/Urban Interface zones; Hells Canyon Preservation Council	Ongoing	Ongoing	X			X

Source: Grant NHMP Steering Committee and John Day NHMP Working Group, 2007 (updated 2013)

John Day Addendum Update

Representatives from the City of John Day served on the Northeast Oregon NHMP Update Steering Committee, and convened a working group meeting to update the John Day addendum on September 12th, 2013 (see Appendix B for more information). During this meeting, the working group reviewed and revised the addendum, with particular focus on the plan's action items and mitigation strategy.

The current version of the addendum reflects changes decided upon at the plan update meeting and during subsequent work and communication with OPDR. The changes are highlighted with more detail throughout this document and within Appendix B, Planning and Public Process Appendix of the Northeast Oregon NHMP. Other documented changes include a revision of the city's Risk Assessment and Hazard Identification sections, Plan Goals (see Section 3, Mitigation Strategy), and Community Profile (see Appendix C, Community Profile).

How Will the Plan be Implemented?

The City Council will be responsible for adopting the John Day Natural Hazard Mitigation Plan Addendum. This addendum designates a coordinating body and a convener to oversee the development and implementation of action items. Because the city addendum is considered part of the regional plan, the city will look for opportunities to partner with the region (in particular Grant County). The City's working group will convene semi-annually during the department head meetings to discuss implementation and plan maintenance. The City Manager of John Day will serve as the local convener and will be responsible for convening the working group. The local convener will also remain active in the County's planning process. Additionally, there are two action items identified in the NHMP, multi-hazard actions #7 and #8, which would create a regional natural hazards coordinator and coordinating body. If these actions are pursued and accomplished, the city may choose to coordinate action items with the assistance of the regional coordinator and may also participate as a member in the regional steering committee.

Implementation through Existing Programs

Many of the Natural Hazards Mitigation Plan's recommendations are consistent with the goals and objectives of the city's existing plans and policies. Where possible, the City of John Day will implement the Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, allowing them to adapt to changing conditions and needs. Implementing the Natural Hazard Mitigation Plan's action items through such plans and policies increases their likelihood of being supported and implemented.

John Day currently has the following plans that relate to natural hazard mitigation:

- The John Day Comprehensive Plan (2013) discusses hazard related information for landslide, flood, and wildfire in its Goal 7 "Natural Hazards Element." There are nine listed natural hazard policies that relate to natural hazard mitigation[1]
- Chapter 5-2.9 of the City of John Day development code manages the development of the flood plain and includes a flood plain (FP) zoning overlay
- The Transportation System Plan (1996) and Street Network Plan (2009) include segments dedicated to the location of the future transportation network that could be affected by natural disasters

The working group and the community's leadership have the option to add or implement action items at any time. This allows the working group to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. When new actions are identified, they should be documented using the action item form. Once a proposed action form has been submitted to the convener, the action will become part of the city's addendum.

Continued Public Participation

Keeping the public informed of the city's efforts to reduce the city's risk to future natural hazards events is important for successful plan implementation and maintenance. The city is committed to involving the public in the plan review and updated process. The City Addendum along with the Regional Plan will be posted on-line on the University of Oregon's Scholars Bank accessible via the OPDR website (http://csc.uoregon.edu/opdr/plans/grant) so that the public may view the plan and submit electronic comments to the community at any time.

In addition, natural hazards information dissemination is conducted throughout the year when opportunities present themselves via the city offices and website.

Plan Maintenance

The Northeast Oregon Natural Hazard Mitigation Plan will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. During the regions' plan update process, the city will also review and update its addendum. The convener will be responsible for convening the working group to address the questions outlined below.

- Are there new partners that should be brought to the table?
- Are there new local, regional, state, or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Have new issues or problems related to hazards been identified in the community?
- Are the actions still appropriate given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?

[1]John Day Comprehensive Plan 2013. These nine policies primarily deal with multiple hazards per policy.

- Have there been any significant changes in the community's demographics that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?
- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

These questions will help the working group determine what components of the mitigation plan need updating. The working group will be responsible for updating any deficiencies found in the plan.

The City of John Day Natural Hazard Mitigation Addendum includes three sections:

1) A Community Profile: this section primarily refers to the Northeast Oregon NHMP Appendix C – Community Profile,

2) A revised summary of the city's Hazard Identification and Risk Assessment, and

3) A Mitigation Strategy section.

John Day Community Profile Asset Identification

This section provides information on city and county specific asset identification. For more information on the characteristics of John Day and Grant County, in terms of geography, environment, population, demographics, employment and economics, as well as housing and transportation see Appendix C, Community Profile. Many of these community characteristics can affect how natural hazards impact communities and how communities choose to plan for natural hazard mitigation. Considering the city specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Table JD-2 City of John Day Asset Identification

Sector and Assets
Population
Elderly Population - less mobile during wildfire
Assisted living home: Valley View (10 beds)
Step Forward Homes
Riverside Mobile Homes (between river and creek)
Critical Roads
Highway 26
Highway 395
Bridges
The Bridge Street bridge has erosion concerns
Bridges outside of town have washed out in the past
Critical Facilities
Blue Mountain Hospital (22 beds)
John Day Fire Station
John Day Police Department
Water System -- treatment plant in floodplain
Recent Development: Oregon State Police Department, ODF building

Source: City of John Day NHMP Steering Committee, 2013.

Introduction to Grant County

Grant County lies in northeast Oregon bordered by eight different counties. Grant County spans 4,528 square miles making it over 1,000 square miles larger than any other county in the northeast region. Grant County has a current population of approximately 7,445 with just over 1.6 people per square mile.

Grant County Natural Environment Capacity

Table JD-3 shows the natural resources that were identified by the Grant County Steering Committee in 2007 and 2013. This table gives some indication of the intersection between the economy and the natural environment.

Table JD-3 Natural Resource Asset Identification:

Natural Resources
Environmental resources include the North Fork John Day Wilderness Area, Strawberry Mountain Wilderness Area, John Day Fossil Beds, the Malheur National Forest, Black Canyon Wilderness Area, and Silvies River.
Forest fires may negatively affect the economic benefits that Grant County sees from tourism, camping, and hunting.
Lightning storms and heavy winds increase the number of forest fires, building collapses, and power outages.
The John Day River is culturally and historically significant, it's the longest free flowing river in the United States

Source: Grant County NHMP Steering Committee, 2007, 2013

Climate

Grant County lies within Oregon Climate Services designated Climate Division 8 – Northeast Oregon. This Division is characterized by a semi-arid, low precipitation climate with warm summers and cool winters. Table JD-4 shows the mean monthly annual average temperature for Grant County. Temperatures can reach as low as -23° F and as high 107° F. There is over a 36 degree temperature swing between the mean temperature in January (31.2) and July (67.6).

Figure JD-1 shows the precipitation of Grant County. The locations on the valley floor receive less than 20 inches of precipitation per year, particularly those surrounded by high mountains which may receive less than 10 inches. The higher elevation locations receive higher annual precipitation totals, generally in the form of snowfall. The precipitation for the region is evenly distributed throughout the seasons.[2]

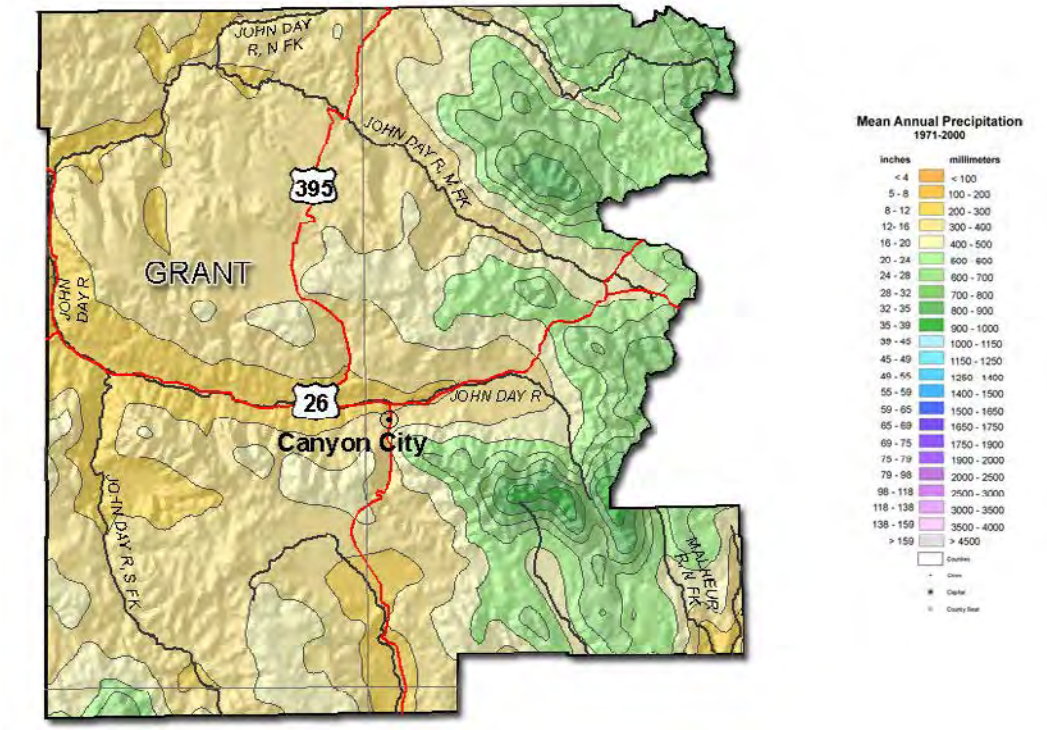
[2] The Oregon Climate Service "Climate of Grant County."

Table JD-4 Mean Monthly and Annual Average Temperatures (deg F), 1971-2000

Month	Mean Maximum	Mean Minimum	Mean Temperature	Extreme Maximum	Extreme Minimum
January	41.0	21.3	31.2	66.0	-16.0
February	47.1	24.5	35.8	73.0	-20.0
March	53.4	28.4	40.9	80.0	9.0
April	59.9	32.3	46.1	91.0	15.0
May	68.0	38.7	53.4	98.0	22.0
June	77.0	44.4	60.7	103.0	30.0
July	86.7	48.4	67.6	107.0	35.0
August	86.9	47.5	67.2	106.0	30.0
September	77.4	40.1	58.8	105.0	23.0
October	65.4	33.0	49.2	95.0	5.0
November	48.9	27.9	38.4	79.0	-9.0
December	41.8	22.1	32.0	66.0	-23.0
Annual	*62.8*	*34.1*	*48.4*	*107.0*	*-23.0*

Sources: The Oregon Climate Service, NOAA Climate Station: John Day. "Climate of Grant County." http://www.ocs.oregonstate.edu/county_climate/Grant_files/Grant.html

Figure JD-1 Mean Annual Precipitation



Source: The Oregon Climate Service. "Mean Annual Precipitation."http://www.ocs.oregonstate.edu/county_climate/fig2/baker.jpg

Land Ownership

Grant County spans approximately 4,528 square miles.[3] A large percentage of this land is owned by government agencies, approximately 62%,[4] which is the highest percentage of government ownership in the region.[5] Nearly 90 percent of the County is dedicated to forest or farm land.[6]. Grant County is therefore dependent on natural resources economically, regarded as a "total dependence" in Grant County's Comprehensive Land Use Plan.[7]

The following assets were identified by the NHMP Steering Committee in 2007:

Table JD-5 Land Use Asset Identification

Land Use and Development
The Grant County wildland-urban interface areas include Austin, Bates, Canyon City, Dayville, Granite, John Day, Long Creek, Monument, Mount Vernon, Prairie City, and Seneca.
Future growth will likely occur in the cities' growth boundaries; none of these areas are particularly subject to natural hazards.
Major new developments: Silvies Valley Ranch development is the most significant, can result in denser development than normally allowed (5,000 acres in northern Silvies Valley – 575 cabins), began two years ago. Pine Creek Road is an exception area (not in a fire district), small lots are being developed.

Source: Grant County NHMP Steering Committee, 2007, 2013

Grant County Socio Demographic Capacity

Population

Grant County is the second least populated county in the region. Table JD-6 details some of the population assets from the NHMP Steering Committees in 2007 and 2013 including information on vulnerable population types, organizations that serve them, and large festivals/events.

[3] Oregon Blue Book "Grant County" http://bluebook.state.or.us/local/counties/counties12.htm Accessed May 2013

[4] Total land management in acres: Private lands 1,111,279; BLM: 171,481; NPS: 6,688; USFS: 1,578,714; Grant County: 800; Baker County: 5; Hood River County: 14,064; ODFW: 29,076. Grant County CWPP 2013 "Grant County Profile;"

[5] Baker County contains 52% public and 48 percent private lands. Union County contains 47% public and 53% private lands. Wallowa County contains 56% public and 44% private lands.

[6] Grant County Comprehensive Land Use Plan 1996

[7] Ibid; Goal IX: Economic Element, the Comprehensive Plan calls for diversifying economically. For more information about the role of natural resources on Grant County's economy visit the Grant County Economic Vulnerability Section of the Community Profile

Table JD-6 Population Asset Identification

Population Assets
Northeast Oregon attracts tourists and hunters in both the summer and fall. A temporary increase in population places heightened demands on emergency response systems; additionally, uninformed hikers and campers may increase the community's risk to wildfire.
Community organizations that serve vulnerable populations are concerned with the lack of emergency transportation and services available to persons with special needs.
All buildings and homes within Grant County, and particularly those on the valley floor, are subject to severe weather, including ice and snow storms, lightning storms, and hail, heavy rain, and fast winds.
Large community events include: the BMW Rally, Motogucci, Solwest, Cycle Oregon, Prairie City has a very popular Fourth of July parade (significant increase in population) and hunting season (August - November).
Law enforcement includes: The 9-1-1 Center in John Day is also the John Day Police Department, city hall is attached to this building; the Bureau of Land Management has law enforcement officers in Painted Hills; Grant County Sheriff officer stationed in Prairie City Hall.

Source: Grant County NHMP Steering Committee, 2007, 2013

Table JD-7 shows the population change between 2000-2010 for Grant County and its incorporated cities. Grant County saw the most impressive change in population among the four counties. From 2000-2010 its population shrank by the highest percentage (-6.2%); the largest decrease of which came from incorporated communities (-6.8%).

Table JD-7 Grant County Incorporated Cities Population Change 2000-2010

	2000		2010		Population Change 2000-2010		
Jurisdiction	Population	Percent	Population	Percent	Population	Percent	AAGR
Canyon City	669	8.4%	703	9.4%	34	1.0%	0.5%
Dayville	138	1.7%	149	2.0%	11	0.3%	0.8%
Granite	24	0.3%	38	0.5%	14	0.2%	4.7%
John Day	1,821	22.9%	1,744	23.4%	-77	0.5%	-0.4%
Long Creek	228	2.9%	197	2.6%	-31	-0.2%	-1.5%
Monument	151	1.9%	128	1.7%	-23	-0.2%	-1.6%
Mount Vernon	595	7.5%	527	7.1%	-68	-0.4%	-1.2%
Prairie City	1,080	13.6%	909	12.2%	-171	-1.4%	-1.7%
Seneca	223	2.8%	199	2.7%	-24	-0.1%	-1.1%
Sub-Total	*4,929*	*62.1%*	*4,594*	61.7%	*-335*	*-6.8%*	*-0.7%*
Not incorporated	3,006	37.9%	2,851	38.3%	-155	-5.2%	-0.5%
Total	7,935	100.0%	7,445	100.0%	-490	-6.2%	-0.6%

Source: U.S. Census Bureau, Census 2000 Summary File 1, "DP-1 Profile of General Demographic Characteristics" http://http://factfinder2.census.gov, accessed April 2013. U.S. Census Bureau, Census 2010 Summary File 1, "DP-1 Profile of General Population and Housing Characteristics" http://http://factfinder2.census.gov, accessed April 2013. Note: AAGR = Average Annual Growth Rate

Age

Table JD-8 shows Grant County's population by age groups and age dependency ratio. Grant County has the largest percentage of population 65 and older (23.6%) and also the largest age dependency ratio (64.1%) in the region. Grant County's age dependency ratio is nearly 16 percentage points higher than the State of Oregon's. Among cities, over half were below county averages for population 65 and older and age dependency ratio -- the unincorporated communities have a larger share of elderly population.[8]

[8] 25.6% of the unincorporated communities have populations > 64, compared to 22.4% in the incorporated communities.

Table JD-8 Grant County Population by Age Groups and Age Dependency Ratio (2010 and 2040)

2010		< 15 Years		15 to 64	> 64 Years		
Jurisdiction	Total	Number	Percent	Number	Number	Percent	Age Dependency Ratio
Oregon	3,831,074	717,323	18.7%	2,580,218	533,533	13.9%	48.5%
Grant County	7,445	1,148	15.4%	4,537	1,760	23.6%	64.1%
Canyon City	703	109	15.5%	445	149	21.2%	58.0%
Dayville	149	15	10.1%	100	34	22.8%	49.0%
Granite	38	1	2.6%	20	17	44.7%	90.0%
John Day	1,744	317	18.2%	1,043	384	22.0%	67.2%
Long Creek	197	28	14.2%	133	36	18.3%	48.1%
Monument	128	25	19.5%	82	21	16.4%	56.1%
Mount Vernoı	527	84	15.9%	326	117	22.2%	61.7%
Prairie City	909	153	16.8%	523	223	24.5%	71.9%
Seneca	199	27	13.6%	122	50	25.1%	63.1%
2040							
Oregon	5,425,408	958,949	17.7%	3,368,940	1,097,519	20.2%	61.0%
Grant County	7,678	1,061	13.8%	4,620	1,996	26.0%	66.2%

Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2013;

Figure JD-2 shows Grant County's population by age group. Grant County's largest five-year age brackets in 2010 were 55 to 59 year olds and 60 to 64 year olds, each of which comprised 18.1[9]percent of the county's total population. In contrast, the statewide shares for those age increments were 13.3%.[10] All age groups from 50 to 54 years and older had greater representation in Grant County's population than in Oregon's population.

Eastern Oregon Regional Economist Jason Y. Yohannan wrote on Grant County's share of elderly population:

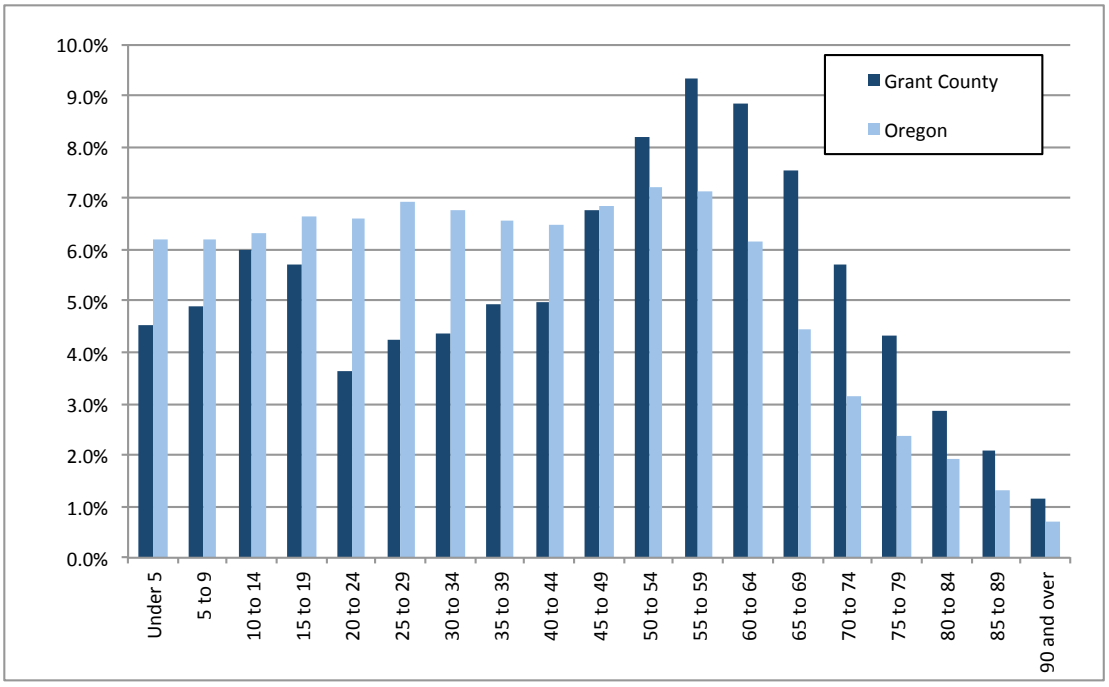
> *"Oregon and Eastern Oregon have been aging for a long time, but Grant is the only county in this Eastern Oregon region where the median age climbed in 2010, 2000, 1990, 1980, 1970,and 1960. Furthermore, the median age surge of 8.3 years from 2000 to 2010 was the heftiest shift - up or down - of any regional county in any decade over the past 60 years."*[11]

[9] 9.3% and 8.8% respectively

[10] 7.1% and 6.2% respectively

[11] Oregon Employment Department "2010 Census Tell us How Old We Are, read more at: http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007708

Figure JD-2 Population by Age Group – Grant County and Oregon



Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2012;

Income

Table JD-9 shows Grant County's median income difference between 2000 and 2011. There are variables for nominal (inflation adjusted) and real dollars (not adjusted for inflation) for the year 2000. Grant County experienced a loss of median income through most of its incorporated communities, perhaps most dramatically in Granite (-78.6%).

Table JD-9 Grant County -- Median Household Income

Jurisdiction	2000 (Nominal $)	2000 (Real $)*	2011	Percent Change
Oregon	$40,916	$53,447	$49,850	-6.7%
Grant County	$32,560	$42,532	$34,367	-19.2%
Canyon City	$29,940	$39,110	$46,667	19.3%
Dayville	$30,893	$40,354	$30,156	-25.3%
Granite	$15,625	$20,410	$4,375	-78.6%
John Day	$31,953	$41,739	$32,546	-22.0%
Long Creek	$31,250	$40,821	$19,375	-52.5%
Monument	$24,000	$31,350	$33,625	7.3%
Mount Verno	$31,635	$41,324	$34,250	-17.1%
Prairie City	$31,354	$40,957	$31,050	-24.2%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics"; U.S. Census Bureau, Table DP3 "Profile of Selected Economic Characteristics: 2000,"http://censtats.census.gov/cgi-bin/pct/pctProfile.pl, Accessed March 2013. *Note: 2000 figures are adjusted for inflation based on the CPI Calculator provided by the Bureau of Labor Statistics, http://www.bls.gov/data/inflation_calculator.htm Accessed May 2013.

Table JD-10 shows the poverty levels among all persons, those under 18, families, and families with children under 18. Grant County had the lowest poverty level among the four counties; however, John Day (20.8%), Canyon City (21.6%), and Granite (66.7%) had exceptionally high poverty levels.

Table JD-10 Grant County -- Individuals and Families below Poverty Level

Jurisdiction	All People	People < 18	Families	Families with Children < 18
Oregon	14.8%	19.6%	10.2%	16.7%
Grant County	15.8%	20.6%	11.2%	15.3%
Canyon City	21.6%	39.2%	10.5%	17.8%
Dayville	9.4%	12.1%	2.0%	5.0%
Granite	66.7%	na	0.0%	na
John Day	20.8%	17.4%	14.3%	18.5%
Long Creek	19.6%	18.2%	10.8%	0.0%
Monument	11.5%	0.0%	11.8%	0.0%
Mount Verno	6.8%	0.0%	0.0%	0.0%
Prairie City	16.7%	41.6%	14.5%	33.7%
Seneca	5.1%	0.0%	5.3%	0.0%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics, "http, accessed March 2013.

Education

Table JD-11 shows the educational attainment rate in terms of high school and college graduation for Grant County. Grant County's high school graduation rate was approximately

87.4 percent, less than a percent below the state average. College graduates formed a much lower percentage of the population at about a quarter of the county.

Table JD-11 Grant County -- Educational Attainment

Jurisdiction	Total Population > 18 Years	No Highschool Degree	High School Graduate and beyond	College Graduate and beyond
Oregon	2,937,534	11.8%	88.2%	34.0%
Grant County	5,913	12.6%	87.4%	25.7%
Canyon City	475	11.6%	88.4%	34.5%
Dayville	159	13.2%	86.8%	27.0%
John Day	1,698	11.7%	88.3%	27.0%
Long Creek	194	21.1%	78.9%	16.0%
Monument	63	12.7%	87.3%	27.0%
Mount Vernon	470	18.1%	81.9%	13.0%
Prairie City	810	15.7%	84.3%	20.9%
Seneca	146	23.3%	76.7%	10.3%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B15001 "Sex by Age by Educational Attainment for the population 18 years and over, "http, accessed March 2013.

Grant County Economic Capacity

Grant County's assets are tied to its natural resources and recreation these assets may be more vulnerable to natural disasters and can suffer environmental damages. However, they are tied even more so to government agencies as they make up over 40 percent of the total employment. Table JD-12 describes some of these assets as well as some of the major employers in the county. The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table JD-12 Grant County Economic Asset Identification

Economic Assets
Thomas Orchards, Inc. The Kimberly Fruit Company is a popular, locally attractive business in Grant County.
Forestry, livestock, recreation and tourism are Grant County's principle industries.
Major employers include government agencies (US Forest Service, Oregon Department of Transportation, Schools, Grant County and Oregon State Road Departments), Grayback Forestry Inc., Ed Staub & Sons Petroleum, Malheur Lumber Company, Chester's Thriftway Grocery Store, and the Blue Mountain Hospital/Nursing Home, Winners Choice, Bow Strings, Motion Targets, Iron Triangle, Tidewater, Stepforward.
Grant County supports a variety of small, locally-owned businesses (six hotels and several restaurants) through which the majority of workers are employed. Small businesses are particularly susceptible to economic losses created by power outages and structural damages.
Recreational opportunities and annual fairs / events bring tourism and economic benefits to the County. Forest fires may negatively affect the economic benefits that Grant County sees from tourism, camping, and hunting.
Corporate travelers use the airport extensively in support of the lumber mills, Les Schwab, and others.
Economic Assets: Restoration (fish habitat and stream restoration), nature conservancy, water conservation district, forest services.

Source: Grant County NHMP Steering Committee, 2007, 2013

Industry

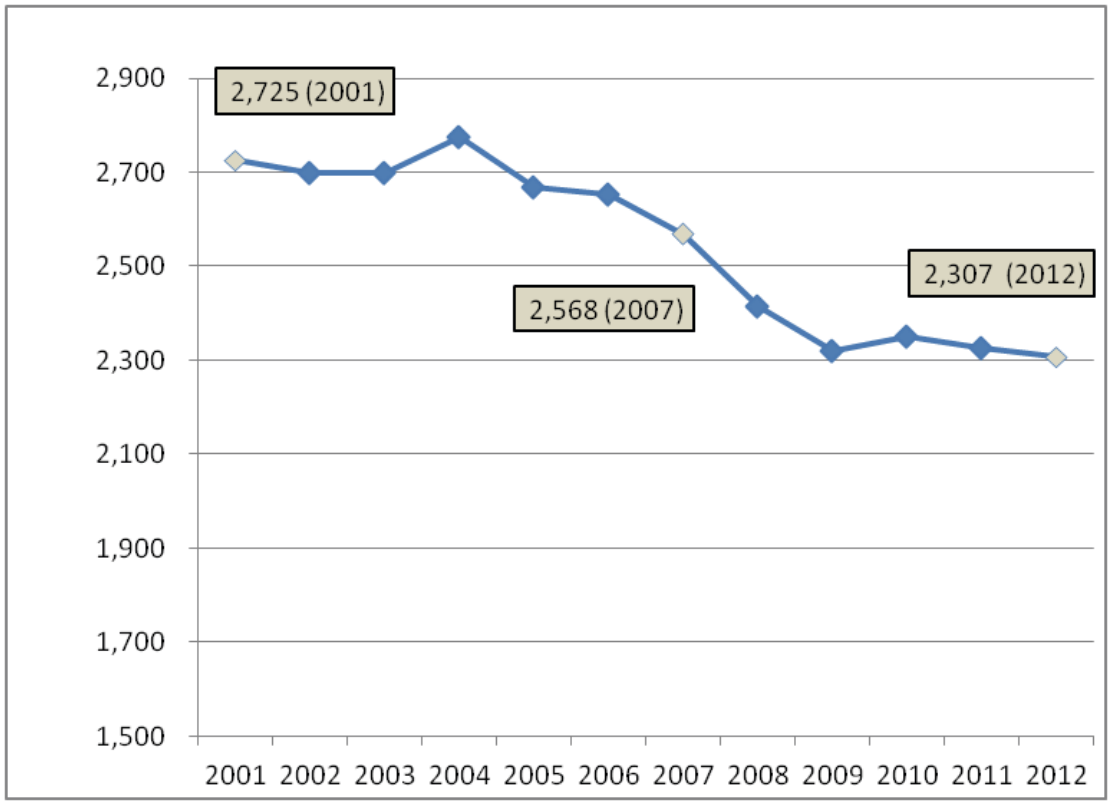
TOTAL EMPLOYMENT

Grant County's total nonfarm employment has been experiencing a downward trend since 2004. While the employment bounced back briefly in 2010, the 2012 numbers mark a 29-year low for nonfarm employment in Grant County.[12] Additionally, local unemployment rate hasn't changed since 2009, staying near 13 percent. Conversely, Oregon's unemployment rate has been trending downward since 2009.[13] Figure JD-3 below shows Grant County's total non-farm employment.

[12] Oregon Employment Department "Eastern Oregon Job Trends in 2012: Only Pockets of Recovery" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008580 Accessed June 2013

[13] Ibid

Figure JD-3: Grant County 2001-2012 Total Nonfarm Employment



Source: Oregon Employment Department, "2001-2012 Covered Employment and Wages Summary Reports". http://www.qualityinfo.org/olmisj/labforce; Accessed June 2013.

EMPLOYMENT BY INDUSTRY

Since 2007, Grant County has seen a 10% decrease in employment. Impacting primarily construction (-56.7%), manufacturing (-45.4%), and wholesale trade (-34.0%). Areas of growth include natural resources and mining (+11.1%), education and health services (+19.8%), and professional and business services (+39.8%). Table JD-13 shows the total employment by industry. A particularly notable statistic is the percentage of employment in government (42%) which is the highest in the region.

Table JD-13 2011 Total Employment by Industry

Jurisdiction	Firms	2012 Employees	2012 Percent of Workforce	2012 Average Pay	Percent Change in Employment 2007-2012
Total	*328*	*2,307*	*100%*	*$33,597*	-10.2%
Total Private	264	1,338	58.0%	$26,896	-13.8%
Natural Resources and Mining	42	200	8.7%	$32,090	11.1%
Construction	33	61	2.6%	$24,503	-56.7%
Manufacturing	7	130	5.6%	$37,213	-45.4%
Trade, Transportation & Utilities	57	311	13.5%	$29,584	-16.4%
Wholesale	9	31	1.3%	$32,205	-34.0%
Retail	37	232	10.1%	$23,244	-12.1%
Information	7	40	1.7%	$38,758	-9.1%
Finance Activities	18	68	2.9%	$33,599	-21.8%
Professional & Business Services	26	144	6.2%	$24,563	39.8%
Education & Health Services	23	151	6.5%	$21,418	19.8%
Leisure & Hospitality	27	172	7.5%	$12,359	-9.9%
Other Services	24	59	2.6%	$20,344	-15.7%
Government	64	970	42.0%	$42,805	-4.4%
Federal	15	247	10.7%	$58,239	0.8%
State	13	140	6.1%	$38,603	0.7%
Local	36	582	25.2%	$37,339	-7.6%

Source: Oregon Employment Department "2007 and 2012 Covered Employment and Wages Summary Reports." http://www.qualityinfo.org/olmisj/labforce. Accessed June 2013.

HIGH REVENUE SECTORS

Table JD-14 shows the reported revenue of top sectors in Grant County. *Retail Trade* was by far the largest revenue generator in 2007, generating over $72.5 million that year (approximately88 percent of reported revenue). *Accommodation and Food Services* was the second largest revenue generating sector with over $6.5 million (approximately eight percent of reported revenue). Lastly, *Other Services* generated over $3.4 million (approximately 4 percent of reported revenue).

Table JD-14 Revenue of Top Sectors in Grant County

Sector Meaning (NAICS code)	Revenue ($1,000)	Percent of Total Revenue	Sector Ranking
Retail Trade	$72,523	87.86%	**1**
Accomodation & Food Services	$6,583	7.98%	**2**
Other Services (except Public Administration)	$3,439	4.17%	**3**
Manufacturing	D		
Health Care & Social Assistance	D		
Wholesale Trade	D		
Professional, Scientific & Technical Services	D		
Real Estate & Rental & Leasing	D		
Administrative & Support & Waste Management &	D		
Arts, Entertainment & Recreation	D		
Educational Services	D		
Information	N		
Total	$82,545		

Source: U.S. Census Bureau, 2007 Economic Census, Table EC0700A1 "All sectors: Geographic Area Series: Economy-Wide Key Statistics: 2007," http://factfinder2.census.gov/, *D = Withheld, N = No Data* accessed March 2013.

Agricultural employment in Grant County has grown over the past couple of years. Some nonfarm jobs may also be adding as well.[14] According to news reports from the Blue Mountain Eagle, Community Counseling Solutions is building an acute mental health facility in John Day, expected to be completed in December, 2013.[15]The expansion is expected to employ 20 or more staff members. The Blue Mountain Eagle also reports that a New Jersey company, Enviro Board Corp., is purchasing a seven-acre tract at the Grant County Airport Industrial Park and plans to use the site to produce environmentally friendly building materials at a plant that could employ more than 100 workers.[16]

Grant County Community Connectivity

Civic Engagement

According to the Blue Mountain Eagle the 2012 Presidential General Election generated a turnout from 82.49% people in the County as of November 6th, 2012.[17] These results are relatively equal to voter participation reported across the State (82.8%).[18] Other indicators such as volunteerism, participation in formal community networks and community

[14] Oregon Employment Department "Grant County's Employment Slide Persisted in 2012" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008546, Accessed September 2013

[15] Blue Mountain Eagle "Acute-care building rising in John Day" http://www.bluemountaineagle.com/free/acute-care-building-rising-in-john-day/article_15c8832c-e711-11e1-b824-0019bb2963f4.html Accessed September 2013.

[16] Oregon Employment Department, "Grant County's Employment Slide Persisted in 2012" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008546, Accessed September 2013

[17] A bumper crop of ballots in Grant County, http://www.bluemountaineagle.com/free/a-bumper-crop-of-ballots-in-grant-county/article_3b574ef2-2875-11e2-81ef-001a4bcf887a.html, accessed September 2013.

[18] Oregon Blue Book, Voter Participation.

charitable contributions are examples of other civic engagement that may increase community connectivity.

Cultural Resources

Historic Places

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources for tourism revenue. Protecting these resources from the impact of disasters is important because they have an important role in defining and supporting the community. Table JD-15 identifies the number of historical sites in Grant County. Overall, there are a total of 10 historically registered places in Grant County.

Table JD-15 Grant County Historic Places

Type	Listed on the National Register
Archeological	0
Bridges	0
Cemetaries	0
Churches	2
Commercial	2
Districts	2
Houses, Hotels, Resorts and Cabins	2
Military Posts, Ranger Stations and Guard Lookouts	0
Municipal Buildings, Libraries and Schools	0
Parks, Campgrounds, Ranches, Barns, and Openspace	2
Total	**10**

Source: Oregon Historic Sites Database, http://heritagedata.prd.state.or.us/historic/index.cfm?do=v.dsp_main, accessed September 2013.

Libraries and Museums

Libraries and museums develop cultural capacity and community connectivity as they are places of knowledge and recognition, they are common spaces for the community to gather, and can serve critical functions in maintaining the sense of community during a disaster. They are recognized as safe places and reflect normalcy in times of distress. There is currently one community library in Grant County located in John Day.[19] There are four museums in Grant County: the Grant County Historical Museum, the DeWitt Museum, the Kam Wah Chung & Co. Museum, and The John Day Fossil Beds National Monument.[20]

Cultural Events

Other such institutions that can strengthen community connectivity are the presence of festivals and organizations that engage diverse cultural interests. Examples of events and institutions include BMW Rally, Motogucci, Solwest, Cycle Oregon, hunting (August –

[19] Libraries of Eastern Oregon http://librariesofeasternoregon.org/leo-libraries/ Accessed September 2013

[20] Grant County Travel Pagehttp://www.el.com/to/grantcounty/ Accessed September 2013

November). Not only do these events bring revenue into the community, they have potential to improve cultural competence and enhance the sense of place. Cultural connectivity is important to community resilience, as people may be more inclined to remain in the community because they feel part of the community and culture.

Community Stability

Residential Geographic Stability

Community stability is a measure of rootedness in place. It is hypothesized that resilience to a disaster stems in part from familiarity with place, not only for navigating the community during a crisis, but also accessing services and other supports for economic or social challenges.[21] Table JD-16 estimates residential stability across the region. It is calculated by the number of people who have lived in the same house and those who have moved within the same county a year ago, compared to the percentage of people who have migrated into the region. Grant County overall has geographic stability rating of about 94% (i.e., 94% of the population lived in the same house or moved within the county).

Table JD-16 Regional Residential Stability

Jurisdiction	Population	Geographic Stability	Same House	Same County
Grant County	15,914	93.8%	88.4%	5.4%
Canyon City	9,609	98.6%	85.7%	12.9%
Dayville	287	91.6%	90.6%	1.0%
Granite	336	100.0%	100.0%	0.0%
John Day	535	94.4%	86.1%	8.3%
Long Creek	102	94.2%	94.2%	0.0%
Monument	535	64.6%	59.4%	5.2%
Mount Vernon	102	90.5%	78.1%	12.4%
Prairie City	137	96.3%	92.0%	4.3%
Seneca	54	100.0%	92.4%	7.6%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B07003 "Geographical Mobility in the Past Year 5-Year Estimate," http://factfinder2.census.gov/, accessed September 2013.

Homeownership

Often homeownership is associated with greater resilience as it is a measure of place attachment and commitment. Homeownership is an indicator that residents will return to a community post-disaster, as these people are economically and socially invested in the community. Similar to communities with higher median household income, homeownership can reflect an increased resource vulnerability to prepare, respond and cope with a crisis situation.

Table JD-17 identifies housing tenure across the county. The table shows the home-ownership rate of occupied households is lowest in Monument, John Day, and Long Creek.

[21] Cutter, Susan, Christopher Burton, Christopher Emrich. "Disaster Resilience Indicators for Benchmarking Baseline Conditions." Journal of Homeland Security and Emergency Management.

There are approximately, 2,053 renters in Grant County. Renters are less likely to return after a disaster, since they are less economically invested in the community.

Table JD-17 Homeownership

Jurisdiction	Occupied Households	Owner Occupied	Percent Owner Occupied	Renter Occupied	Percent Renter Occupied	Population Renter Occupied
Grant County	3,352	2,404	71.7%	948	28.3%	2,053
Canyon City	322	234	72.7%	88	27.3%	178
Dayville	72	57	79.2%	15	20.8%	35
Granite	22	20	90.9%	2	9.1%	3
John Day	794	477	60.1%	317	39.9%	594
Long Creek	84	59	70.2%	25	29.8%	65
Monument	55	29	52.7%	26	47.3%	62
Mount Vernon	259	179	69.1%	80	30.9%	149
Prairie City	402	283	70.4%	119	29.6%	258
Seneca	95	81	85.3%	14	14.7%	40

Source: U.S. Census Bureau, American Community Survey 2007-2011 Table DP04 "Selected Housing Characteristics," http://factfinder2.census.gov, accessed September 2013.

Grant County Political Capacity

Government Structure

Grant County employs a County Clerk, District Attorney, Sheriff, Treasurer, and a Judge, along with the following departments:

ECONOMIC DEVELOPMENT

The Department of Economic Development provides a variety of services to existing and prospective businesses.

PLANNING

The Grant County Planning Department provides planning and zoning information to the public and other government agencies. Additional responsibilities include reviewing development proposals, administering and enforcing land use laws, regulations, and ordinances, reviewing applications for land use actions, and conducting comprehensive planning studies and research.

ROAD DEPARTMENT

The Grant County Road Department works to provide roadways that are safe, efficient, and economical to maintain.

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[22]

[22]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

The Natural Hazards Mitigation Plan includes a range of recommended action items that, when implemented, will reduce the county's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the county's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the Plan. Implementing the natural hazards mitigation plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the county's resources.

The following are existing plans and policies already in place within the community.

Table JD-18 Existing Plans

Jurisdiction	Document	Year Acknowledged	Last Revision
Grant County	Grant County Comprehensive Plan		1999
Grant County	Emergency Operations Plan		
Grant County	Transportation System Plan		1997
Grant County	Community Wildfire Protection Plan	2005	2013
Canyon City	Comprehensive Plan	1984	1999
Canyon City	Zoning Ordinance		1999
Dayville	Comprehensive Plan	1985	
Dayville	Zoning Ordinance		1981
Granite	Comprehensive Plan	1986	
John Day	**Comprehensive Plan**	**1985**	**2013**
John Day	**Development Code**		**2012**
John Day	**Transportation System Plan**		**1996**
John Day	**Street Network Plan**		**2009**
Long Creek	Comprehensive Plan	1985	1999
Long Creek	Zoning Ordinance		1999
Monument	Comprehensive Plan	1985	
Monument	Zoning Ordinance		1998
Mount Vernon	Comprehensive Plan	1985	
Mount Vernon	Zoning Ordinance		1995
Prairie City	Comprehensive Plan	1985	
Prairie City	Zoning Ordinance		1995
Seneca	Comprehensive Plan	1984	
Seneca	Zoning Ordinance		1984

Source: Oregon Blue Book

Community Organizations and Programs

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within

the population (e.g. elderly, children, low income). The County can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

For a full list of community organizations that may be potential partners for implementing mitigation actions visit the Community Profile, Appendix C: Table C-28

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.

Hazard Analysis and Issue Identification Update

On September 12th, 2013, the John Day addendum update working group reviewed and revised the plan's Hazard Analysis and Risk Assessment section. Changes were made where appropriate to reflect changes in perception of risk from natural hazards to John Day, which are discussed throughout this plan as well as in the Planning and Public Process Appendix of the Northeast Oregon NHMP. The following is a summary of input from the original city addendum working group, along with revisions and additions from the 2013 working group.

The table below presents the entire updated hazard analysis matrix for John Day. The hazards are listed in order of rank from high to low and compare them to the county's ranking for each hazard. The table shows that hazard scores are influenced by each of the four categories combined. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities, but does not predict the occurrence of a particular hazard.

With considerations for past historical events, the probability or likelihood of a particular hazard event occurring, the vulnerability to the community, and the maximum threat or worst-case scenario, flood, windstorm, winter storm and wildfire were ranked as the top hazard threats to the city (Top Tier). Drought, extreme temperatures and earthquake (crustal)comprise the next highest ranked hazards (Middle Tier).Volcanic event and landslide/ debris flow comprise the lowest ranked hazards (Bottom Tier).John Day did not rank the dust storm or earthquake (Cascadia) hazards.

Table JD-19 Hazard Analysis Matrix – John Day

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	County Hazard Rank
Flood	20	45	100	70	235	#1	#1
Windstorm	18	50	100	63	231	#2	#4
Winter Storm	18	50	100	63	231	#2	#4
Wildfire	20	30	100	70	220	#4	#1
Drought	4	15	80	70	169	#5	#1
Extreme Temperatures	20	25	50	70	165	#6	NR
Earthquake - Crustal	4	45	100	14	163	#7	#8
Volcanic Event	2	20	90	7	119	#8	#7
Landslide	10	15	30	49	104	#9	#6
Duststorm	NR	NR	NR	NR	NR	NR	NR
Earthquake - Cascadia	NR	NR	NR	NR	NR	NR	NR

Sources: John Day NHMP Steering Committee, September 12, 2013 and Grant County NHMP Steering Committee, Updated June 25, 2013.Note: NR = Not Ranked

Table JD-20 categorizes the probability and vulnerability scores from the hazard analysis for the city and compares the results to the assessment completed by the Grant County NHMP Steering Committee (areas of differences are noted with **bold** text within the city ratings). The table indicates that there is lower probability of landslide in John Day than in the county and lower vulnerability to drought, landslide, volcanic event, and wildfire than the county. There is a higher vulnerability to earthquake – crustal in the John Day than in the county.

Table JD-20 Probability and Vulnerability Comparison – John Day and Grant County

Hazard	John Day		Grant County	
	Probability	Vulnerability	Probability	Vulnerability
Drought	High	**Low**	High	High
Dust Storm	NR	NR	NR	NR
Earthquake - Cascadia	NR	NR	NR	NR
Earthquake - Crustal	Low	**High**	Low	Moderate
Extreme Temperatures	High	Moderate	NR	NR
Flood	High	High	High	High
Landslide	**Moderate**	**Low**	High	Moderate
Volcanic Event	Low	**Moderate**	Low	High
Wildfire	High	**Moderate**	High	High
Windstorm	High	High	High	High
Winter Storm	High	High	High	High

Sources: John Day NHMP Steering Committee, September 12, 2013 and Grant County NHMP Steering Committee, Updated June 25, 2013.Note: NR = Not Ranked

Drought

The John Day Working Group determined that there is a **High** probability that the City will experience severe extended drought conditions. This rating is consistent with the 2013 Grant County Hazard Analysis and was unranked in the 2008 John Day Hazard Analysis. In the 2008John Day Addendum it was noted that John Day completed a Water System Master Plan in 2001, and recently increased its total water storage to 1,689,800.[23] The Working Group noted that while the aquifers have decreased, this has not been much of a problem. As such, the John Day Working Group determined that the city has a vulnerability of **Low** from a drought event. This rating is lower than the 2013 Grant County Hazard Analysis score of high.

Dust Storm

The City of John Day Working Group did not rank the dust storm hazard.

Earthquake

Crustal Earthquake

The John Day Working Group determined that there is a **Low** probability that a crustal earthquake event will affect the city. This rating is consistent with 2013 Grant County Hazard Analysis and was unranked in the 2008 John Day Hazard Analysis. The history of recent earthquakes in the John Day area is limited; the Working Group was unable to identify a recent earthquake that affected John Day. There are historic buildings and critical facilities in John Day that may have a high risk of collapse during extreme levels of seismic activity. The buildings that were considered to have a 'very high' collapse potential rating in the DOGAMI Rapid Visual Survey include the John Day Fire Department. As such, the John

[23] As of 2002

Day Working Group determined that the city has a **High** vulnerability to an earthquake hazard. This rating is higher than the 2013Grant County Hazard Analysis score of moderate.

CASCADIA SUBDUCTION ZONE EARTHQUAKE

The City of John Day Working Group did not rank the Cascadia Subduction zone earthquake hazard.

Extreme Temperatures

The John Day Working Group considers the city to have a **High** probability to extreme temperatures events. This rating hazard was unranked in the 2008 John Day Hazard Analysis and the 2013 Grant County Hazard Analysis. The Working Group was concerned most with extreme cold events. It was noted that in the 1990's there were more cold events and it has become milder recently. The Working Group noted an increase in fatalities during extreme hot and extreme cold spells. As such, the John Day Working Group considers the city **Moderately** vulnerable to an extreme temperatures event.

Flood

The John Day Working Group considered determined that the city has a **High** probability of a flood event. This rating is consistent with the 2008 John Dayand2013 Grant County Hazard Analyses. Flooding is generally localized and the John Day is so small that the impacts are felt throughout.

John Day suffers occasional flooding damages from the John Day River. John Day's last Flood Insurance Rate Map was completed in 1982, and the Working Group indicated a need for an update. The 2008 City Addendum noted that the area's most vulnerable to flood include properties along the intersection of 7th and NW Bridge Street, the John Day radio station, and the John Day wastewater treatment plant. The wastewater treatment plant is in the river's floodplain, and the facility is 34 years old.

The primary flooding sources for John Day detailed in the Flood Insurance Study (1977) include the lower reach of Canyon Creek and from the John Day River. These events occur from combined rainstorms with snowmelt. The city is also subject to occasional summer thunderstorms with high intensity precipitation.[24]Numerous residences, commercial and industrial establishments, and public buildings are located within the flood plain of Canyon Creek and the John Day River and have been damaged historically by floods.[25]

Recent Flood events:

2010 – There was a flood on Canyon Creek near mobile-home park. The event eroded a large section of the bank under mobile homes.

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[24]FEMA, John Day Flood Insurance Study,1977

[25]John Day Comprehensive Plan 1975. Damaging overflow from floods in the area occurred on May 11, 1901; March 19, 1932; March 30 and April 17, 1943; and December 22, 1964. The May of 1901 flood was caused by a thunderstorm. The other floods were from a combination of rain and snowmelt. It is likely that similar and possibly more damaging floods will occur in the future.

2011 – Grant Union High School Flood The flood caused damage to the Grant-Union High School in addition to basements flooded, approximately 100 homes were affected (houses with basements were affected more than those without).

The John Day Working Group determined that the city's vulnerability to flood is **High**. This ranking is consistent with the 2008 John Dayand2013 Grant County Hazard Analyses.

Landslide

Landslides have been an important factor in the development of the slopes along the John Day River and Canyon Creek. Other slopes may fail as a result of modifications associated with the construction of roads and buildings.[26]The John Day Working Group determined that the city has a **Moderate** probability to a landslide. This rating is lower than the 2013 Grant County Hazard Analysis score of high and was unranked in the 2008 John Day Hazard Analysis. The hazard prone areas near John Day include Airport Road, which is a geological slide area, most houses in this area are on city sewer. Another hazard prone area is Ferguson Road, which has slides caused by ground saturation due to septic failure. The City code requires a geotechnical report for development (since 1980s).The John Day Working Group determined that the city has a **Low** vulnerability to a landslide. This rating is lower than the 2013 Grant County Hazard Analysis score of moderate.

Volcanic Event

Considering past history, the probability of a volcanic event for John Day and Grant County is **Low.** This hazard was not ranked in the 2008 John Day Hazard Analysis. While a volcanic event may not have a direct impact on the city, the ash fallout from an event in the Cascades or Mount St. Helens could potentially affect John Day, especially for people with respiratory problems. The City of John Day received some ash during St. Helens volcanic event.[27]As such, the John Day Working Group determined that the city's vulnerability to a volcanic event is **Moderate**. This rating is lower than the 2013 Grant County Hazard Analysis score of high.

Wildfire

Leading up to the City Addendum Meeting the City of John Day were threatened by the GC Complex Fire (August 2013). The GC Complex Fire includes both the Grouse Mountain Fire and the Starvation Fire. The Grouse Mountain Fire started around 7 miles north of John Day and made reached the northern edge of John Day. The Starvation Fire began 17 miles southeast of Prairie City.[28] The fire reached over 12,000 acres at its peak. These fires required a conflagration for the City of John Day and threatened a senior home on the perimeter of the city. Due to the history of wildfire in the county and near John Day the Working Group determined that the probability of a wildfire event is **High**. This is consistent with the 2013 Grant County Hazard Analysis score and was unranked in the 2008 John Day Hazard Analysis. The working group indicated that the city is affected by smoke from wildfires such as in the recent Marysville Fire. The Working Group determined that the city's

[26] John Day Comprehensive Plan 1975

[27] Air filters had to be changed frequently due to ash fallout

[28]Inciweb: Incident Information System http://inciweb.org/incident/3612/

vulnerability to wildfire is **Moderate.** This ranking is lower than the 2013 Grant County Hazard Analysis score of high. The 2013 Grant County Community Wildfire Protection Plan gave John Day a relatively higher score with an overall 'high' risk ranking.[29]

Windstorm

Windstorms occur frequently in the John Day area; as such the John Day Working Group determined that the probability of a windstorm event is **High**. This score is consistent with the 2013 Grant County Hazard Analysis and this hazard was unranked in the 2008 John Day Hazard Analysis. The regional plan further addresses the windstorm risks that the city faces. Around 1983 John Day had a large wind event with 80 to 100 mph winds which tipped over mobile homes and took out numerous outbuildings, took out power lines, and accompanied hail and flash flooding. Smaller events have occurred since 1983, including frequent annual wind and thunderstorms. The Steering Committee determined that the city's vulnerability to a windstorm is **High**. This ranking is consistent with the 2013 Grant County Hazard Analysis.

Winter Storm

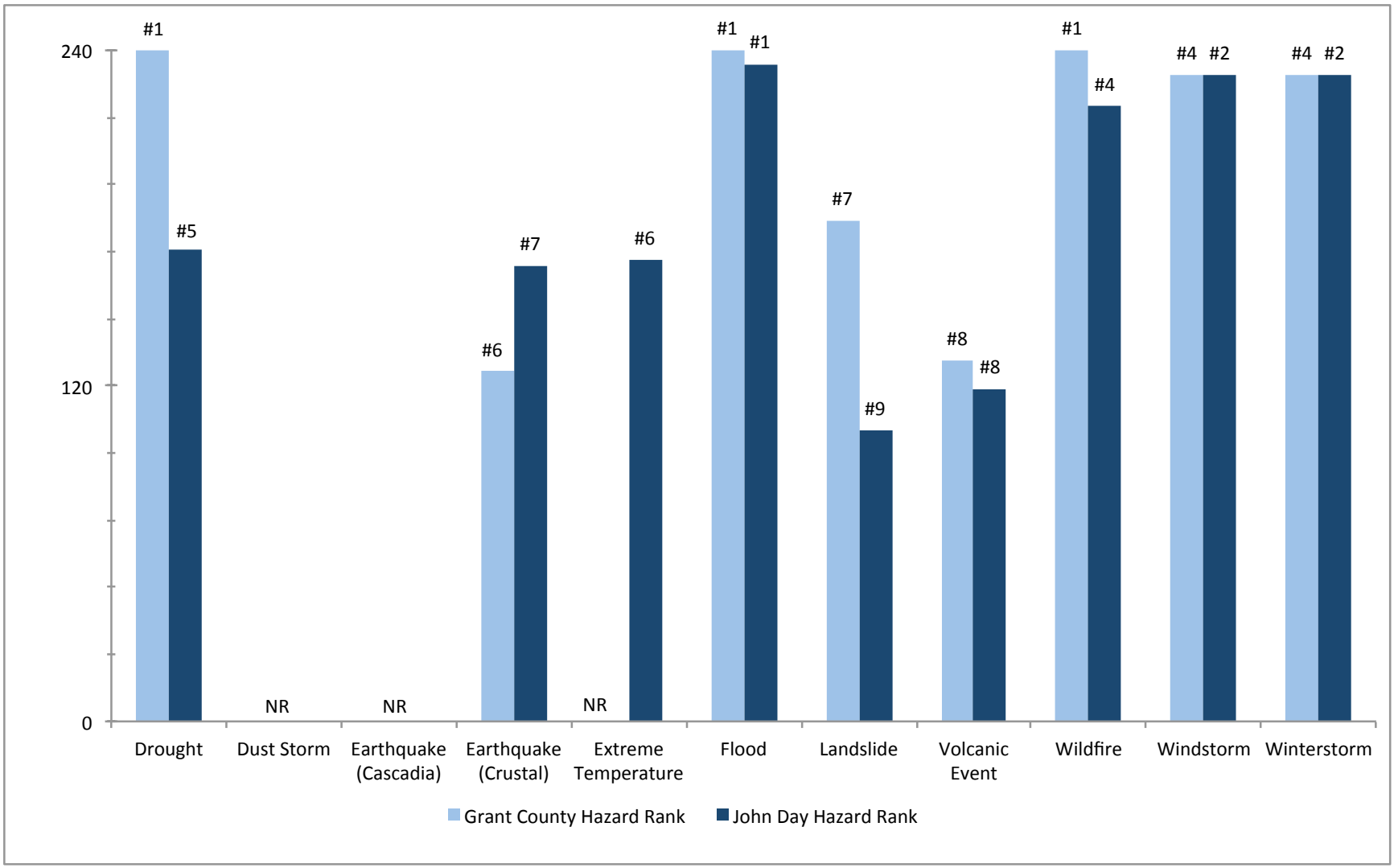
Considering the history of winter storms in the region the John Day Working Group determined that the probability of a winter storm event is **High**. This rating is consistent with the 2013 Grant County Hazard Analysis and was unranked in the 2008 John Day Hazard Analysis. Plowing during winter storm events is a concern, there were 16-inches of snow last winter (December 2012) which shut down law enforcement. The problem with dealing with winter storms is limited funding. Normally there is 8 to 12 inches per snowfall -- the city is accustomed to these types of events. The John Day Working Group determined that the cities vulnerability to a winter storm is **High**. This ranking is consistent with the 2013 Grant County Hazard Analysis.

The figure below presents a summary of the hazard analysis for the John Day and compares the results to the assessment completed by the Grant County NHMP Steering Committee.

In terms of probability, vulnerability, history, and maximum threat, the hazard analysis for the city overall rated their threat to flood, volcano, wildfire, windstorm, and winter storm. The threat from drought and landslide are greater to the county than the city. Earthquake is a greater threat to the city considering the concentration of population and assets.

[29] Grant County CWPP 2013. The methodology considered: ignition risk, hazard, values protected, and protection capability. The assessment considered that John Day has a higher density of homes as well as a greater number of values at risk.

Figure JD-4 Overall Hazard Analysis Comparison (OEM: Total Threat Score) – John Day and Grant County



Source: John Day NHMP Steering Committee, September 12, 2013 and Grant County NHMP Steering Committee, Updated June 25, 2013.Note: NR = Not Ranked

Mitigation Plan Mission

The plan mission states the purpose and defines the primary functions of the Northeast Oregon Natural Hazard Mitigation Plan. It is intended to be adaptable to any future changes made to the plan and need not change unless the community's environment or priorities change.

The 2013 plan update steering committee reviewed, and John Day Working Group accepted, the 2008 mission statement and agreed that the following statement best describes the over purpose and intent of this plan:

Mission: *To create a disaster-resilient Northeast Oregon*

Mitigation Plan Goals

Mitigation plan goals are more specific statements of direction that Northeast Oregon citizens, and public and private partners can take while working to reduce the county's risk from natural hazards. These statements of direction form a bridge between the broad mission statement and particular action items. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Goal 1: *Protect human welfare, property, and natural resources*

Goal 2*: Increase the resilience of local and regional economies*

Goal 3: *Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness*

Goal 4: *Strengthen organizational and community capacity*

Action Item Worksheets

Each action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below. These action item worksheets are located in Appendix A, *Action Items.*

PROPOSED ACTION TITLE

Each action item includes a brief description of the proposed action.

ALIGNMENT WITH PLAN GOALS

The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

ALIGNMENT WITH EXISTING PLANS/ POLICIES

Identify any existing community plans and policies where the action item can be incorporated. Incorporating the mitigation action into existing plans and policies, such as comprehensive plans, will increase the likelihood that it will be implemented.

RATIONALE OR KEY ISSUES ADDRESSED

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from a number of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in Section 2 and the Hazard Annexes.

IMPLEMENTATION THROUGH EXISTING PROGRAMS

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance process. Ideas for implementation could include: (1) collaboration with relevant organizations, (2) alignment with the community priority areas, and (3) applications to new grant programs. When an action is implemented, more work will probably be needed to determine the exact course of action.

The Northeast Oregon Natural Hazard Mitigation Plan includes a range of action items that, when implemented, will reduce loss from hazard events in the region. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. The northeast Oregon counties and their participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvements plans, strategic plans and mandated standards and building codes. To the extent possible, the jurisdictions will work to incorporate the recommended mitigation action items into existing programs and procedures.

Many of the Northeast Oregon Natural Hazard Mitigation Plan's recommendations are consistent with the goals and objectives of the existing plans and policies. Where possible, the northeast Oregon counties and the participating cities will implement the multi-jurisdictional Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[30] Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

COORDINATING ORGANIZATION

The coordinating organization is the public agency or non-profit organization with the regulatory responsibility to address natural hazards, or that is willing and able to organize

[30]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

INTERNAL AND EXTERNAL PARTNERS

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project Steering Committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the county or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

POTENTIAL FUNDING SOURCES

Where possible, identify potential funding sources for the action item. Example funding sources can include: the federal Pre-Disaster Mitigation and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

ESTIMATED COST

Where possible, an estimate of the cost for implementing the action item is included.

TIMELINE

Action items include both short and long-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term action items* (ST) are activities that may be implemented with existing resources and authorities in one to two years. *Long-term action items* (LT) may require new or additional resources and/or authorities, and may take from three to five years to implement. *Ongoing action items* are activities that are currently being performed and will continue into the foreseeable future.

STATUS

As action items are implemented or new ones are created during the plan maintenance process, it is important to indicate the status of the action item—whether it is new, ongoing, deferred, or complete. Documenting the status of the action will make reviewing and updating mitigation plan easier during the plan's five-year update, and can be used as a benchmark for progress. *Deferred* action items have yet to see any significant work begin on the particular action.

PRIORITY

The County Steering Committees and City working groups can designate action items with a 'High' priority, which indicates a higher level of importance than the other action items.

City of John Day Action Items

The table below shows the action items that affect the city. Action items FL #3 and FL #4 are "high" priority actions for the city. To review the action item forms see Appendix A.

Table JD-21 Action Item timelines, status, priority and related hazards

Action Item	Timeline	Status	Priority	Jurisdiction		Related Hazards						
				John Day	Union County	Drought	Earthquake*	Flood	Landslide	Severe Weather**	Volcanic Event	Wildfire
MH #1	Ongoing	Deferred		X	X	X	X	X	X	X	X	X
MH #2	Short Term	New		X	X	X	X	X	X	X	X	X
MH #3	Short Term	Deferred		X	X	X	X	X	X	X	X	X
MH #4	Ongoing	Ongoing		X		X	X	X	X	X	X	X
MH #9	Short Term	Deferred		X	X	X	X	X	X	X	X	X
MH #10	Short Term	Ongoing		X		X	X	X	X	X	X	X
DR #2	Ongoing	Ongoing		X		X						
DR #3	Long Term	Deferred		X	X	X						
EQ #1	Long Term	NEW		X	X		X					
EQ #9	Long Term	NEW		X	X		X					
FL #1	Ongoing	Ongoing		X	X			X				
FL #2	Short Term	Deferred		X				X				
FL #3	Short Term	Deferred	High	X				X				
FL #4	Short Term	New	High	X				X				
WF #1	Ongoing	Ongoing		X	X							X

Source: Grant County NHMP Steering Committee, John Day NHMP Steering Committee.
*Earthquake includes crustal and Cascadia Subduction Zone events.
**Severe Weather includes dust storm, extreme temperatures, windstorm and winter storm events.

Volume III:
La Grande Addendum

Purpose

This document serves as an update for La Grande's Addendum to the Northeast Oregon Natural Hazards Mitigation Plan (NHMP). La Grande's original addendum to Northeast Oregon's NHMP was completed in 2008. The city conducted an update to its original addendum in 2013, which coincided with the mitigation strategy stage of the Northeast Oregon NHMP update. The city's addendum is considered part of the region's multi-jurisdictional plan, and meets the following requirements: (1) Multi-jurisdictional Plan Adoption §201.6(c) (5), (2) Multi-jurisdictional Participation §201.6(a) (3), (3) Multi-Jurisdictional Risk Assessment §201.6(c) (2) (iii), and (4) Multi-jurisdictional Mitigation Strategy §201.6(c) (3) (IV).

A description of the city specific planning and adoption process follows, along with detailed community specific action items. Information about the city's risk relative to the county's risk to natural hazards is documented in the addendum's Hazard Analysis and Issue Identification section. The section considers how the city's risk differs from or matches that of the county's; additional information on Risk Assessment is provided within the Northeast Oregon NHMP's Section 2 – Risk Assessment and within the Hazard Annexes within Volume II of this NHMP.

Updates to La Grande's addendum are further discussed throughout the plan and in the Northeast Oregon NHMP Planning and Public Process Appendix, which provides an overview of alterations to the document that took place during the addendum update process.

How was the Plan Developed?

In fall 2005, the Oregon Natural Hazards Workgroup (ONHW, now the Oregon Partnership for Disaster Resilience) at the University of Oregon's Community Service Center partnered with the Department of Geology and Mineral Industries (DOGAMI) and the Northeast Oregon Region (Baker, Grant, Union, and Wallowa) counties to develop a Pre-Disaster Mitigation Planning Grant proposal. Each county joined the Partnership for Disaster Resistance and Resilience (The Partnership) by signing (through their County Commissions) a Memorandum of Understanding for this project. FEMA awarded the Northeast Oregon Region grant to support the development of the natural hazard mitigation plans for the four counties in the region. ONHW, DOGAMI and the communities were awarded the grant in the fall of 2005 and local planning efforts in this region began in the fall of 2006 with county and city meetings proceeding in 2007.

The Northeast Oregon Multi-jurisdictional NHMP was formally adopted by Union County on June 11, 2008and approved by FEMA on May 23, 2008(Grant County was the first to approve the regional NHMP on April 23, 2008). To maintain its compliance with the Disaster Mitigation Act of 2000 (DMA2K), the plan required an update by May 23, 2013.La Grande

created an addendum to the Northeast Oregon NHMP and also needs to be updated in order to maintain compliance with DMA2K.

In fall 2012, Union County initiated the update process in order to take advantage of grant funding and technical support currently available through the Oregon Partnership for Disaster Resilience (OPDR) at the University of Oregon's Community Service Center (CSC). Updating the mitigation plan is a requirement for maintaining eligibility for the Federal Emergency Management Agency's Pre-Disaster Mitigation and Hazard Mitigation Grant Programs. By updating the plan and having it re-approved by FEMA, northeast Oregon will maintain its eligibility for FEMA Hazard Mitigation, Pre-Disaster Mitigation and Flood Mitigation Assistance grant program funds. This project is funded through the Federal Emergency Management Agency's (FEMA) FY12 Pre-Disaster Mitigation Competitive Grant Program (PDMC – PL-10-OR-2012-002).

The Northeast Oregon Regional Multi-jurisdictional Natural Hazards Mitigation Plan was updated and reapproved by FEMA Region X on **June 5, 2014**. The plan is effective through **June 4, 2019**. The City of La Grande adopted their addendum to the plan on **July 16, 2014**.

The Northeast Oregon Natural Hazard Mitigation Plan is the result of a collaborative effort among citizens, public agencies, non-profit organizations, the private sector and regional organizations. Several project steering committees guided the process of developing the plan. For more information on the composition of the steering committees see the Acknowledgements and Executive Summary section.

The Action Item MH #8 proposes a position for a regional natural hazards mitigation coordinator to be created and have shared responsibilities among the four counties. This plan could be implemented and maintained through this regional coordinator. Without the regional coordinator the plan will be implemented, maintained and updated by designated local conveners.

The Union County Emergency Manager was designated as the plan's convener (for portions relevant to Union County) and will take the lead in implementing, maintaining and updating the plan. Public participation played a key role in the development of goals and action items. Public participation was achieved with the establishment of the Northeast Oregon Natural Hazards Mitigation Steering Committees, which was comprised of community members representing different organizations and sectors in northeast Oregon. The steering committees were closely involved throughout the development of the plan and served as the local oversight body for the plan's development. In addition, community members outside of the steering committee were involved in the planning and review process (see Northeast Oregon NHMP Appendix B, Planning Process for more information).

How Were the Action Items Developed?

The City's action items were developed through a two-stage process. In stage one, OPDR facilitated a work session with the working group to discuss the city's risk and to identify potential issues. In the second stage, OPDR developed potential actions based on the hazards and the issues identified by the working group. During the 2013 update process OPDR re-evaluated the Action Items with the local steering committee and updated actions, noting what accomplishments had been made and if the actions were still relevant; any new action items were identified at this time. OPDR also cross-walked the city's issues with

region's action items to identify opportunities for partnership where issues were shared between jurisdictions. The City's actions are listed below. Items in **bold** are specific to the city and can be found at the end of this addendum, all other action item forms are within Appendix A.

Table LG-1 La Grande Action Items

Multi-Hazard Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
MH #1	High	Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties.	Interested City Managers and/or City Council; County Commissioners, Emergency Management	Relevant Public Works and Emergency Services / Emergency Management, Law Enforcement, Fire Department, Department of Homeland Security, County Roads Departments, ODOT, relevant private industries, OEM	Short Term	Deferred				X
MH #2		Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	County/ City Planning Department	Department of Land Conservation and Development, Oregon Office of Emergency Management, Federal Emergency Management Agency	Short Term	New Action Item				X
MH #3		Inform public officials about mitigation awareness and the Natural Hazards Mitigation Plan	County Steering Committee Convener	Counties and participating cities in Region 7	Short Term	Deferred			X	
MH #4		Develop and implement education and outreach programs to increase public awareness of the risk associated with natural hazards. Specifically target vulnerable populations	Emergency Services / Emergency Management; Baker City; City of La Grande, Relevant Public Health Department	Eastern Oregon Head Start, Chambers of Commerce, American Red Cross, Oregon Education Association, Families First, Grant and Harney County Casa, Oregon Rural Action, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA, Greater Prairie City Community Association, People Mover, Community Connections of Northeast Oregon	Short Term	Deferred	X		X	
MH #9		Develop a warning and emergency evacuation protocol for vulnerable populations	Emergency Services / Emergency Management	Community Connections of Northeast Oregon, American Red Cross, People Mover, Assisted living facilities, Elks lodge, public libraries, National Organization on Disability	Deferred	Deferred				X
MH #11		Build partnerships with local jurisdictions to develop emergency management planning for Eastern Oregon University	Eastern Oregon University	Union County Emergency Services, La Grande Fire Department, La Grande Planning Department, Union County Planning Department, American Red Cross, Oregon Trail Electric Co-op, Internet Service Providers, Oregon Department of Transportation	Ongoing	Ongoing				X
MH #12	High	Update City and County addresses within the County's GIS database	Union County Planning Department/GIS	City of La Grande, Union County Emergency Services, Union City, Community Connections	Short Term	Deferred				X
MH #16 (La Grande)		**Secure funding to filter water within the Beaver Creek Watershed, La Grande's backup water supply**	**City of La Grande Public Works**	**City of La Grande Planning Department, Union County Water Master, Oregon Water Resources Department**	**Long Term**	**Deferred**	**X**			
Drought Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
DR #2		Identify incentive programs to Increase water efficiency among municipal water users	Participating Cities	Relevant utility companies, city public works departments, County, wastewater treatment facilities, Wallowa Lake County Service District, US Environmental Protection Agency's WAVE program	Ongoing	Ongoing	X			X
DR #3		Develop community drought emergency plans and policies	County Emergency Services / Emergency Management; Interested Cities	Water Resources Departments, County and City Governments, County and City Planning Departments, Public Works Departments, Enterprise, City of La Grande, Baker City, John Day, Halfway, Natural Resources Conservation Service, Wallowa Lake Service District, Baker County Cattleman's Association, Relevant Irrigation Districts, OSU Extension Office, US Department of Agriculture	Long Term	Deferred				X
DR #5	High	Conduct an aquifer (groundwater) study for the Grande Ronde Valley	Grande Ronde Model Watershed Council, Union County Commissioners	The City of La Grande, Union County Planning Department, Union County Public Works, Union County Water Master, Oregon Department of Water Resources, United States Geological Survey	Short Term	Deferred	X			

Source: Union NHMP Steering Committee and La Grande NHMP Working Group, 2007 (updated 2013)

Table LG-1 La Grande Action Items (continued)

Earthquake Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
EQ #1		Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Emergency Management	Eastern Oregon University, County Public Works Departments, Region 7 Counties, Interested Cities, Business Oregon, Relevant utility companies, DOGAMI	Long Term	New Action Item	X	X		
EQ #16		Seismically retrofit the Grande Ronde Hospital to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	The Grande Ronde Hospital, Emergency Management	County Public Works Departments, The City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #17		Seismically retrofit the La Grande City Police Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	City of La Grande, Emergency Management	County Public Works Departments, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #18		Seismically retrofit Willow Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	La Grande SD 1, Emergency Management	County Public Works Departments, City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #19		Seismically retrofit La Grande High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	La Grande SD 1, Emergency Management	County Public Works Departments, City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
EQ #20		Seismically retrofit Greenwood Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	La Grande SD 1, Emergency Management	County Public Works Departments, City of La Grande, Business Oregon, DOGAMI, OEM, FEMA, ODE	Long Term	New Action Item	X			
Flood Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
FL #1		Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	Relevant City and County Public Works Departments / Emergency Services and Emergency Management	County Roads Departments, Public Works Departments, County Planning Departments; City of John Day, City of La Grande, Baker City, City of Halfway, Silver Jackets, Relevant water treatment facilities, Federal Emergency Management Agency, Homeowner, Army Corps of Engineers, Oregon Department of Fish and Wildlife, Department of State Lands, ODOT	Ongoing	Ongoing	X			
FL #2		Explore the costs and benefits for participation in the NFIP's Community Rating System	Interested Cities and Counties	County and city planning departments, county emergency services / emergency management, county public works, Silver Jackets, FEMA, DLCD	Short Term	Deferred	X	X		
FL #3		Increase awareness concerning the NFIP program and specifically the Biggert Waters Flood Insurance Reform Act of 2012.	Local flood plain managers, County Emergency Managers	City Planning Departments, Emergency Services / Emergency Management, NFIP Floodplain Coordinator (DLCD), insurers, realtors, FEMA, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA , Greater Prairie City Community Association, People Mover, Community Connections of NEOR (Any community organizations capable of distributing information), Blue Mountain Eagle, ACOE	Short Term	Deferred			X	X
FL #4		Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	Relevant City and County Public Works Departments, Emergency Management, City Managers, County Planning Departments	County Roads Departments, Public Works Departments, City of John Day, City of La Grande, Baker City, City of Halfway, Army Corps of Engineers, DOGAMI, DAS-GEO, elected officials	Long Term	New Action Item	X			
FL #7 (La Grande)		**Incorporate recommended action items created in the Morgan Lake Study**	**City of La Grande Parks Director**	**The City of La Grande, Union County Emergency Management, Silver Jackets, USACE, FEMA,**	**Short Term**	**New Action Item**	**X**			

Source: Union NHMP Steering Committee and La Grande NHMP Working Group, 2007 (updated 2013)

Table LG-1 La Grande Action Items (continued)

Landslide Action Items	Priority	Proposed Action Title	Lead Agency	Partner Organization(s)	Timeline	Status	Alignment with Plan Goals			
							1	2	3	4
LS #1		Identify, obtain, and evaluate detailed risk assessments in landslide prone areas and develop mitigation strategies to reduce the likelihood of a potential hazardous event.	County Public Works Department	County Planning Department, City of La Grande, ODOT, EOU, DOGAMI, USGS, irrigation district	Long Term	New Action Item	X			X
Wildfire Action Items	**Priority**	**Proposed Action Title**	**Lead Agency**	**Partner Organization(s)**	**Timeline**	**Status**	**Alignment with Plan Goals**			
							1	2	3	4
WF #1		Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan.	County Steering Committee Convener, Emergency Management	County Emergency Services / Emergency Management, County Planning Departments, City of Baker City, City of Halfway, Local Public Safety Coordinating Council (LPSCC), Oregon Department of Forestry, Bureau of Land Management, local fire departments, OSU Extension Services, US Forest Service, Soil and Water Conservation Districts, Oregon Department of Fish and Wildlife; Homeowners in Wildland/Urban Interface zones; Hells Canyon Preservation Council	Ongoing	Ongoing	X			X

Source: Union NHMP Steering Committee and La Grande NHMP Working Group, 2007 (updated 2013)

La Grande Addendum Update

Representatives from the City of La Grande served on the Northeast Oregon NHMP Update Steering Committee, and convened a working group meeting to update the La Grande addendum on September 9th, 2013 (see Appendix B for more information). During this meeting, the working group reviewed and revised the addendum, with particular focus on the plan's action items and mitigation strategy.

The current version of the addendum reflects changes decided upon at the plan update meeting and during subsequent work and communication with OPDR. The changes are highlighted with more detail throughout this document and within Appendix B, Planning and Public Process Appendix of the Northeast Oregon NHMP. Other documented changes include a revision of the city's Risk Assessment and Hazard Identification sections, Plan Goals (see Section 3, Mitigation Strategy), and Community Profile (see Appendix C, Community Profile).

How Will the Plan be Implemented?

The City Council will be responsible for adopting the La Grande Natural Hazard Mitigation Plan Addendum. This addendum designates a coordinating body and a convener to oversee the development and implementation of action items. The City's working group will re-convene after re-adoption of the La Grande city addendum. The Public Works Director of the City of La Grande will serve as the local convener and will be responsible for convening the working group in cooperation with the County convener (Union County Emergency Manager). Additionally, there are two action items identified in the NHMP, multi-hazard actions #7 and #8, which would create a regional natural hazards coordinator and coordinating body. If these actions are pursued and accomplished, the city may choose to coordinate action items with the assistance of the regional coordinator and may also participate as a member in the regional steering committee.

Implementation through Existing Programs

Many of the Natural Hazards Mitigation Plan's recommendations are consistent with the goals and objectives of the city's existing plans and policies. Where possible, the City of La Grande will implement the Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, allowing them to adapt to changing conditions and needs. Implementing the Natural Hazard Mitigation Plan's action items through such plans and policies increases their likelihood of being supported and implemented.

La Grande currently has the following plans that relate to natural hazard mitigation:

- The La Grande Comprehensive Plan (2013) relates to natural hazard mitigation through its sections that outline La Grande's goals, policies, and implementation measures; especially within the Goal 7 "Areas Subject to Natural Disasters and Hazards" element.
- The recently completed Morgan Lake Study
- Article 3.12 of the Land Development Code (2009) regulates development in the floodplain.

The working group and the community's leadership have the option to add or implement action items at any time. This allows the working group to consider mitigation strategies as new opportunities arise, such as funding for action items that may not be of the highest priority. When new actions are identified, they should be documented using the action item form. Once a proposed action form has been submitted to the convener, the action will become part of the city's addendum.

Continued Public Participation

Keeping the public informed of the city's efforts to reduce the city's risk to future natural hazards events is important for successful plan implementation and maintenance. The city is committed to involving the public in the plan review and updated process. The City Addendum along with the Regional Plan will be posted on-line on the University of Oregon's Scholars Bank accessible via the OPDR website (http://csc.uoregon.edu/opdr/plans/union) so that the public may view the plan and submit electronic comments to the community at any time.

In addition, natural hazards information dissemination is conducted throughout the year when opportunities present themselves via the city offices and website.

Plan Maintenance

The Northeast Oregon Natural Hazard Mitigation Plan will be updated every five years in accordance with the update schedule outlined in the Disaster Mitigation Act of 2000. During the regions' plan update process, the city will also review and update its addendum. The convener will be responsible for convening the working group to address the questions outlined below.

- Are there new partners that should be brought to the table?
- Are there new local, regional, state, or federal policies influencing natural hazards that should be addressed?
- Has the community successfully implemented any mitigation activities since the plan was last updated?
- Have new issues or problems related to hazards been identified in the community?
- Are the actions still appropriate given current resources?
- Have there been any changes in development patterns that could influence the effects of hazards?
- Have there been any significant changes in the community's demographics that could influence the effects of hazards?
- Are there new studies or data available that would enhance the risk assessment?
- Has the community been affected by any disasters? Did the plan accurately address the impacts of this event?

These questions will help the working group determine what components of the mitigation plan need updating. The working group will be responsible for updating any deficiencies found in the plan.

La Grande Natural Hazard Mitigation Addendum includes three sections:

1) A Community Profile: this section primarily refers to the Northeast Oregon NHMP Appendix C – Community Profile,

2) A revised summary of the city's Hazard Identification and Risk Assessment, and

3) A Mitigation Strategy section.

La Grande Community Profile Asset Identification

This section provides information city specific asset identification. For more information on the characteristics of La Grande, in terms of geography, environment, population, demographics, employment and economics, as well as housing and transportation see Appendix C, Community Profile. Many of these community characteristics can affect how natural hazards impact communities and how communities choose to plan for natural hazard mitigation. Considering the city specific assets during the planning process can assist in identifying appropriate measures for natural hazard mitigation.

Table LG-2 City of La Grande Asset Identification

Sector and Assets
Population
Elderly Population
Possible expansion of the UGB from city to airport
Infrastructure and Facilities
City has two wastewater treatment facilities. Both are vulnerable to flooding, but designed to withstand a 100-year flood.
Wildflower assisted living facility is near the floodplain
New OSP building in the business park on Gekeler Lane (within 100 year floodplain)
Grande Ronde Hospital
Spruce Street bridge is low and could be affected by debris in a flood
911 center / Police Station will relocate to La Grande Rural in case of disaster
2nd Street bridge is an older bridge that may need to be replaced

Source: City of La Grande NHMP Steering Committee, 2013.

Introduction to Union County

Union County is bordered by Wallowa County to the northeast, Baker and Grant Counties to the south, and Umatilla County to the west. Union County spans 2,038 square miles and has a current population of approximately 25,980.[1]Union County is the smallest county area wise but also the most populated giving it the highest population density, particularly in , La Grande which makes up over half of Union County's population.

Union County Natural Environment Capacity

Table LG-3 shows the natural resources that were identified by the Union County Steering Committee in 2007 and 2013.

[1] Oregon Blue Book Union County

Table LG-3 Natural Resource Asset Identification

Natural Resources
48.1% of Union County is publicly-owned and includes the Wallowa-Whitman National Forest, Umatilla National Forest, and areas of the Eagle Cap Wilderness. Recreational opportunities are abundant: including in Ledd Marsh, Mount Emily Recreational Area, and the Grande Ronde River (for fishing and boating)
A combination of climate, fuels and terrain make Union County prone to wildfire. Unmanaged wildfires can lead to floods, landslides, and loss of habitat. Floods have the potential to change the drainage channel, cause erosion and sedimentation, and impact fisheries habitats. Landslides have the potential to and historically have blocked streams
The Grande Ronde Model Watershed manages and coordinates habitat restoration on both private and public lands within the Grande Ronde Basin. Watersheds, wells, and reservoir sites are particularly vulnerable to both drought and wildfire.
The region's wildlife populations are critical for habitat stability as well as for tourism and hunting opportunities. There has been a recent increase in bicycle tourism in the county

Source: Union County NHMP Steering Committee, 2007, 2013

Climate

Union County lies within Oregon Climate Services designated Climate Division 8 – Northeast Oregon. This Division is characterized by a semi-arid, low precipitation climate with warm summers and cool winters. Table LG-4 shows the mean monthly annual average temperature for Union County. Temperatures can reach as low as -18° F and as high 104° F. There is over a 38 degree temperature swing between the mean temperature in January (30.2) and July (68.9).

Figure LG-1 shows the precipitation of Union County. The locations on the valley floor receive less than 20 inches of precipitation per year, particularly those surrounded by high mountains which may receive less than 10 inches. The higher elevation locations receive higher annual precipitation totals, generally in the form of snowfall. The precipitation for the region is evenly distributed throughout the seasons.[2]

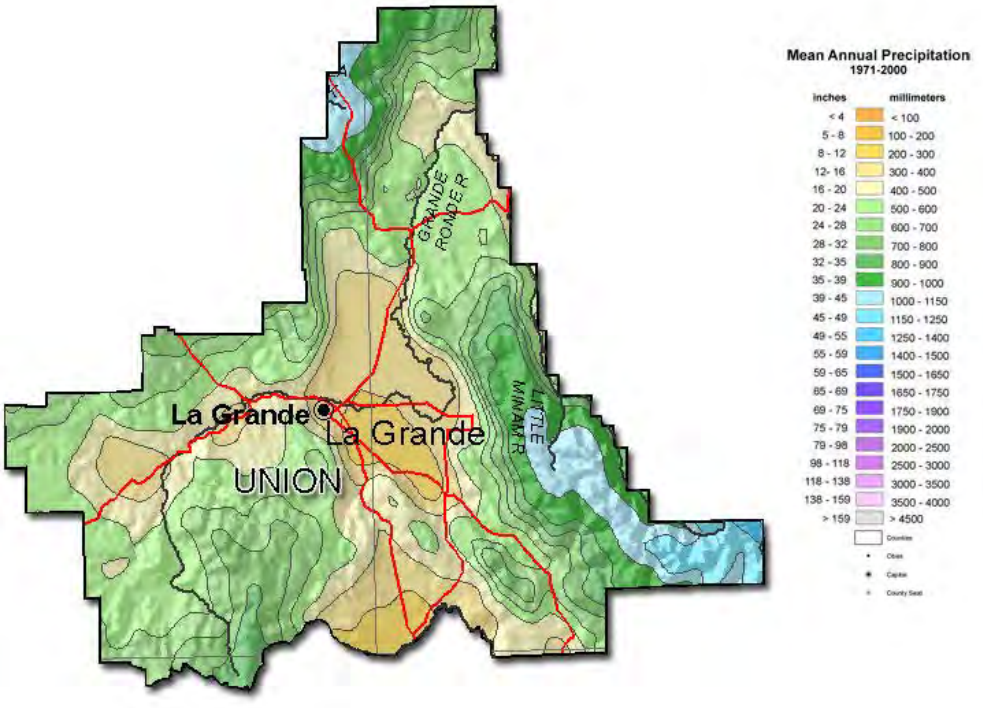
[2] The Oregon Climate Service "Climate of Union County."

Table LG-4 Mean Monthly and Annual Average Temperatures (deg F), 1971-2000

Month	Mean Maximum	Mean Minimum	Mean Temperature	Extreme Maximum	Extreme Minimum
January	37.3	23.1	30.2	61.0	-17.0
February	42.8	26.4	34.6	66.0	-14.0
March	50.3	30.5	40.4	75.0	9.0
April	57.7	35.1	46.4	88.0	20.0
May	66.2	41.8	54.0	95.0	25.0
June	74.9	48.3	61.6	100.0	29.0
July	84.7	53.0	68.9	104.0	32.0
August	85.0	51.8	68.4	104.0	32.0
September	75.6	43.5	59.6	100.0	23.0
October	62.6	35.4	49.0	88.0	13.0
November	45.6	29.8	37.7	71.0	-14.0
December	38.2	24.2	31.2	59.0	-18.0
Annual	*60.1*	*36.9*	*48.5*	*104.0*	*-18.0*

Sources: The Oregon Climate Service, NOAA Climate Station: La Grande. "Climate of Union County." http://www.ocs.orst.edu/county_climate/Baker_files/Baker.html.

Figure LG-1 Mean Annual Precipitation



Source: The Oregon Climate Service. "Mean Annual Precipitation."http://www.ocs.oregonstate.edu/county_climate/fig2/baker.jpg

Land Ownership

Union County spans approximately 2,038 square miles.[3] Of this land 52% is private and 47.5% is federally owned.[4] The federally owned land is almost exclusively dedicated to United States Forest Service, which owns 47% of the total land.[5] The Union County Comprehensive Plan requires more specifically addressed the flood hazards in La Grande, areas along Willow Creek in the city limits of Summerville, additional lands near the Grande Ronde River, and small stream side hill runoff areas around the perimeter of the valley.[6]The Comprehensive Plan also mentions the potential for landslide in the county and that "future development should be particularly cautious of the basalt formations that have thick layers of tuff interbedded within."[7]

The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table LG-5Land Use Asset Identification

Land Use and Development
Union County wildland-urban interface areas include: Morgan, Cove, Mt. Emily, Palmer, Perry/Hillgard, Stubblefield, Beaver Creek Watershed, Catherine Creek, Blue Springs, Medical Springs, Kamela, Pumpkin Ridge/Ruckle, Elkanah, Clark, Rysdam, and Starkey (as listed in the Union County Community Wildfire Protection Plan).
The City of Union expects to see local growth; global online distributors have recently purchased large portions of land for warehousing sites and a new windmill facility is slated for construction in the near future. The majority of the City of Union resides in a 100-500 year floodplain.
The valley floor supports agricultural activities; surrounding slopes support livestock grazing and timber resources.
The Grande Ronde Hospital sits on a slope where previous landslides have occurred; it is also in the wildland-urban interface where potential fires may occur.
Many of the landslides in the immediate vicinity of La Grande are slow moving, unstable wedges of soil and rock along the West La Grande fault zone. Structures constructed on these unstable surfaces are susceptible to damage from slope movement.
Population growth generally occurs in the urban growth boundary, not many subdivision expansions. Unincorporated communities aren't growing as quickly, wind farm expansion occurred since 2008, no population nearby, but there may be toxic elements in the wind turbines.

Source: Union County NHMP Steering Committee, 2007, 2013

[3] Oregon Blue Book "Union County" http://bluebook.state.or.us/local/counties/counties31.htm Accessed May 2013

[4] Reid, Rebecca L., Oregon: A Statistical Overview: 2002, Southern Oregon Regional Services Institute, Southern Oregon Regional Services Institute, Southern Oregon University. Ashland, Oregon, May 2002.

[5] Ibid

[6] Union County Comprehensive Plan "Flood Hazards"1979

[7] Ibid "Landslide Hazards"

Union County Socio Demographic Capacity

Population

Union County is the most populated county in the region and has the most populated city in La Grande. Table LG-6 details some of the population assets from the NHMP Steering Committees in 2007 and 2013 including information on vulnerable population types, organizations that serve them, and large festivals/events.

Table LG-6 Population Asset Identification

Population Assets
Community organizations that serve vulnerable populations are concerned with the lack of emergency transportation and services available to persons with special needs.
Winter storms can cause freeway closure both east and west, stranding motorists and disrupting supply chains. Air Ambulance transports are not possible during severe winter weather.
Residents of nearby towns rely on La Grande for employment, health services, and shopping needs. Resultantly, La Grande's population is higher during workday hours.
The community organization, Head Start, has two concerns regarding natural hazards in Region 7: 1) children are left at Head Start centers for extended periods of time for weather-related hazards; 2) Head Start centers have inadequate food and water supplies on hand for emergencies. Head Start would like to have a better understanding of emergency services in the region.
Northeast Oregon attracts tourists and hunters in both the summer and fall. A temporary increase in population places heightened demands on emergency response systems; additionally, uninformed hikers and campers may increase the community's risk to wildfire.
Large community events include: The Stampede, hunting season (although hunters are often scattered, not in large group) events that occur at the University campus (example: graduation), Local high school events (example: softball and baseball tournaments), seasonal harvests, professional mushroom pickers come in the spring.
Population growth generally occurs in the urban growth boundary, not many subdivision expansions. Unincorporated communities aren't growing as quickly, wind farm expansion occurred since the last update (2008), no population nearby.

Source: Union County NHMP Steering Committee, 2007, 2013

Table LG-7 shows the population change between 2000 and 2010 for Union County and its incorporated cities. Between 2000 and 2010 Union County's population was the only county in the region to increase (+5%), and the vast majority came out of La Grande.[8]The growth

8 57.6% U.S. Census Bureau, Census 2010 Summary File 1, "DP-1 Profile of General Population and Housing Characteristics" http://http://factfinder2.census.gov, accessed April 2013.

rate came equally from the incorporated communities and unincorporated communities which both increased approximately 5% over that ten year period.

Table LG-7 Union County Incorporated Cities Population Change 2000-2010

	2000		2010		Population Change 2000-2010		
Jurisdiction	Population	Percent	Population	Percent	Population	Percent	AAGR
Cove	594	2.4%	552	2.1%	-42	-0.3%	-0.7%
Elgin	1,654	6.7%	1,711	6.6%	57	-0.1%	0.3%
Imbler	284	1.2%	306	1.2%	22	0.0%	0.7%
Island City	916	3.7%	989	3.8%	73	0.1%	0.8%
La Grande	12,327	50.3%	13,082	50.8%	755	0.6%	0.6%
North Powder	489	2.0%	439	1.7%	-50	-0.3%	-1.1%
Sub-Total	*16,264*	*66.3%*	*17,079*	*66.3%*	815	0.0%	*0.5%*
Not incorporated	8,266	33.7%	8,669	33.7%	403	0.0%	0.5%
Total	24,530	100.0%	25,748	100.0%	1,218	0.0%	0.5%

Source: U.S. Census Bureau, Census 2000 Summary File 1, "DP-1 Profile of General Demographic Characteristics" http://http://factfinder2.census.gov, accessed April 2013. U.S. Census Bureau, Census 2010 Summary File 1, "DP-1 Profile of General Population and Housing Characteristics" http://http://factfinder2.census.gov, accessed April 2013. Note: AAGR = Average Annual Growth Rate

In 2012, Union County's population grew by 195, or 0.8 percent.[9] That's marginally faster than Oregon's 2012 population growth rate. Union County's population has been steadily and consistently increasing for years.[10]

Age

Table LG-8 shows Union County's population by age groups and age dependency ratio.[11]Union County's age dependency ratio is over eight percentage points higher than the State of Oregon's. Union County's population age profile is unique because of large number of students from Eastern Oregon University which brings younger age groups.[12]It has the youngest population in the region. However, communities with large age dependency ratios are Union (60.8%), Cove (63.8%), North Powder (64.4%), Island City (70.2%), and North Powder (80.0%). As of 2011 the median age for the county is 40.2.[13]

9 Population Research Center, Portland State University (2011-2012 data) http://www.pdx.edu/prc/population-estimates-0 Accessed May 2013

10 Oregon Employment Department "Mostly Small Population Changes in Eastern Oregon in 2012" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007361 Accessed April 2013

11The dependency ratio is derived by dividing the combined under 15 and 65-and-over populations by the 15-to-64 population and multiplying by 100.

12 EOU enrolled approximately 3,900 students last year US News "Eastern Oregon University" http://colleges.usnews.rankingsandreviews.com/best-colleges/eastern-oregon-university-3193 accessed May 2013

13U.S. Census Bureau, American Fact Finder 2011 "DP05 ACS Demographic and Housing Estimate" http://factfinder2.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_11_5YR_DP05&prodType=table Accessed October 2013

Table LG-8 Union County Population by Age Groups and Age Dependency Ratio (2010 and 2040)

2010		< 15 Years		15 to 64	> 64 Years		
Jurisdiction	Total	Number	Percent	Number	Number	Percent	Age Dependency Ratio
Oregon	3,831,074	717,323	18.7%	2,580,218	533,533	13.9%	48.5%
Union County	25,748	4,789	18.6%	16,651	4,308	16.7%	54.6%
Cove	552	87	15.8%	337	128	23.2%	63.8%
Elgin	1,711	320	18.7%	1,087	304	17.8%	57.4%
Imbler	306	47	15.4%	218	31	10.1%	35.8%
Island City	989	204	20.6%	581	204	20.6%	70.2%
La Grande	13,082	2,496	19.1%	8,665	1,931	14.8%	51.1%
North Powde	439	96	21.9%	267	76	17.3%	64.4%
Summerville	135	42	31.1%	75	18	13.3%	80.0%
Union	2,121	423	19.9%	1,319	379	17.9%	60.8%
2040							
Oregon	5,425,408	958,949	17.7%	3,368,940	1,097,519	20.2%	61.0%
Union County	31,793	6,747	21.2%	19,574	5,474	17.2%	62.4%

Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2013;

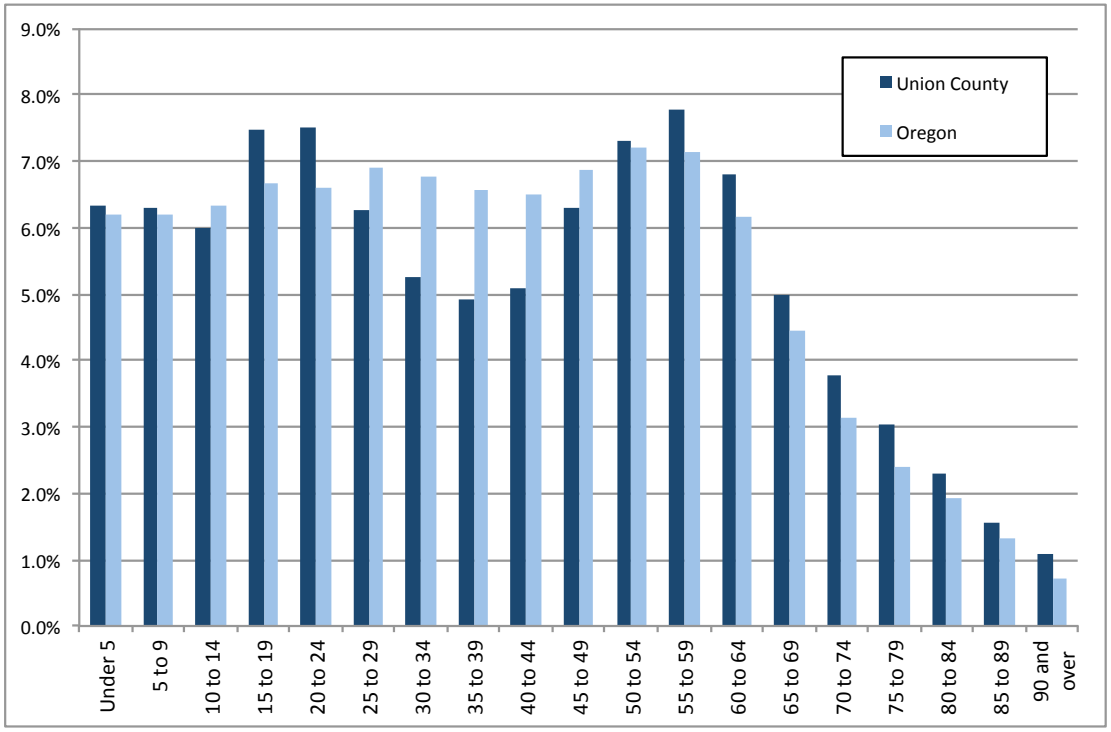
In Figure LG-2 one can see the effects of having a university in La Grande. In 2010 Union County's second and third largest age bracket were 15 to 19 year olds (7.5%) and 20 to 24 year olds (7.5%). Only Benton, Polk, and Lane counties have higher proportions within those age brackets.[14]Even with the college age students in Union County's population mix, the elderly population is still higher than the state of Oregon average in every age bracket greater than 50. The population older than 65 accounted for 16.7percent of Union County's population, compared to Oregon's 13.9 percent.[15]The reason why the share of young and elderly populations is so high is because of the noticeable lack of 25-44 year olds.[16]

[14] Union showed a higher percentage of 15-19 year olds than Lane (7.5% to 7.3%) but a lower percentage of 20-24 year olds

[15] Oregon Employment Department "Senior Citizens are More Prominent in Eastern Oregon's Population Mix" found here: http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007019 Accessed May 2013;

[16]http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00007708

Figure LG-2 Population by Age Group – Union County and Oregon



Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2012;

Income

Table LG-9 shows Union County's median income difference between 2000 and 2011. There are variables for real (inflation adjusted) and nominal dollars for the 2000 values. Union County's inflation adjusted median household income ("real" income) decreased between 2000 and 2011 (-7.0%), slightly more than the state's decrease(-6.7%).For the same time period, median household incomes within the cities of Elgin and La Grande decreased, 18.5% and 13.1%, respectively. North Powder and Summerville have the largest median income growth, 26.0% and 30.8%, respectively.

Table LG-9 Union County -- Median Household Income

Jurisdiction	2000 (Real $)*	2011	Percent Change
Oregon	$53,447	$49,850	-6.7%
Union County	$44,071	$40,974	-7.0%
Cove	$50,346	$44,674	-11.3%
Elgin	$41,081	$33,468	-18.5%
Imbler	$52,754	$48,750	-7.6%
Island City	$57,456	$50,179	-12.7%
La Grande	$41,247	$35,831	-13.1%
North Powder	$31,569	$39,773	26.0%
Summerville	$44,903	$58,750	30.8%
Union	$37,266	$39,972	7.3%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics"; U.S. Census Bureau, Table DP3 "Profile of Selected Economic Characteristics: 2000,"http://censtats.census.gov/cgi-bin/pct/pctProfile.pl, Accessed March 2013. *Note: 2000 figures are adjusted for inflation based on the CPI Calculator provided by the Bureau of Labor Statistics, http://www.bls.gov/data/inflation_calculator.htm Accessed May 2013.

Table LG-10 shows the poverty levels among all persons, those under 18, families, and families with children under 18. Poverty levels in Union County were above state averages in every category (individuals and families). Cove and Summerville showed a remarkably lower poverty rate than state average.

Table LG-10 Union County Individuals and Families below Poverty Level

Jurisdiction	All People	People < 18	Families	Families with Children < 18
Oregon	14.8%	19.6%	10.2%	16.7%
Union County	16.6%	22.0%	10.3%	19.0%
Cove	6.9%	7.6%	5.8%	8.7%
Elgin	20.2%	27.0%	14.9%	35.7%
Imbler	12.1%	14.9%	15.5%	22.9%
Island City	13.6%	28.6%	9.1%	26.5%
La Grande	22.9%	31.2%	14.5%	24.0%
North Powd	11.2%	13.6%	7.9%	10.5%
Summerville	1.4%	0.0%	0.0%	0.0%
Union	11.3%	21.6%	7.9%	18.0%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics, "http, accessed March 2013.

Education

Table LG-11 shows the educational attainment rate in terms of high school and college graduation for Union County. Union County ranked above state average in percentage of population with a high school degree, but below in percentage of population with a college degree, which may be surprising considering the presence of Eastern Oregon University.

Table LG-11 Union County -- Educational Attainment

Jurisdiction	Total Population > 18 Years	No High School Degree	High School Graduate and beyond	College Graduate and beyond
Oregon	2,937,534	11.8%	88.2%	34.0%
Union County	19,826	10.6%	89.4%	27.7%
Cove	422	18.5%	81.5%	33.9%
Elgin	1,155	13.1%	86.9%	16.0%
Imbler	176	11.9%	88.1%	26.1%
Island City	848	10.4%	89.6%	25.6%
La Grande	10,132	9.6%	90.4%	28.2%
North Powder	297	11.4%	88.6%	29.0%
Summerville	96	5.2%	94.8%	18.8%
Union	1,455	9.9%	90.1%	22.4%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B15001 "Sex by Age by Educational Attainment for the population 18 years and over, accessed March 2013.

Union County Economic Capacity

Union County's assets are largely tied to its natural resources and recreation these assets may be more vulnerable to natural disasters and can suffer environmental damages. Among Union County's main assets is having Eastern Oregon University as an education and employment hub for the region. Table LG-12 describes some of these assets as well as some of the major employers in the county. The following assets were identified by the NHMP Steering Committee in 2007 and 2013:

Table LG-12 Union County Economic Asset Identification

Economic Assets
Eastern Oregon University provides the County with employment opportunities, infrastructure that can support cultural and educational offerings, and on-line business-related programs. Additionally, several student organizations provide services to the community.
Major employers include Nash Trailers, Hexion Chemical Company, Northwood, Moda, Grande Ronde Hospital, EOU, Anderson Perry, Boise Cascade, government agencies and/or departments, and schools.
Economic Assets: Having the EOU in La Grande is a big economic engine. The airport activities makes Union a major hub, agriculture and timber
Union County supports a variety of small, locally-owned businesses through which a number of workers are employed. Small businesses are particularly susceptible to economic losses created by power outages and structural damages.
Transportation systems (i.e., interstates, Union Pacific Railroad, airports) are vital to the region's economic stability and pursuits.
The City of Cove maintains a hydroelectric power-plant. Although not dependent on the plant for power needs, Cove is required to produce a certain amount of power per year. Should drought or power-outages frequently occur, Cove may financially struggle.
Recreational opportunities and annual fairs / events bring tourism and economic benefits to the County.
Future renewable energy endeavors (i.e., wind farms and biomass productions) may bring additional growth and financial stability to Union County.
Three mills in Union County have closed or reduced employment levels following timber harvesting reductions on public lands.

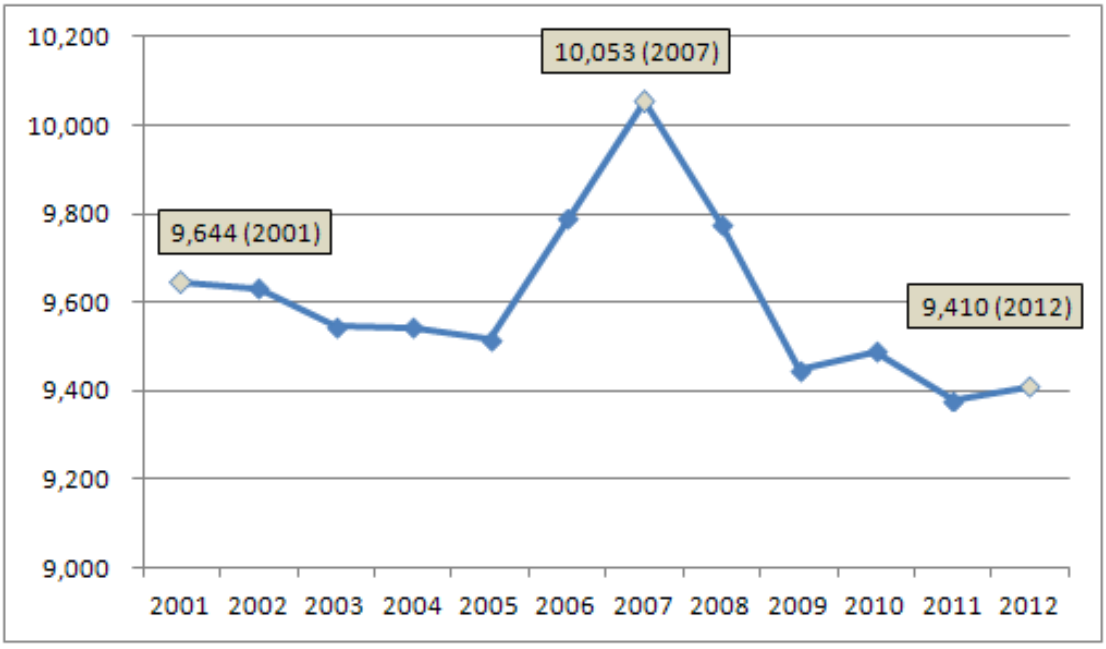
Source: Union County NHMP Steering Committee, 2007, 2013

Industry

TOTAL EMPLOYMENT

Figure LG-3 shows Union County's total non-farm employment. Union County experienced growth in employment between 2005 and 2007. Since 2007 employment has declined and held steady at approximately 9,400. The 2007 peak and subsequent decline in employment occurred simultaneously with the nationwide recession and is likely correlated.

Figure LG-3: Union County 2001-2012 Total Nonfarm Employment



Source: Oregon Employment Department, "2001-2012 Covered Employment and Wages Summary Reports". http://www.qualityinfo.org/olmisj/labforce; Accessed June 2013.

EMPLOYMENT BY INDUSTRY

Between 2007 and 2011, the sectors of growth within Union County were Education and Health Services (15.4%), Federal Government (6.9%), and Natural Resources and Mining (5.1%). Employment in one basic sector, Natural Resource and Mining, grew by 3.3%. State government saw a large growth in the region (2.5%), fueled in part by Eastern Oregon University.[17] Sectors of the greatest loss included Manufacturing (-28.7%), Construction (-24.1%), Information (-23.6%), and Finance Activities (-21.4%). The manufacturing sector alone trimmed 446 jobs during this time period. Local government saw a large increase in employment for the state of Oregon, 2011 was four percent higher than in 2001.[18] In Union County, however, local government employment in 2011 was 21 percent lower than 10 years earlier. In fact, Union County's 2011 local government workforce was its smallest in 23 years.[19] Furthermore, the local government industry cut more jobs from 2010 to 2011 than any other segment of Union County's economy.[20]

Table LG-13 shows the total employment by industry for Union County

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[17] Oregon Employment Department "Eastern Oregon Job Trends in 2012: Only Pockets of Recovery" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008580 Accessed June 2013 Regional Economist Jason Yohanon: "More than half of all state jobs in Union County are at Eastern Oregon University, and EOU's climbing enrollment pushed those employment numbers higher. (For statistical purposes, even student workers count as state employees.)"

[18] Oregon Employment Department "Local Government Employment in Union County Sinks to Decades-Long Low" http://www.qualityinfo.org/olmisj/ArticleReader?itemid=00008139 Accessed September 2013

[19] Ibid

[20] Ibid

TableLG-13 2011 Total Employment by Industry

Jurisdiction	2012 Firms	2012 Employees	2012 Percent Workforce	2012 Average Pay	Percent Change in Employment 2007-2012
Total	*898*	*9,410*	*100%*	*$32,976*	-6.4%
Total Private	819	7,220	76.7%	$31,045	-7.7%
Natural Resources and Mining	73	410	4.4%	$28,022	5.1%
Construction	98	412	4.4%	$36,611	-24.1%
Manufacturing	30	1,106	11.8%	$42,101	-28.7%
Trade, Transportation & Utilities	160	1,806	19.2%	$27,559	-6.6%
Wholesale	32	240	2.6%	$37,555	-4.4%
Retail	100	1,349	14.3%	$23,922	-8.0%
Information	17	120	1.3%	$32,409	-23.6%
Finance Activities	60	276	2.9%	$34,093	-21.4%
Professional & Business Services	90	446	4.7%	$31,028	4.4%
Education & Health Services	110	1,473	15.7%	$39,212	15.4%
Leisure & Hospitality	82	840	8.9%	$11,809	-4.3%
Other Services	100	331	3.5%	$19,281	7.5%
Government	79	2,190	23.3%	$39,342	-2.0%
Federal	18	232	2.5%	$60,806	6.9%
State	20	982	10.4%	$41,539	2.5%
Local	41	977	10.4%	$31,998	-7.7%

Source: Oregon Employment Department "2007 and 2012 Covered Employment and Wages Summary Reports." http://www.qualityinfo.org/olmisj/labforce. Accessed June 2013.

HIGH REVENUE SECTORS

Table LG-14 shows the reported revenue of the top nine sectors in Union County from the year 2007. In 2007, the three sectors with the highest reported revenue were *Manufacturing* (39.4%), *Retail Trade* (39.0%), and *Health Care and Social Assistance*. These three sectors combined generated over $766 million in revenue for the County or almost 90% of the total revenue share. The remaining six sectors are: *Accommodation & Food Services* (3.8%), *Professional, Scientific, & Technical Services* (2.3%), *Other Services* (1.6%), *Administration & Support & Water Management & Remediation Services* (1.5%), *Real Estate & Rental & Leasing* (1.1%), *and Art, Entertainment, & Recreation* (0.2%). However, the *Educational Services* and *Wholesale Trade* sector data was withheld and may make up a larger percentage of the total county revenue, particularly considering Eastern Oregon University and the school districts.

Table LG-14 Revenue of Top Sectors in Union County

Sector Meaning (NAICS code)	Sector Revenue ($1,000)	Percent of Total Revenue	Sector Ranking
Manufacturing	$337,099	39.4%	**1**
Retail Trade	$333,760	39.0%	**2**
Health Care & Social Assistance	$95,777	11.2%	**3**
Accomodation & Food Services	$32,852	3.8%	**4**
Professional, Scientific & Technical Services	$19,304	2.3%	**5**
Other Services (except Public Administration)	$13,300	1.6%	**6**
Administrative & Support & Waste Management & Remediation Services	$13,114	1.5%	**7**
Real Estate & Rental & Leasing	$9,539	1.1%	**8**
Arts, Entertainment & Recreation	$1,864	0.2%	**9**
Wholesale Trade	D		
Educational Services	D		
Information	N		
Total	$856,609		

Source: U.S. Census Bureau, 2007 Economic Census, Table EC0700A1 "All sectors: Geographic Area Series: Economy-Wide Key Statistics: 2007," http://factfinder2.census.gov/, *D = Withheld, N = No Data* accessed March 2013.

Union County Community Connectivity

Civic Engagement

The 2012 General Election generated a turnout from 12,006 people in the County as of November 11th, 2012.[21] Other indicators such as volunteerism, participation in formal community networks and community charitable contributions are examples of other civic engagement that may increase community connectivity.

Cultural Resources

Historic Places

Historic and cultural resources such as historic structures and landmarks can help to define a community and may also be sources for tourism revenue. Protecting these resources from the impact of disasters is important because they have an important role in defining and supporting the community. Table C-9u identifies the number of historical sites in Union County. Overall, there are a total of 19 historically registered places in Union County.

[21] Union County Republican Central Committee, http://www.ucrcc.org/2012/11/11/union-county-election-results/, accessed September 2013.

Table LG-15 Union County Historic Places

Type	Listed on the National Register
Archeological	0
Bridges	0
Cemetaries	0
Churches	1
Commercial, Cultural Buildings	1
Districts	2
Houses, Hotels, Resorts and Cabins	11
Military Posts, Ranger Stations and Guard Lookouts	0
Municipal Buildings, Libraries and Schools	4
Parks, Campgrounds, Ranches, Barns, and Openspace	0
Total	**19**

Source: Oregon Historic Sites Database, http://heritagedata.prd.state.or.us/historic/index.cfm?do=v.dsp_main, accessed September 2013.

LIBRARIES AND MUSEUMS

Libraries and museums develop cultural capacity and community connectivity as they are places of knowledge and recognition, they are common spaces for the community to gather, and can serve critical functions in maintaining the sense of community during a disaster. They are recognized as safe places and reflect normalcy in times of distress. There are currently five community libraries in Union County located in Cove, Elgin, La Grande, North Powder, and Union.[22] There are five museums in Union County: Elgin Museum, Eastern Oregon Fire Museum and Learning Center in La Grande; Manuel Museum in La Grande (Hot Lake); The Think Link Discovery Center in La Grande; the Union County Museum in Union City.[23]

CULTURAL EVENTS

Other such institutions that can strengthen community connectivity are the presence of festivals and organizations that engage diverse cultural interests. Examples of events and institutions include The Stampede, hunting season, events that occur at the University campus (e.g. graduation), local high school events (e.g. softball and baseball tournaments), seasonal harvests, professional mushroom pickers come in the spring. Not only do these events bring revenue into the community, they have potential to improve cultural competence and enhance the sense of place. Cultural connectivity is important to community resilience, as people may be more inclined to remain in the community because they feel part of the community and culture.

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[22] Libraries of Eastern Oregon http://librariesofeasternoregon.org/leo-libraries/ Accessed September 2013

[23] Union County Chamber of Commerce "Community Profile" http://www.journalgraphicsdigitalpublications.com/epubs/UnionCountyChamberGuide2013/UnionCountyChamberChamberGuide2013/#?page=0 Accessed September 2013

Community Stability

Residential Geographic Stability

Community stability is a measure of rootedness in place. It is hypothesized that resilience to a disaster stems in part from familiarity with place, not only for navigating the community during a crisis, but also accessing services and other supports for economic or social challenges.[24] Table LG-16 estimates residential stability across the region. It is calculated by the number of people who have lived in the same house and those who have moved within the same county a year ago, compared to the percentage of people who have migrated into the region. Union County overall has geographic stability rating of about 92% (i.e., 92% of the population lived in the same house or moved within the county).

Table LG-16 Regional Residential Stability

Jurisdiction	Population	Geographic Stability	Same House	Same County
Union County	25,262	92.3%	80.9%	11.3%
Cove	564	87.0%	78.5%	8.5%
Elgin	1,536	94.4%	80.5%	13.9%
Imbler	223	98.7%	95.1%	3.6%
Island City	996	94.0%	88.4%	5.6%
La Grande	12,855	90.2%	73.2%	17.0%
North Powder	466	95.7%	88.2%	7.5%
Summerville	137	86.1%	80.3%	5.8%
Union	1,897	95.8%	91.1%	4.7%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B07003 "Geographical Mobility in the Past Year 5-Year Estimate," http://factfinder2.census.gov/, accessed September 2013.

Homeownership

Often homeownership is associated with greater resilience as it is a measure of place attachment and commitment. Homeownership is an indicator that residents will return to a community post-disaster, as these people are economically and socially invested in the community. Similar to communities with higher median household income, homeownership can reflect an increased resource vulnerability to prepare, respond and cope with a crisis situation.

Table LG-17 identifies housing tenure across the county. The table shows the home-ownership rate of occupied households is lowest in La Grande and Elgin. There are approximately 8,305 renters in Union County. Renters are less likely to return after a disaster, since they are less economically invested in the community.

[24] Cutter, Susan, Christopher Burton, Christopher Emrich. "Disaster Resilience Indicators for Benchmarking Baseline Conditions." Journal of Homeland Security and Emergency Management.

Table LG-17 Homeownership

Jurisdiction	Occupied Households	Owner Occupied	Percent Owner Occupied	Renter Occupied	Percent Renter Occupied	Population Renter Occupied
Union County	10,501	6,873	65.5%	3,628	34.5%	8,305
Cove	240	182	75.8%	58	24.2%	128
Elgin	714	491	68.8%	233	31.2%	567
Imbler	114	101	88.6%	13	11.4%	34
Island City	399	313	78.4%	86	21.6%	231
La Grande	5,395	2,893	53.6%	2,502	46.4%	5,410
North Powder	184	136	73.9%	48	26.1%	121
Summerville	45	36	80.0%	9	20.0%	34
Union	859	636	74.0%	223	26.0%	568

Source: U.S. Census Bureau, American Community Survey 2007-2011 Table DP04 "Selected Housing Characteristics," http://factfinder2.census.gov, accessed September 2013.

Union County Political Capacity

Political capacity is recognized as the government and planning structures established within the community. In terms of hazard resilience, it is essential for political capital to encompass diverse government and non-government entities in collaboration; as disaster losses stem from a predictable result of interactions between the physical environment, social and demographic characteristics and the built environment.[25] Resilient political capital seeks to involve various stakeholders in hazard planning and works towards integrating the Natural Hazard Mitigation Plan with other community plans, so that all planning approaches are consistent.

Government Structure

Union County employs a county clerk, District Attorney, Sheriff, Treasurer, and three commissioners, along with the following departments:

Emergency Services

The Emergency Services Program serves to aid the citizens of Union County by managing all types of emergencies. The Emergency Operations Plan, the Program's all-hazard approach to emergency management, is used to mitigate, prepare, respond, and recover from the effects of war, natural disaster, technological accidents, and other major incidents.

Economic Development

The Department of Economic Development links citizens to four opportunities: The Northeast Oregon economic Development District (NEOEDD), Union County Economic Development Corporation (UCEDC), Oregon Economic & Community Development Department (OECDD), and Oregon Small Business Development Center (OSBDC). NEOEDD is a public organization established in 1985 to serve Baker, Union, and Wallowa Counties. Their services include training and technical assistance, business assistance, strategic planning, and program administration/staffing. UCEDC is a non-profit organization comprised of leaders from the private sector, cities and county who work as a team to maintain and enhance the quality of life found in Union County. UCEDC networks with other

[25] Mileti, D. 1999. Disaster by Design: a Reassessment of Natural Hazards in the United States. Washington D.C.: Joseph Henry Press.

economic development organizations to help businesses and individuals in Union County. The Union County Economic Development Corporation is a partner with a number of communities, regional and statewide organizations to promote economic development in the area. OECDD provides economic and community development and cultural enhancement throughout the state, and administers programs that assist businesses, communities and people. OSBDC services include financial, marketing, production, organization, international trade and feasibility studies. The group assists in developing business plans, assessing markets, creating cash flow projections, or controlling costs.

PLANNING

The Union County Planning Department is responsible for the preparation and maintenance of the county's land use plan and zoning ordinances, administration and implementation of the regulations, processing public requests for special district annexations, and road creations and vacations. The county land use plan is periodically reviewed and updated through a public review process. Department staff provides information, application assistance and documentation on the regulations to the general public. The department also provides assistance to the County Planning Commission and Board of Commissioners when they are involved in land use regulation decisions.

PUBLIC WORKS

A myriad of internal departments comprise the Union County Public Works Department (UCPWD). Among these are the Road Department, Equipment Maintenance Department, Traffic Control and Vegetation Management. Current funding is received from timber receipts and gasoline taxes exclusively.

ROAD DEPARTMENT

The Road Department's goal is to ensure that the traveling public has a safe and efficient roadway system. The maintenance duties include, but are not limited to, asphalt and gravel road maintenance, snow removal, bridge maintenance and general right-of-way maintenance.

TRAFFIC CONTROL DEPARTMENT

The Traffic Control Department installs and maintains the signs, signals, and pavement markings that provide information and guidance to commuters. The Department additionally regularly inspects bridges.

Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[26]

[26]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

The Natural Hazards Mitigation Plan includes a range of recommended action items that, when implemented, will reduce the county's vulnerability to natural hazards. Many of these recommendations are consistent with the goals and objectives of the county's existing plans and policies. Linking existing plans and policies to the Natural Hazards Mitigation Plan helps identify what resources already exist that can be used to implement the action items identified in the Plan. Implementing the natural hazards mitigation plan's action items through existing plans and policies increases their likelihood of being supported and getting updated, and maximizes the county's resources.

The table below is a list of plans and policies already in place in Union County:[27]

Table LG-18 Existing Plans

Jurisdiction	Document	Year Acknowledged	Last Revision
Union County	Community Wildfire Protection Plan		2005
Union County	Zoning, Partition and Subdivision Ordinance		1983
Union County	Transportation System Plan		1999
Union County	Comprehensive Land Use Plan		1978
Union County	Flood Insurance Study		1996
Union County	Grande Ronde Subbasin Plan		2004
Cove	Comprehensive Land Use Plan	1984	1984
Cove	Zoning Ordinance		1984
Elgin	Comprehensive Plan	1984	
Imbler	Comprehensive Plan	1981	1981
Imbler	Zoning Ordinance		1993
Island City	Comprehensive Plan	1984	2001
Island City	Zoning Ordinance		2001
La Grande	**Comprehensive Plan**	**1984**	**2001**
La Grande	**Zoning Ordinance**		**2000**
La Grande	**Land Development Code**		**2009**
La Grande	**Morgan Lake Study**		**2013**
La Grande	**Transportation System Plan**		**2013**
North Powder	Comprehensive Plan	1983	1983
Union City	Comprehensive Plan	1981	1981

Source: Oregon Blue Book

Community Organizations and Programs

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In

[27] Oregon Blue Book; La Grande City Website

planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within the population (e.g. elderly, children, low income). The County can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

For a full list of community organizations that may be potential partners for implementing mitigation actions visit the Community Profile, Appendix C: Table C-28

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.

Hazard Analysis and Issue Identification Update

On September 9th, 2013, the La Grande addendum update working group reviewed and revised the plan's Hazard Analysis and Risk Assessment section. Changes were made where appropriate to reflect changes in perception of risk from natural hazards to La Grande, which are discussed throughout this plan as well as in the Planning and Public Process Appendix of the Northeast Oregon NHMP. The following is a summary of input from the original city addendum working group, along with revisions and additions from the 2013 working group.

The table below presents the entire updated hazard analysis matrix for La Grande. The hazards are listed in order of rank from high to low and compare them to the county's ranking for each hazard. The table shows that hazard scores are influenced by each of the four categories combined. For local governments, conducting the hazard analysis is a useful step in planning for hazard mitigation, response, and recovery. The method provides the jurisdiction with sense of hazard priorities, but does not predict the occurrence of a particular hazard.

With considerations for past historical events, the probability or likelihood of a particular hazard event occurring, the vulnerability to the community, and the maximum threat or worst-case scenario, winter storm, flood, and wildfire were ranked as the top three hazard threats to the city (Top Tier). Drought, extreme temperatures, earthquake (crustal) and landslide/ debris flows were the next highest ranked hazards (Middle Tier). Windstorm, volcanic event and dust storm comprise the lowest ranked hazards (Bottom Tier).La Grande did not rank the earthquake (Cascadia) hazard.

Table LG-19 Hazard Analysis Matrix – La Grande

Hazard	History	Vulnerability	Maximum Threat	Probability	Total Threat Score	Hazard Rank	County Hazard Rank
Winter Storm	10	50	100	70	230	#1	#1
Flood	20	45	100	63	228	#2	#2
Wildfire	10	45	80	70	205	#3	#3
Drought	18	10	100	63	191	#4	#7
Extreme Temperatures	2	50	80	56	188	#5	#4
Earthquake - Crustal	2	50	100	14	166	#6	#6
Landslide	2	25	80	49	156	#7	#8
Windstorm	2	25	30	56	113	#8	#5
Volcano	2	5	10	7	24	#9	#10
Dust Storm	2	5	10	7	24	#9	#9
Earthquake - Cascadia	NR	NR	NR	NR	NR	NR	NR

Sources: La Grande NHMP Steering Committee, September 9, 2013 and Union County NHMP Steering Committee, Updated June 11, 2013.Note: NR = Not Ranked

The following table categorizes the probability and vulnerability scores from the hazard analysis for the city and compares the results to the assessment completed by the Union County NHMP Steering Committee (areas of differences are noted with **bold** text within the city ratings). The table indicates that there lower vulnerability to drought, extreme temperatures, and wildfire to the city than the county. The table also indicates that there is

a higher probability of landslide and a higher vulnerability to a volcanic event to the city than the county.

Table LG-20 Probability and Vulnerability Comparison – La Grande and Union County

Hazard	La Grande		Union County	
	Probability	Vulnerability	Probability	Vulnerability
Drought	High	**Low**	High	Moderate
Dust Storm	NR	NR	Low	Low
Earthquake - Cascadia	NR	NR	NR	NR
Earthquake - Crustal	Low	High	Low	High
Extreme Temperatures	High	**Moderate**	High	High
Flood	High	High	High	High
Landslide	**Moderate**	Low	Low	Low
Volcanic Eruption	Low	**Moderate**	Low	Low
Wildfire	High	**Moderate**	High	High
Windstorm	High	High	High	High
Winter Storm	High	High	High	High

Sources: La Grande NHMP Steering Committee, September 9, 2013 and Union County NHMP Steering Committee, Updated June 11, 2013.Note: NR = Not Ranked

Drought

The La Grande Working Group determined that there is a **High** probability that the City will experience severe extended drought conditions. This rating is consistent with the 2008 La Grande Hazard Analysis and 2013 Union County Hazard Analysis. The 2008 City Addendum noted that "the City is concerned about aquifer capacities should growth continued" and that the "amount of water within the Grande Ronde Valley is currently unknown." The 2013 working group was similarly concerned about droughts that could affect aquifer. There is no mandated water conservation in the city. The working group determined that the city is less vulnerable than the county – there has not been a need for the city to apply for federal aid. As such, the La Grande Working Group determined that the city has a drought vulnerability of **Low**. This rating is consistent with the 2008 La Grande Hazard Analysis and lower than the 2013 Union County Hazard Analysis score of moderate

Dust Storm

The City of La Grande Working Group did not rank the dust storm hazard.

Earthquake (Crustal and Cascadia)

CRUSTAL EARTHQUAKE

The La Grande Working Group determined that there is a **Low** probability that a crustal earthquake event will affect the city. This rating is consistent with the 2008 La Grande Hazard Analysis and the 2013 Union County Hazard Analysis. The history of recent earthquakes in the La Grande area is limited. The fault line wraps around the Grande Ronde Hospital. The hospital has a monitoring station to measure movement. There are historic buildings and critical facilities in La Grande that may have a high risk of collapse during extreme levels of seismic activity. The buildings that were considered to have a 'very high'

collapse potential rating in the DOGAMI Rapid Visual Survey include the La Grande City Police Department, Willow Elementary School, La Grande High School, and Greenwood Elementary. The working group considered other older buildings that may have a high collapse potential not surveyed by DOGAMI including city hall and some of the historic main street buildings. As such, the La Grande Working Group determined that the city has a **High** vulnerability to an earthquake hazard. This rating is consistent with the 2013Union County Hazard Analysis and higher than the 2008 La Grande Hazard Analysis score of Moderate.

CASCADIA SUBDUCTION ZONE EARTHQUAKE

The City of La Grande Working Group did not rank the Cascadia Subduction zone earthquake hazard.

Extreme Temperatures

The La Grande Working Group determined that there is a **High** probability that the city will be affected by an extreme temperatures event. This hazard was given a moderate rating in the 2013 Union County Hazard Analysis and was unranked in the 2008 La Grande Hazard Analysis. The working group considered low temperature events that can last for weeks or more and cause pipes to break. These types of events would require vulnerable populations (such as the elderly) to be checked on. Any length of power outage would affect community. The Working Group considered La Grande to have a higher concentration of vulnerable population than the county. In winter cold there would be more people affected if power goes out, especially since people have converted to heat sources other than wood. As such, the La Grande Working Group determined that the city has a **High** vulnerability to an extreme temperatures event. This rating is consistent with the 2013 Union County Hazard Analysis.

Flood

The La Grande Working Group determined that there is a **High** probability of a flood event affecting the city. This rating is consistent with the 2008 La Grande Hazard Analysis and the 2013 Union County Hazard Analysis. Most flooding that affects the city is from snowmelt and warm temperatures. The city considered a breach in the Morgan Lake dam as a worst-case-scenario type event and discussed the recent Morgan Lake Study.[28] This study includes some mitigation recommendations among them is a diversion channel. The plan is to divert water to the west of Morgan Lake, divert flood water down other drainage. A Morgan Lake breach can result in affecting more than 25% of the population. The City can be considered more vulnerable than the county to floods. The county is affected by the Grande Ronde River while the City of La Grande it is more affected by flash floods. Previous floods have flowed on Gekeler Slough. Approximately 10% of population lives near or in the flood plain.

The 2008 city Working Group identified Deal Creek, Mill Creek, Taylor Creek, and Gekeler Slough as flooding sources within the city. The primary flooding sources for La Grande detailed in the Union County Flood Insurance Study (1988) include Old Settler's Slough and the Powder River.[29]

[28] Study to be completed and adopted after submission of NHMP by the Parks Director

[29] FEMA, Union County Flood Insurance Study, 1988

The La Grande Working Group determined that the city's vulnerability to flood is **High**. This rating is consistent with the 2008 La Grande Hazard Analysis and the 2013 Union County Hazard Analysis.

Landslide

There is little history and no steep slopes that would *directly* affect the La Grande; however, landslide incidents can cause an indirect commercial impact to the community via the Highway 86 closure. The La Grande Working Group determined that the city has a **Moderate** probability of a landslide. This rating is higher than the 2013 Union County Hazard Analysis score of Low and consistent with the 2008 La Grande Hazard Analysis. Landslide events within the city have been minor but a major one could potentially happen. More development in hillside area impacts the risk associated with a landslide. The high risk of landslides on the west side of La Grande; the hospital, in particular, is of concern to the City, although the hospital has taken efforts to ensure its stability. La Grande's "Geologic Hazards Zones" is specifically intended to lower the risk of homeowner's one the City's western slopes. The La Grande Working Group determined that the city has a **Low** vulnerability to a landslide. This rating is consistent with the 2008 La Grande Hazard Analysis score and lower than the 2013 Union County Hazard Analysis score of moderate.

Volcanic Event

Considering past history the probability of a volcanic event for La Grande and Union County is **Low.** This hazard was not ranked in the 2008 City Addendum. While a volcanic event may not have a direct impact on the city, the ash fallout from an event in the Cascades or Mount St. Helens could potentially affect La Grande, especially for people with respiratory problems. As such, the La Grande Working Group determined that the city's vulnerability to a volcanic event is **Moderate**. This rating is higher than the 2013 Union County Hazard Analysis score of low.

Wildfire

Due to the history of wildfire in the county and near La Grande the working group determined that the probability of a wildfire event is **High**. This hazard was unranked in the 2008 La Grande Hazard Analysis and is consistent with the 2013 Union County Hazard Analysis score. The right combinations of things could cause a wildfire to affect the city. If there was a drought with dry city landscaping, a wildfire could potentially break out in town if it jumped. The Rooster Peak Fire in 1973 is the most damaging fire near La Grande. The fire was located near the southwest city limits and destroyed structures near the city limits.[30] However, smoke is the biggest concern, actual fire incursion is less likely, the city is at bottom of sloped land, and the fire would have to travel downhill to reach to the city. The 2004Union County Community Wildfire Protection Plan ranks the Morgan Lake/ Looking Glass Hill Wildland Urban Interface (which includes La Grande as a community at risk) as the number one ranked WUI in Union County.[31]Smoke has also been a concern for the city which affects the risk associated with wildfire because the city is within an inversion area.

[30]Union County CWPP 2004

[31]Ibid. This WUI borders the southwest edge of the city, overlapping the location of the Rooster Peak Fire

The working group determined that the city's vulnerability to wildfire is **Moderate**. This rating is lower than the 2013 Union County Hazard Analysis score of high.

Windstorm

Windstorms occur frequently in the La Grande area therefore the La Grande Working Group determined that the probability of a windstorm event is **High**. This rating is consistent with the 2008 La Grande Hazard Analysis and the 2013 Union County Hazard Analysis. Windstorms happen almost every year and result in tree limb falling, but there is no significant damage to structures. Incidents occur frequently in the valley: roofs have been peeled back and it is not unusual to have 30 to 50 mph wind. The working group claims that the city is less vulnerable than the county. There has not been a large history of emergency-type large wind events in the city. The Steering Committee determined that the city's vulnerability to a windstorm is **High**. This rating is consistent with the 2013 Union County Hazard Analysis rating of high. The vulnerability to windstorms was not addressed in the 2008 La Grande Hazard Analysis.

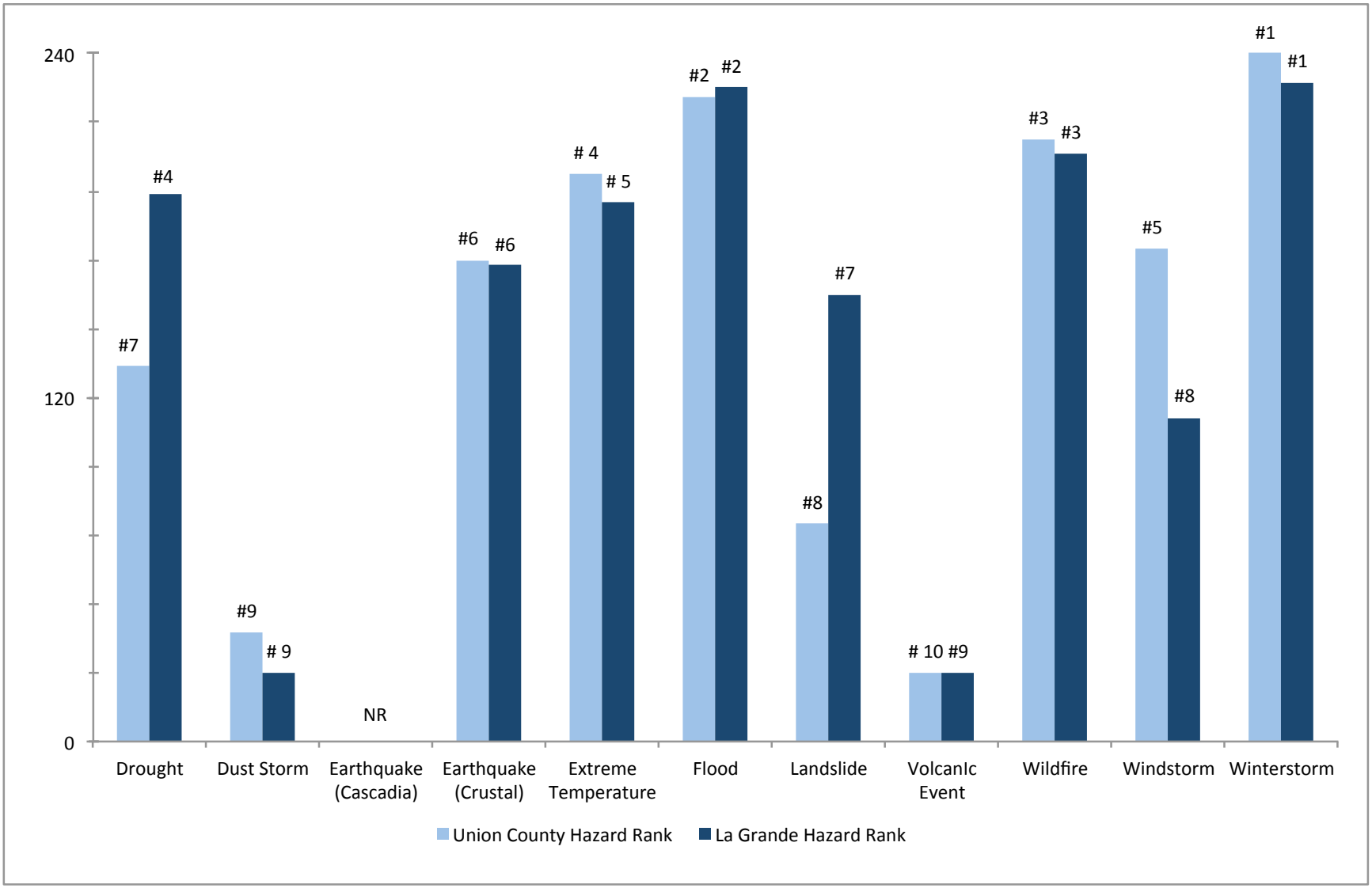
Winter Storm

Considering the history of winter storms in the region the La Grande Working Group determined that the probability of a winter storm event is **High**. This rating is consistent with the 2008 La Grande Hazard Analysis and the2013 Union County Hazard Analysis. The city is generally well prepared for winter storm events. More than 10% of the population is generally affected by the winter storm events that occur every year. There hasn't been a significant winter storm event in the community since 1995-- snow levels have decreased from their historic records. The pass can be closed occasionally near La Grande. Travelers often get stuck in the valley when the pass is closed, trucks on freeway, this can cause motels to fill up and there may be no place to park. The La Grande Working Group determined that the cities vulnerability to a winter storm is **High**. This ranking is consistent with the 2008 La Grande Hazard Analysis and the 2013 Union County Hazard Analysis.

The figure below presents a summary of the hazard analysis for the La Grande and compares the results to the assessment completed by the Union County NHMP Steering Committee.

In terms of probability, vulnerability, history, and maximum threat, the hazard analysis for the city overall rated their threat to drought, winter storm, and wildfire as greatest, similar to the county. There was similarity between the city and county in dust storm, earthquake, extreme temperatures, flood, wildfire, and winter storm events. The city has a higher risk to drought and landslide than the county and the county has a higher risk to windstorm events than the city.

Figure LG-4 Overall Hazard Analysis Comparison (OEM: Total Threat Score) – La Grande and Union County



Source: La Grande NHMP Steering Committee, September 9, 2013 and Union County NHMP Steering Committee, Updated June 11, 2013.Note: NR = Not Ranked

Mitigation Plan Mission

The plan mission states the purpose and defines the primary functions of the Northeast Oregon Natural Hazard Mitigation Plan. It is intended to be adaptable to any future changes made to the plan and need not change unless the community's environment or priorities change.

The 2013 plan update steering committee reviewed, and La Grande Working Group accepted, the 2008 mission statement and agreed that the following statement best describes the over purpose and intent of this plan:

Mission: *To create a disaster-resilient Northeast Oregon*

Mitigation Plan Goals

Mitigation plan goals are more specific statements of direction that Northeast Oregon citizens, and public and private partners can take while working to reduce the county's risk from natural hazards. These statements of direction form a bridge between the broad mission statement and particular action items. The goals listed here serve as checkpoints as agencies and organizations begin implementing mitigation action items.

Goal 1: *Protect human welfare, property, and natural resources*

Goal 2*: Increase the resilience of local and regional economies*

Goal 3: *Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness*

Goal 4: *Strengthen organizational and community capacity*

Action Item Worksheets

Each action item has a corresponding action item worksheet describing the activity, identifying the rationale for the project, identifying potential ideas for implementation, and assigning coordinating and partner organizations. The action item worksheets can assist the community in pre-packaging potential projects for grant funding. The worksheet components are described below. These action item worksheets are located in Appendix A, *Action Items.*

PROPOSED ACTION TITLE

Each action item includes a brief description of the proposed action.

ALIGNMENT WITH PLAN GOALS

The plan goals addressed by each action item are identified as a means for monitoring and evaluating how well the mitigation plan is achieving its goals, following implementation.

ALIGNMENT WITH EXISTING PLANS/ POLICIES

Identify any existing community plans and policies where the action item can be incorporated. Incorporating the mitigation action into existing plans and policies, such as comprehensive plans, will increase the likelihood that it will be implemented.

RATIONALE OR KEY ISSUES ADDRESSED

Action items should be fact-based and tied directly to issues or needs identified throughout the planning process. Action items can be developed at any time during the planning process and can come from a number of sources, including participants in the planning process, noted deficiencies in local capability, or issues identified through the risk assessment. The rationale for proposed action items is based on the information documented in Section 2 and the Hazard Annexes.

IMPLEMENTATION THROUGH EXISTING PROGRAMS

The ideas for implementation offer a transition from theory to practice and serve as a starting point for this plan. This component of the action item is dynamic, since some ideas may prove to not be feasible, and new ideas may be added during the plan maintenance process. Ideas for implementation could include: (1) collaboration with relevant organizations, (2) alignment with the community priority areas, and (3) applications to new grant programs. When an action is implemented, more work will probably be needed to determine the exact course of action.

The Northeast Oregon Natural Hazard Mitigation Plan includes a range of action items that, when implemented, will reduce loss from hazard events in the region. Within the plan, FEMA requires the identification of existing programs that might be used to implement these action items. The northeast Oregon counties and their participating cities currently address statewide planning goals and legislative requirements through their comprehensive land use plans, capital improvements plans, strategic plans and mandated standards and building codes. To the extent possible, the jurisdictions will work to incorporate the recommended mitigation action items into existing programs and procedures.

Many of the Northeast Oregon Natural Hazard Mitigation Plan's recommendations are consistent with the goals and objectives of the existing plans and policies. Where possible, the northeast Oregon counties and the participating cities will implement the multi-jurisdictional Natural Hazard Mitigation Plan's recommended actions through existing plans and policies. Plans and policies already in existence have support from local residents, businesses, and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[32] Implementing the NHMP's action items through such plans and policies increases their likelihood of being supported and implemented.

COORDINATING ORGANIZATION

The coordinating organization is the public agency or non-profit organization with the regulatory responsibility to address natural hazards, or that is willing and able to organize

[32]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

resources, find appropriate funding, or oversee activity implementation, monitoring and evaluation.

INTERNAL AND EXTERNAL PARTNERS

The internal and external partner organizations listed in the Action Item Worksheets are potential partners recommended by the project Steering Committee but not necessarily contacted during the development of the plan. The coordinating organization should contact the identified partner organizations to see if they are capable of and interested in participation. This initial contact is also to gain a commitment of time and/or resources toward completion of the action items.

Internal partner organizations are departments within the county or other participating jurisdiction that may be able to assist in the implementation of action items by providing relevant resources to the coordinating organization.

External partner organizations can assist the coordinating organization in implementing the action items in various functions and may include local, regional, state, or federal agencies, as well as local and regional public and private sector organizations.

POTENTIAL FUNDING SOURCES

Where possible, identify potential funding sources for the action item. Example funding sources can include: the federal Pre-Disaster Mitigation and Flood Mitigation Assistance Programs; state funding sources such as the Oregon Seismic Rehabilitation Grant Program; or local funding sources such as capital improvement or general funds. An action item may also have multiple funding sources.

ESTIMATED COST

Where possible, an estimate of the cost for implementing the action item is included.

TIMELINE

Action items include both short and long-term activities. Each action item includes an estimate of the timeline for implementation. *Short-term action items* (ST) are activities that may be implemented with existing resources and authorities in one to two years. *Long-term action items* (LT) may require new or additional resources and/or authorities, and may take from three to five years to implement. *Ongoing action items* are activities that are currently being performed and will continue into the foreseeable future.

STATUS

As action items are implemented or new ones are created during the plan maintenance process, it is important to indicate the status of the action item—whether it is new, ongoing, deferred, or complete. Documenting the status of the action will make reviewing and updating mitigation plan easier during the plan's five-year update, and can be used as a benchmark for progress. *Deferred* action items have yet to see any significant work begin on the particular action.

PRIORITY

The County Steering Committees and City working groups can designate action items with a 'High' priority which indicates a higher level of importance than the other action items.

City of La Grande Action Items

The table below shows the action items that affect the city. Action items MH #1, MH #12 and DR #5 are "high" priority actions for the city. To review the action item forms see Appendix A. Items in bold are specific to the city and can be found at the end of this addendum.

Table LG-21 Action Item timelines, status, priority and related hazards

				Jurisdiction		Related Hazards						
Action Item	Timeline	Status	Priority	La Grande	Union County	Drought	Earthquake*	Flood	Landslide	Severe Weather**	Volcanic Event	Wildfire
MH #1	Short Term	Deferred	High	X	X	X	X	X	X	X	X	X
MH #2	Short Term	New		X	X	X	X	X	X	X	X	X
MH #3	Short Term	Deferred		X	X	X	X	X	X	X	X	X
MH #4	Short Term	Deferred		X		X	X	X	X	X	X	X
MH #9	Deferred	Deferred		X	X	X	X	X	X	X	X	X
MH #11	Ongoing	Ongoing		X	X	X	X	X	X	X	X	X
MH #12	Short Term	Deferred	High	X	X	X	X	X	X	X	X	X
MH #16	**Long Term**	**Deferred**		**X**		**X**	**X**	**X**	**X**	**X**	**X**	**X**
DR #2	Ongoing	Ongoing		X		X						
DR #3	Long Term	Deferred		X	X	X						
DR #5	Short Term	Deferred	High	X	X	X						
EQ #1	Long Term	New		X	X		X					
EQ #17	Long Term	New		X	X		X					
EQ #18	Long Term	New		X	X		X					
EQ #19	Long Term	New		X	X		X					
EQ #20	Long Term	New		X	X		X					
FL #1	Ongoing	Ongoing		X	X			X				
FL #2	Short Term	Deferred		X				X				
FL #3	Short Term	Deferred		X				X				
FL #4	Long Term	New		X				X				
FL #7	**Short Term**	**New**		**X**	**X**			**X**				
LS #1	Long Term	New		X	X				X			
WF #1	Ongoing	Ongoing		X	X							X

Source: Union County NHMP Steering Committee, La Grande NHMP Steering Committee. *Earthquake includes crustal and Cascadia Subduction Zone events. **Severe Weather includes dust storm, extreme temperatures, windstorm and winter storm events.

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?
MH # 16– Secure funding to filter water within the Beaver Creek Watershed, La Grande's backup water supply	Goal 1	

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The City of La Grande is concerned about aquifer capacities, should growth continue. The amount of water within the Grande Ronde Valley is currently unknown.
- The City of La Grande's water is supplied by wells. The Beaver Creek Watershed provides secondary backup, but it currently does not meet water quality standards. The City would like funding to filter the water.

Ideas for Implementation:

- Seek funding to filter the City's backup water supply
- Action is to be contingent upon an aquifer and/or groundwater study done for the Grande Ronde Valley

Coordinating Organization:	City of La Grande Public Works

Internal Partners:	External Partners:
City of La Grande Planning Department, Union County Water Master	Oregon Water Resources Department

Potential Funding Sources:	Estimated cost:	Timeline:
		Long Term

Form Submitted by:	2008 La Grande NHMP Steering Committees; revised and confirmed in 2013
Action Item Status:	Deferred

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?
FL #7– Implement Actions Identified in the Morgan Lake Study	Goal 1	

Affected Jurisdictions:

☐ Baker County	☐ Grant County	☐ Union County	☐ Wallowa County
☐ Baker City	☐ John Day	☒ La Grande	☐ Enterprise
☐ Halfway			

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- A study conducted by La Grande Parks Director is currently pending approval and includes mitigation actions to improve the resilience of La Grande from a Morgan Lake flood event
- The La Grande Working Group identified a breach of the
- As a result of the heavy rains during the latter part of May, 2011, the small saddle dam on the west side of Morgan Lake began to seep. The CalPac Company, for the purpose of generating electricity, built the dam in 1903. Parks Director Mark Touhey implemented temporary measures to stabilize the dam.

Ideas for Implementation:

- Include persons who created the Morgan Lake Study at semi-annual meetings.
- Incorporate Morgan Lake Study identified action items into the project prioritization process.

Coordinating Organization:	City of La Grande Parks Director

Internal Partners:	External Partners:
The City of La Grande, Union County Emergency Management	United States Army Corps of Engineers, Silver Jackets Federal Emergency Management Agency,

Potential Funding Sources:	Estimated cost:	Timeline:
		Short Term

Form Submitted by:	
Action Item Status:	New Action Item

Volume IV:
Mitigation Resources

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APPENDIX A: ACTION ITEM FORMS

The following tables list the action item numbers, the affected jurisdictions and the page that you can find the action. Each action includes the timeline and status for each county affected by the action. Note: See addenda for each city's updated timeline, status and action item prioritization.

Table A-1 Action Item Table of Contents and Affected Jurisdiction

Action Item	Page Number	Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
MH #1	A-3	X	X	X	X	X	X	X	X	X
MH #2	A-5	X	X	X	X	X	X	X	X	X
MH #3	A-6	X	X	X	X	X	X	X	X	X
MH #4	A-8	X	X		X	X	X	X	X	X
MH #5	A-10	X			X		X		X	
MH #6	A-12	X			X		X		X	
MH #7	A-13	X			X		X		X	
MH #8	A-14	X			X		X		X	
MH #9	A-15				X	X	X	X	X	X
MH #10	A-17				X	X				
MH #11	A-19						X	X		
MH #12	A-21						X	X		
MH #13	A-22								X	
MH #14	A-23								X	
DR #1	A-25	X			X		X		X	
DR #2	A-27	X	X	X	X	X	X	X	X	X
DR #3	A-29	X			X	X	X	X	X	X
DR #4	A-31	X	X	X						
DR #5	A-33						X	X		
EQ #1	A-35	X	X	X	X	X	X	X	X	X
EQ #2	A-37	X								
EQ #3	A-39	X	X							
EQ #4	A-41	X	X							
EQ #5	A-43	X	X							
EQ #6	A-45	X	X							

Table A-1 Action Item Table of Contents and Affected Jurisdiction (cont'd)

Action Item	Page Number	Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise
EQ #7	A-47	X	X							
EQ #8	A-49	X								
EQ #9	A-51				X	X				
EQ #10	A-53				X					
EQ #11	A-55				X					
EQ #12	A-57				X					
EQ #13	A-59				X					
EQ #14	A-61				X					
EQ #15	A-63				X					
EQ #16	A-65						X	X		
EQ #17	A-67						X	X		
EQ #18	A-69						X	X		
EQ #19	A-71						X	X		
EQ #20	A-73						X	X		
EQ #21	A-75						X			
EQ #22	A-77						X			
EQ #23	A-79						X			
EQ #24	A-81						X			
EQ #25	A-83						X			
EQ #26	A-85						X			
EQ #27	A-87								X	X
EQ #28	A-89								X	
FL #1	A-91	X	X	X	X	X	X	X	X	X
FL #2	A-93	X	X	X	X	X	X	X	X	X
FL #3	A-95	X	X	X	X	X	X	X	X	X
FL #4	A-97	X	X	X	X	X	X	X	X	X
FL #5	A-99				X					
LS #1	A-100	X			X		X	X	X	
SW #1	A-102	X			X		X			
SW #2	A-104	X			X		X		X	
SW #3	A-105	X			X		X		X	
WF #1	A-107	X	X		X		X		X	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #1 – Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties	Goal 4	☐ Baker ☐ Grant	☐ Union ☒ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Government is the largest employer in Region 7, making up over a quarter of all employment.
    - Percent of employment working for government by county: Baker: 22%; Grant: 42%; Union: 23%; Wallowa: 28%.
- As of yet, no municipality in Region 7 has identified a back-up plan in case of disaster.
- City and County services in Region 7 are typically relegated to one central building; should an earthquake or any other natural disaster interrupt the functioning of these buildings, municipal operations would cease to function.
- A Continuity of Operations Plan establishes policy and guidance to ensure the execution of the organization's most essential functions in any event that requires the relocation of selected personnel and functions to an alternate facility.

  Source: Oregon Natural Hazards Workgroup (ONHW). Cannon Beach Case Study Report. July 2006. Community Service Center, University of Oregon. Eugene, OR.
- Research has shown that staff turnover is likely to occur after a disaster, and veteran staff is critical after a disaster. Developing a continuity of operations plan will help prevent turnover so that existing personnel do not have to take on extra responsibilities during an already stressful time. In addition, continuity planning can help lessen turnover by ensuring competitive salaries and benefits and by reducing the amount of stress that staff will have to endure.

  Source: Oregon Natural Hazards Workgroup (ONHW). Cannon Beach Case Study Report. July 2006. Community Service Center, University of Oregon. Eugene, OR.
- The City of La Grande has concerns regarding the provision of redundancy of information.
- Wallowa County has created a redundant infrastructure network to maintain services; some historic archives are not included.
- Enterprise has begun work on a Citycounty Insurance, Agility Recovery Solutions plan which provides similar recovery planning of a COOP. The City of John Day also participated in a webinar in 2009/2010 regarding this topic. More information can be found at the Citycounty Insurance website: http://www.cisoregon.org/

Ideas for Implementation:

- Recommend that public sector employees take the FEMA Independent Study Program: Continuity of Operations Course (online). The course provides a fundamental understanding of continuity of operations plans, terms, objectives, and benefits to public sector departments and agencies. It also provides information on how a COOP event might affect employees, the department/agency and an

employee's family.

- Distribute the FEMA continuity of operations self-assessment tool to cities throughout the region.
- Review existing COOP plans and begin to establish county benchmarks for increasing recovery potential.
- Seek assistance from the OEM COOP toolkit available on the Oregon Emergency Management website found here: http://www.oregon.gov/omd/oem/pages/plans_train/coop.aspx

Coordinating Organization:	Interested City Managers and/or City Council; County Commissioners, Emergency Management

Internal Partners:	**External Partners:**
Relevant Public Works and Emergency Services / Emergency Management, Law Enforcement, Fire Department	FEMA, County Roads Departments, ODOT, relevant private industries, OEM

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Short Term

Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013	
Action Item Status:	Baker: Deferred	Union: Deferred
	Grant: Deferred	Wallowa: Deferred

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #2 – Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	Goal 4	☐ Baker ☐ Grant	☐ Union ☒ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The vision, goals, and policies of the comprehensive plan are routinely implemented through other local planning instruments such as zoning ordinances, subdivision regulations, and capital improvement programs. Integrating hazard mitigation into the local comprehensive plan thereby establishes resilience as an overarching value of a community and provides the opportunity to continuously manage development in a way that does not lead to increased hazard vulnerability.

  Source: FEMA

- The Natural Hazards Mitigation Plan's current actions have no regulatory or statutory requirements for compliance. Requiring the incorporation would give the plan 'teeth.'
- The Disaster Mitigation Act of 2000 requires that mitigation plans provide a comprehensive range of actions and projects to mitigate against natural hazards [201.6(c)(3)(ii)], such as actions that protect natural resources. Encouraging the implementation of existing action items with the Comprehensive Plan will help to ensure that the actions are implemented.

Ideas for Implementation:

- Interested county and city Natural Hazards Mitigation Plans will be adopted as an amendment to their Comprehensive Plan Goal 7 elements.
- PDM 12 grant available

Coordinating Organization:	County/ City Planning Departments

Internal Partners:	External Partners:	
	Department of Land Conservation and Development, Oregon Office of Emergency Management, Federal Emergency Management Agency	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Short Term (Grant, Wallowa) Long Term (Baker, Union)

Form Submitted by:	2013 County NHMP Steering Committees	
Action Item Status:	Baker: New Action Item	Union: New Action Item
	Grant: New Action Item	Wallowa: New Action Item

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #3 – Inform public officials about hazard mitigation and the Natural Hazards Mitigation Plan	Goal 3	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The turnover for public officials in Northeast Oregon is relatively high; newcomers should be briefed on community capacity, existing plans and policies, and personnel capabilities.
- Before a crisis occurs, public officials can prepare communities, risk managers, government spokespersons, public health officials, the news media, physicians, and hospital personnel with appropriate messages that can help build public confidence in public officials and the measures they recommend
- The Disaster Mitigation Act of 2000 requires that the Natural Hazard Mitigation plan includes a method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle [201.6(c)(4)(i)]. When public officials are more informed about the mitigation plan, it is more likely that the plan will be implemented and maintained on a regular basis, and that any methods and schedules for monitoring, evaluating, and updating the plan are continued.

Ideas for Implementation:

- Develop public official information kit that can be distributed to elected officials and community decision makers. The kit should include pertinent information regarding the Natural Hazards Mitigation Plan as well as the risk the County faces.
- Publicize the Natural Hazards Mitigation Plan and send a copy to public officials.
- Create a brief memo for public officials that lists pertinent information regarding the Natural Hazards Mitigation Plan. Within the memo, create a list of persons involved in developing and/or implementing the plan, prioritized mitigation actions, and funding source descriptions.
- Bring mitigation awareness training to county planning and public works staff, GIS technicians, and persons responsible for maintaining or implementing the Natural Hazards Mitigation Plan
- Visit the Oregon Partnership for Disaster Resilience website for more information about natural hazards mitigation planning and other completed plans at http://csc.uoregon.edu/opdr
- Utilize training resources available from OPDR, found on the OPDR website: http://csc.uoregon.edu/opdr
- Provide a briefing to relevant public officials regarding the specifics of the plan to the community.

Coordinating Organization:	County Steering Committee Convener

Internal Partners:	External Partners:
Counties and participating cities in Region 7	

Potential Funding Sources:		Estimated cost:	Timeline:
			Short Term
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013		
Action Item Status:	Baker: Deferred	Union: Deferred	
	Grant: Deferred	Wallowa: Deferred	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #4 – Develop and implement education and outreach programs to increase public awareness of the risk associated with natural hazards. Specifically target vulnerable populations	Goals 1 &3	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☐ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- To build and capitalize upon the self-sufficiency and individual capacity of Northeast Oregon inhabitants
- Community organizations that serve elderly or disadvantaged populations are concerned with the transportation and services available to special-needs groups
- The high percentage of elderly individuals, particularly in Grant and Wallowa Counties, require special consideration due to their sensitivities to heat and cold, their reliance upon transportation for medications, and their comparative difficulty in making home modifications that reduce risk to hazards.
- Young people represent a vulnerable segment of the population. In every county in the region, at least 15% of the population is within the 0-14 year age range. Special considerations should be given to younger populations and schools, where children spend much of their time, during the natural hazard mitigation process. Children are more vulnerable to heat and cold, have fewer transportation options, and require assistance to access medical facilities.
- The Disaster Mitigation Act of 2000 requires that communities continue to involve the public beyond the original planning process [201.6(c)(4)(iii)]. Developing a public education and outreach strategies to raise awareness of the risk natural hazard pose will help to keep the public informed of, and involved in, awareness of natural hazards and potential mitigation activities the public can implement. Targeting vulnerable populations and organizations that help people with special needs will help to reduce the impact of a natural hazard event on these populations.
- Public education and outreach can be inexpensive and can provide information that result in safer households, work places, and public areas. Some outreach materials include: informational brochures about community seismic risks and mitigation techniques, public forums, newspaper articles, training classes and television advertisements.
- Mitigation is a shared responsibility between local, state, and federal government; citizens; businesses; non-profit organizations; and others. Informing the public of their role in a community's mitigation efforts not only increases the public's awareness of a community's hazard risks, but also helps a community reduce its risk to the hazards addressed by the Natural Hazard Mitigation Plan. Targeting vulnerable populations and organizations that help people with special needs will also help to reduce the impact of a natural hazard event on these populations.

Ideas for Implementation:

- Develop and distribute Natural Hazard Community Resource Maps and risk reduction tips that include instructions about how to prepare and reduce risks posed by natural hazards.
- Institute for Business and Home Safety (IBHS) offers materials that address winter storms, flooding, wind storms, wildfire and earthquake for homes and businesses. Encourage implementation of non-structural earthquake retrofits in homes, businesses, and medical and care facilities. (Distribute the IBHS Homeowners Guide to Non-structural Retrofit)
- Research ways to create and disseminate a message that will cause people to act to reduce individual risk. Target education and outreach actions to reach marginalized populations.
- Bring emergency management and response training to community organizations, such as Head Start and Community Connections.
- Create mailing packet with hazard-specific information on impacts of hazards, mitigation activities and preparedness
- Determine which media avenue is most effective for local outreach; mailings, posters, flyers, radio, local TV, presentations by local officials, etc.
- Print relevant hazard-related articles in local newspaper and other local publications with tips on mitigation actions.
- Have informational brochures and packets available at identified partner's office locations.
- Fire-wise brochures can be used in the spring to address wildfire.
- Baker County uses the Interagency Fire Prevention Team and Union County uses the Union County Emergency Preparedness Coalitions apparatuses to carry out education and outreach about various natural hazards to vulnerable populations.

Coordinating Organization:	Emergency Services / Emergency Management; Baker City; City of La Grande, Relevant Public Health Departments

Internal Partners:	**External Partners:**
Eastern Oregon Head Start, Chambers of Commerce, American Red Cross, Oregon Education Association, Families First, Grant - Harney County Casa, Inc., Oregon Rural Action	Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA, Greater Prairie City Community Association, People Mover, Community Connections of Northeast Oregon

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Ongoing (Baker, Union); Short Term (Grant, Wallowa)

Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013	
Action Item Status:	Baker: Ongoing	Union: Ongoing
	Grant: Deferred	Wallowa: Deferred

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #5 – Increase the resilience of small businesses to natural hazards	Goal 2	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- To encourage and equip small businesses to rebuild post-disaster.
- As of 2012, there are 2,284 businesses in the Northeast region. Of these, 94%, or 1,821, were small businesses with less than 20 employees. The prevalence of small businesses in the Northeast region is an indication of sensitivity to natural hazards because small businesses are more susceptible to financial uncertainty. When a business is financially unstable before a natural disaster occurs, financial losses (resulting from both damage caused and the recovery process) may have a bigger impact than they would for larger and more financially stable businesses.
- The professional and business services sector is sensitive to a loss of power from a disaster and to disruptions of physical transmission cables (phone lines, etc.). There may also be a disruption of employees' ability to work as a result of damages/problems at home. If prepared and organized, however, this sector has the potential to have moderate resilience to many disasters.
- Business continuity plans assist businesses in determining appropriate insurance coverage, review lease stipulations, mitigate against potential risks, and plan for future recovery efforts. (Source: Alesh, Daniel J. et al. 2001. "Organizations at Risk: What Happens When Small Businesses and Not-for-Profits Encounter Natural Disasters," The Public Entity Risk Institute).
- The Disaster Mitigation Act of 2000 requires communities to identify a comprehensive range of actions and projects that reduce the effects of hazards on the community [201.6(c)(3)(ii)], such as actions that educate the public and raise awareness. Teaching businesses to be more disaster resilient will help reduce the impact of a natural hazard on local businesses and will help them to bounce back faster after a natural hazard event.

Ideas for Implementation:

- Encourage small businesses to develop business continuity plans.
- Develop a program to provide businesses with post-disaster consult and assistance.
    - There is a regional 'Contact Committee' composed of Union County Commissioners, the La Grande City Mayor, UCEDC, NEOEDD, Eastern Oregon University (Annette Johnson and Tim Seydel), OTEC, and Oregon State Employment. When new businesses enter the region, they may use the contact committee for assistance, help in finding loans, etc. Each person/group on this committee is in a position to offer help, and members are bound to confidentiality.
- Provide businesses with the Institute for Business and Home Safety (IBHS) "Getting Back to Business" guide: it contains important steps for business owners to use when reporting losses, assessing damages, and returning to business. It also contains a list of questions to ask your insurer and a

resource list of organizations that can assist in business recovery issues.

- Hold community workshops on business hazard preparation and business continuity planning with Oregon Continuity Planners Association (OCPA; http://continuityplanners.org/)

Coordinating Organization:	Northeast Oregon Economic Development District, Grant County Economic Development		
Internal Partners:		**External Partners:**	
Northeast Oregon Counties' Chambers of Commerce, Baker County Economic Development, Malheur County Environmental Health, Union County Economic Development Corporation,Baker Enterprise Growth Initiative,Grant Resource Enhancement Team		Eastern Oregon University, Greater Eastern Oregon Development Corporation, Oregon Rural Alliance, Enterprise Hometown Improvement Group, Economic and Community Development Department Regional Development Officer, Oregon Trail Electric Cooperative, Southeast Regional Alliance, Historic Baker Center, Regional Solutions Team	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Short (Baker); Long Term (Grant, Union, Wallowa)
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013		
Action Item Status:	Baker: Deferred	Union: Deferred	
	Grant: Deferred	Wallowa: Deferred	

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
MH #6 – Enhance communication and response coordination between all of the incorporated areas in each county			Goal 4	☐ Baker ☐ Grant	☐ Union ☒ Wallowa
Affected Jurisdictions:					
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise		
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					
• In each county, there are distinct, geographically dispersed populations that do not share a lot of communication or interconnection. If areas need to be warned of an event or need emergency assistance, quick response will be difficult. • Resources need to be shared; coordination can eliminate gaps and/or duplication of services					
Ideas for Implementation:					
• Establish resource sharing, interoperable communications, and emergency coordination meetings (to be modeled after those conducted in Baker County) • Determine appropriate divisions of responsibility and establish a framework for joint planning and strategic decision-making on issues of common concern. • Once per quarter hold meetings where public works staff can formally discuss issues and communicate. To be modeled after successful fire department mutual aid agreement communications that currently occur among municipalities.					
Coordinating Organization:	Emergency Services / Emergency Management; Consolidated Dispatch Center				
Internal Partners:		**External Partners:**			
County Planning Departments; Local fire departments and fire districts		Bureau of Land Management, Oregon Department of Forestry, Oregon Department of Transportation, OSU Extension, Amateur Radio Emergency Services, OSP, FBI, Public Works, USFS, local irrigation districts			
Potential Funding Sources:		**Estimated cost:**	**Timeline:**		
			Ongoing		
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013				
Action Item Status:	Baker: Ongoing	Union: Ongoing			
	Grant: Ongoing	Wallowa: Ongoing			

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #7 – Develop a Memorandum of Understanding to establish a regional committee responsible for oversight and implementation of the regional plan, and to oversee reviewing and updating the Northeast Oregon NHMP	Goal 4	☐ Baker ☐ Grant	☐ Union ☒ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The Disaster Mitigation Act of 2000 requires that the plan addresses the method and schedule of monitoring, evaluating, and updating the mitigation plan within a five-year cycle [201.6(c)(4)(i)]. Forming a regional committee will ensure that the Northeast Regional Hazard Mitigation Plan will be implemented over the next five years.
- Mitigation is a shared responsibility between local, state, and federal government; citizens; businesses; non-profit organizations; and others. Forming a regional committee will provide the means for all these groups to coordinate mitigation efforts in the Northeast region to ensure the Hazard Mitigation Plan is implemented.

Ideas for Implementation:

- Develop a process for steering committees to assist in implementing, monitoring, and evaluating county-wide mitigation activities. Establish a convener within each local steering committee to additionally serve on the regional steering committee.
- Establish specific roles and responsibilities for the regional group, and establish mitigation benchmarks to assist in evaluating and updating the plan.
- In the event of an unsuccessful MOU, include discussion of mitigation planning and the Natural Hazards Mitigation Plan within already existing informal/formal modes of communication among the four counties.

Coordinating Organization:	County Steering Committee Conveners

Internal Partners:	External Partners:
Baker, Grant, Union, and Wallowa Counties	Oregon Partnership For Disaster Resilience, Oregon Emergency Management, Department of Land Conservation and Development

Potential Funding Sources:	Estimated cost:	Timeline:
		Long Term

Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013	
Action Item Status:	Baker: Deferred	Union: Deferred
	Grant: Deferred	Wallowa: Deferred

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #8 – Create a position for a Regional Hazards Mitigation Project Coordinator	Goals 3 & 4	☐ Baker ☒ Grant	☐ Union ☒ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Northeast Oregon currently lacks the human and financial resources to develop competitive grant applications to fund the strategies outlined in their plan.
- Having a regional project coordinator will help communities work to more adequately address risk reduction; it will serve as a model for rural communities to work on other issues as well – including community development, economic development, transportation, and finance.
- Clackamas County currently has a hazard mitigation coordinator who has a similar role to what is expected in this action item.

Ideas for Implementation:

- Responsibilities will include: maintaining and updating the plan; coordinating regional and local meetings; pursuing grant funding to finance mitigation projects; collecting an inventory of hazard dates, damages, and locations; developing a unified disaster plan and/or incorporating mitigation actions into existing documents; support local jurisdictions in adopting the regional natural hazards mitigation plan; work towards integrating regional GIS systems and building natural hazard databases; performing outreach, education and awareness related to natural hazards.+
- Develop a cost share structure among the four counties depending on time/work dedicated to each county. This funding could likely be matched through the Emergency Management Grant Program through a 50/50 match between local and federal dollars.

Coordinating Organization:	County Steering Committee Conveners

Internal Partners:	External Partners:	
Planning and Emergency Services / Emergency Management, Local Steering Committees	Oregon Partnership For Disaster Resilience, Oregon Emergency Management, Department of Land Conservation and Development	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Long Term

Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013	
Action Item Status:	Baker: Deferred	Union: Deferred
	Grant: Deferred	Wallowa: Deferred

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #9 – Develop a warning and emergency evacuation protocol for vulnerable populations	Goal 4	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Community organizations that serve vulnerable populations are concerned with the transportation and services available to persons with special needs.
- Northeast Oregon is projected to maintain a fairly stable population over the next 20 years, but the average age of this region's population will increase. In 2025, 35% of Grant and Wallowa Counties' populations are expected to be above the age of 65. The same is true for 23% of Union County's population, and 29% of Baker's.
- In 2010, nearly 20% of the Region's population is over the age of 64; 17.4% of the Region's population is under the age of 15.
- Impacts, in terms of loss and the ability to recover varies among population groups following a disaster. Historically, 80% of a disaster burden falls on the public. Of this number, a disproportionate burden is placed upon special needs groups, particularly minorities, and the poor.
- Low-income populations may require additional assistance following a disaster because they may not have the savings to withstand economic setbacks, and if work is interrupted, housing, food, and necessities become a greater burden. Additionally, low-income households are more reliant upon public transportation, public food assistance, public housing, and other public programs, all which can be impacted in the event of a natural disaster.
- The high percentage of elderly individuals, particularly in Baker and Wallowa Counties, require special consideration due to their sensitivities to heat and cold, their reliance upon transportation for medications, and their comparative difficulty in making home modifications that reduce risk to hazards.
- Young people also represent a vulnerable segment of the population. In every county in the region, at least 15% of the population is within the 0-14 year age range. Special considerations should be given to young populations and schools, where children spend much of their time, during the natural hazard mitigation process. Children are more vulnerable to heat and cold, have fewer transportation options, and require assistance to access medical facilities.
- According to the American Red Cross, natural hazards pose special problems for disabled residents in hazard-prone areas. "For the millions of Americans who have physical, medical, sensory or cognitive disabilities, emergencies such as fires, floods and acts of terrorism present a real challenge. The same challenge also applies to the elderly and other special needs populations."
- No current policy/procedure in place, but there are general informal practices/protocols for vulnerable populations.
- According to the National Organization on Disability, in all these emergencies [natural hazards], people with disabilities are especially vulnerable. The N.O.D./Harris Surveys found that people with disabilities

are less prepared and, correspondingly, more anxious than our non-disabled counterparts. A 2004 N.O.D./Harris Survey of emergency managers across the country found a continued need to include people with disabilities in preparedness plans.			
Ideas for Implementation:			
• Create a voluntary registration for vulnerable populations (i.e., senior citizens, persons with wheelchairs or oxygen tanks, etc.) who may need emergency assistance in evacuating. • Reverse 911 was successfully implemented in Baker County and helped with the water disease crypto outbreak consider using this in other counties/cities			
Coordinating Organization:	Emergency Services / Emergency Management		
Internal Partners:		**External Partners:**	
Community Connections of Northeast Oregon, public libraries		People Mover, Assisted living facilities, Elks lodge, National Organization on Disability, American Red Cross	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Short Term
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013		
Action Item Status:	Baker: Deleted	Union: Deferred	
	Grant: Deferred	Wallowa: Deferred	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #10 – Ensure that critical airport services are available in the event of an emergency. Critical elements include: adequate fuel systems, appropriate lighting, functioning weather services, ground-access to the airport, and safe runways/taxiway infrastructure	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☒ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The Grant County Regional Airport is the only alternative access to John Day should ground transportation be interrupted.
- Air transport also is the fastest way to deliver emergency supplies, medical personnel and law enforcement.
- Aircraft are dependent on sufficient landing runways and the availability of fuel. Night landings require adequate lighting and inclement weather requires full time operation of the Automated Weather Observation System (AWOS). Snow removal is essential for safe operations.
- Even in non-emergency situations the airport plays an essential role in providing medical services to critically ill patients. (60+ times a year) It is also the base of all aerial operations that provide the first and most rapid response to wildfire situations.
- The airport also serves as a repeater site for: ODOT, the schools' county-wide computer network, the hospital, and Oregon Dept of Forestry.

Ideas for Implementation:

- Obtain diesel fuel for the back-up power source for the airport. An adequate power source is needed to support the airport terminal, runway lighting, AWOS, USFS Helibase facility and the repeater radio systems.
- Prioritize and maintain safe access to the airport, including all support and backup systems supplied by Grant County and the City of John Day. (The City of John Day provides all water/sewer services to the airport).

Coordinating Organization:	Grant County Regional Airport

Internal Partners:	External Partners:
Grant County, City of John Day,	USFS, Oregon Trail Electric Cooperative, Blue Mountain Hospital, St. Charles Hospital, Oregon Dept. of Aeronautics, FAA

Potential Funding Sources:	Estimated cost:	Timeline:
		Short Term

Form Submitted by:	2008: Gary Judd, Airport Manager, Grant County Regional Airport s; revised and confirmed in 2013 by Grant County Steering Committee

Action Item Status:	Baker:	Union:
	Grant: Ongoing	Wallowa:

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #11 – Build partnerships with local jurisdictions to develop emergency management planning for Eastern Oregon University	Goal 4	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Eastern Oregon Natural Hazards Mitigation Plan (2012)

Rationale for Proposed Action Item:

- Age of buildings and earthquake-readiness
- Lack of coordination between University employees and La Grande officials re: hazard mitigation and response.
- Hazardous materials in Badgley Hall: should they be released in a large scale disaster, the University and City are unprepared to respond in an adequate fashion.
- Flooding potential to both Quinn Coliseum and Hoke Hall, both of which are Red Cross shelters for the City.
- Pierce library contains historic materials of significant, immeasurable value.
- All of the University's utilities run through the steam tunnels. If one segment breaks, all utilities will be disrupted. The vulnerability and resilience of these steam tunnels is unknown.
- The University and its professors rely on distance education for a significant part of their incomes. Internet connections are thus essential. Likewise, the University maintains a number of partnerships. Staff persons from various locations will rely on the University for assistance in times of disaster.
- Campus population is highest at 10:00 am during weekdays; population concentrations vary significantly throughout the day and year.
- On July 22, 2004, 70 mph winds wreaked havoc on trees, houses, cars and streets. Water flowed into the ground level floors of Ackerman Hall, Pierce Library and Hoke Student Center at Eastern Oregon University. The University's storm drains had reached capacity.
- In 2012 Eastern Oregon University Completed a Natural Hazards Mitigation Plan, which contributed to, but did not complete, the progress towards this action item.

Ideas for Implementation:

- Establish an Eastern Oregon University steering committee that includes personnel from the City of La Grande and Union County.
- Prepare response teams in La Grande for potential earthquake-induced hazardous material releases at Eastern Oregon University (Badgley Hall)
- Evaluate Eastern Oregon University's ability to respond to a variety of disasters and to accommodate its various tenants' needs.
- Assess the vulnerability of Eastern Oregon University's steam tunnels to flooding and earthquake
- Pursue actions that will qualify Eastern Oregon University as a FEMA-approved "Disaster Resistant University."

• Rely on the existing planning apparatus used in the creation of the Eastern Oregon University Natural Hazards Mitigation Plan completed in 2012.			
Coordinating Organization:	Eastern Oregon University		
Internal Partners:		**External Partners:**	
Union County Emergency Services, La Grande Fire Department, La Grande Planning Department, Union County Planning Department		American Red Cross, Oregon Trail Electric Co-op, Internet Service Providers, Oregon Department of Transportation	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Ongoing
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013		
Action Item Status:	Baker:	Union: Ongoing	
	Grant:	Wallowa:	

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
MH #12 – Update City and County addresses within the County's GIS database			Goal 4	☐ Baker ☐ Grant	☒ Union ☐ Wallowa
Affected Jurisdictions:					
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise		
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					
• The La Grande Fire Department uses a real-time incident location map to locate emergency service requests, as well as emergency service locations. This program utilizes the County's GIS databases for address mapping. Currently, addresses are not up to date and Union County requires funding to complete this service.					
Ideas for Implementation:					
• Verify all addresses within the County's GIS database. • Geo-reference addresses for purpose of better locating structure in special flood hazard areas • Identify targeted communities (of vulnerable populations)					
Coordinating Organization:	Union County Planning Department/GIS				
Internal Partners:		**External Partners:**			
City of La Grande, Union County Emergency Services, Union City		Community Connections			
Potential Funding Sources:		**Estimated cost:**	**Timeline:**		
			Long Term		
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013				
Action Item Status:	Baker:	Union: Ongoing			
	Grant:	Wallowa:			

Proposed Action Item:			**Alignment with Plan Goals:**	**High Priority Action Item?**	
MH #13 – Improve Wallowa Mountain Loop road in relation to natural hazard events			Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa
Affected Jurisdictions:					
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise		
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					
• Wallowa Mountain Loop Road is a critical road and snow mobile route in the winter. It is crucial to the economic base nearby. • The road is in poor condition due to limited funding to fix it. Natural hazard caused accidents and injuries occur annually on this road. • Wallowa Mountain Loop Road is impacted by flooding and can be potentially impacted by fire. Landslides frequently affect the road's condition. Periodically there are rocks and debris that need to be cleared from roadways and ditches.					
Ideas for Implementation:					
• Coordinate among local partners to determine an effective way to mitigate the road against a future natural disaster.					
Coordinating Organization:	County Road Department, United States Forest Service				
Internal Partners:		**External Partners:**			
City of Joseph, County Chamber, Wallowa Lake		Oregon Department of Transportation			
Potential Funding Sources:		**Estimated cost:**	**Timeline:**		
			Long Term		
Form Submitted by:	2013 Wallowa County NHMP Steering Committee				
Action Item Status:	Baker:	Union:			
	Grant:	Wallowa: New Action Item			

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
MH #14 – Continue to pursue a secondary emergency access route along the west bank of the Wallowa Lake (between Wallowa Lake and Lake Shore Drive)	Goal 1	☐ Baker ☐ Grant	☐ Union ☒ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Wallowa Lake State Park has not seen a wildfire for 30-40 years. The Forest Service is working on fuels reductions, but under the right conditions, the build-up of fuels will eventually ignite. Access to this area is extremely limited and presents a major vulnerability; with only one access road, summer tourists and residents may have difficulty evacuating in an emergency event. If there was a fire on north end, over 100 structures that would have limited fire suppression recourse.
- There are daily rockslides at Wallowa Lake on its west side; the county has done exploratory work to create an access route / right of way from the west, but private landowners have successfully prevented this from happening.
- Wallowa Lake is a major tourist destination during late spring and summer months. Seasonal and accommodation businesses in the area are predominantly dependent on people who come to the area as tourists, on business, or simply passing through, and many food service businesses also serve this clientele. They rely on open transportation networks for both customers and supplies, as well as for open evacuation routes in case of emergency. The businesses that primarily cater to tourists and recreationalists are also dependant on an unimpaired physical environment. Increasing emergency access to Wallowa Lake will allow for faster, and more efficient emergency responses to wildfire and/or landslide.

Ideas for Implementation:

- Work with individual landowners to emphasize the need for emergency access. Hold a public meeting (potentially a barbeque) to discuss options.
- Develop an emergency gate system. Oregon State Parks is working on acquiring property in order to gain access. Create private road for emergency services only.

Coordinating Organization:	Wallowa County Roads Department, Emergency Management

Internal Partners:	External Partners:
Wallowa County Public Works, Wallowa Lake Fire District	Wallowa Lake State Park, Oregon Department of Forestry, Oregon Department of Transportation, local fire departments and/or districts, private landowners Oregon Parks and Recreation

Potential Funding Sources:	Estimated cost:	Timeline:
		Short Term

Form Submitted by:	2008 Wallowa County NHMP Steering Committee; revised and confirmed in 2013	
Action Item Status:	Baker:	Union:

	Grant:	Wallowa: Deferred

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
DR #1 – Identify incentive programs to increase water efficiency among agricultural water users	Goals 1 & 4	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- 1985-1997 was a dry period capped by statewide droughts in 1992 and 1994 (1992 drought emergency declaration). Negative externalities included forest-fires and insect problems.
- 2001: Baker, Union and Wallowa Counties were issued a declaration of a local drought emergency
- 2002: Grant County was issued a declaration of a local drought emergency
- 2003: Baker, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2005:Baker and Wallowa Counties were issued a declaration of a local drought emergency
- 2007: Baker, Grant, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2013: Baker County was issued a declaration of a local drought emergency
- The probability that Region 7 will experience future droughts is high; Baker and Grant counties describe their vulnerability to drought as high (i.e., more than 10% of the population or assets will be affected by a major drought emergency or disaster). Union and Wallowa described their vulnerability to drought as moderate (i.e. 1 to 10% of the population or assets will be affected by a major drought emergency or disaster)
- A strong water conservation incentive program will help to raise public consciousness and participation in water saving habits and lifestyles.
- Drought can affect all segments of a jurisdiction's population, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.). Facilities affected by drought conditions include communications facilities, hospitals, and correctional facilities that are subject to power failures. Storage systems for potable water, sewage treatment facilities, water storage for firefighting, and hydroelectric generating plants also are vulnerable.
- Water-efficiency measures can reduce water and sewer costs by up to 30%. Significant savings in energy, chemical and maintenance expenses are also possible. The typical payback period is three to seven years. Some general benefits of water conservation include energy savings (by using less energy for heating, pumping, and treating water), financial savings, less wastewater, and environmental benefits including increased water availability to local streams, wetlands, and the natural inhabitants of both environments.
- The Disaster Mitigation Act of 2000 requires communities to identify comprehensive actions and projects that reduce the effects of a hazard on the community [201.6(c)(3)(ii)], such as actions protecting natural resources. Installing water efficient devices can significantly reduce the impact of drought by conserving the critical water resources in the community.

Ideas for Implementation:			
• Create a water-conservation committee within interested counties and/or cities to develop incentive programs, educational programs, and voluntary and/or mandatory restrictions on water use. • Distribute conservation literature along with the regular mailing of bills. Local service organizations can be asked to disseminate water conservation promotional information. • Investigate water pricing schemes (i.e., peak pricing and excess use charges) that discourage water use. • Speak to local civic organizations (Boy Scouts, volunteer fire companies, etc.) on water conservation and suggest the sale of water-saving devices as a fund-raising activity.			
Coordinating Organization:	County Water Masters, Natural Resources Conservation Service		
Internal Partners:		**External Partners:**	
Relevant utility companies, county public works departments, ditch companies, landowners, irrigation districts, soil and water conservation districts, Wallowa Resources, fresh water trust		U.S. Environmental Protection Agency's WAVE (Water Alliances for Voluntary Efficiency) program[1]	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Ongoing
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013		
Action Item Status:	Baker: Ongoing	Union: Ongoing	
	Grant: Ongoing	Wallowa: Ongoing	

[1] U.S. EPA WAVE program is a non-regulatory water-efficiency partnership that encourages commercial businesses and institutions to reduce water consumption while increasing efficiency, profitability, and competitiveness

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
DR #2 – Identify incentive programs to increase water efficiency among municipal water users	Goals 1 & 4	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- 1985-1997 was a dry period capped by statewide droughts in 1992 and 1994 (1992 drought emergency declaration). Negative externalities included forest-fires and insect problems.
- 2001: Baker, Union and Wallowa Counties were issued a declaration of a local drought emergency
- 2002: Grant County was issued a declaration of a local drought emergency
- 2003: Baker, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2005: Baker and Wallowa Counties were issued a declaration of a local drought emergency
- 2007: Baker, Grant, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2013: Baker County was issued a declaration of a local drought emergency The probability that all four counties will experience future droughts is high; Baker and Grant County describe their vulnerability to drought as high (i.e., more than 10% of the population or assets will be affected by a major drought emergency or disaster). Union and Wallowa described their vulnerability to drought as moderate (i.e. 1 to 10% of the population or assets will be affected by a major drought emergency or disaster)
- A strong water conservation incentive program will help to raise public consciousness and participation in water saving habits and lifestyles.
- Drought can affect all segments of a jurisdiction's population, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.). Facilities affected by drought conditions include communications facilities, hospitals, and correctional facilities that are subject to power failures. Storage systems for potable water, sewage treatment facilities, water storage for firefighting, and hydroelectric generating plants also are vulnerable.
- Water-efficiency measures can reduce water and sewer costs by up to 30%. Significant savings in energy, chemical and maintenance expenses are also possible. The typical payback period is three to seven years. Some general benefits of water conservation include energy savings (by using less energy for heating, pumping, and treating water), financial savings, less wastewater, and environmental benefits including increased water availability to local streams, wetlands, and the natural inhabitants of both environments.
- The Disaster Mitigation Act of 2000 requires communities to identify comprehensive actions and projects that reduce the effects of a hazard on the community [201.6(c)(3)(ii)], such as actions protecting natural resources. Installing water efficient devices can significantly reduce the impact of drought by conserving the critical water resources in the community.
- Baker City and La Grande, along with the non-NHMP participating jurisdictions of Canyon City, Granite, Lostine, Monument and Wallowa Lake, among other communities may have water availability concerns

Ideas for Implementation:			
• Create a water-conservation committee within interested counties and/or cities to develop incentive programs, educational programs, and voluntary and/or mandatory restrictions on water use. • Distribute conservation literature along with the regular mailing of bills. Local service organizations can be asked to disseminate water conservation promotional information. • Investigate water pricing schemes (i.e., peak pricing and excess use charges) that discourage water use. • Initiate a water conservation program in high-use facilities such as schools and colleges, hospitals and institutions, involving a retrofit of existing plumbing fixtures with water saving models and the dissemination of water conservation literature. • Promote a campaign of household leak detection. Provide leak detection tips on billing cards. Distribute dye tablets to customers to encourage toilet leak checks. Direct meter readers to inform customers with unusually high recorded use to check for household water leaks. • Speak to local civic organizations (Boy Scouts, volunteer fire companies, etc.) on water conservation and suggest the sale of water-saving devices as a fund-raising activity. • Encourage the wise use and management of water during peak use summer periods by restricting lawn/garden watering to non-daylight hours. • The cities should provide technical support; the relevant local electric companies should provide water efficiency apparatus (e.g. OTEC has water efficiency programs such as a water efficient shower head). • Encourage Wallowa Lake to improve water conservation during droughts			
Coordinating Organization:	Participating Cities		
Internal Partners:		**External Partners:**	
Relevant utility companies, city public works departments, County, wastewater treatment facilities, Wallowa Lake County Service District,		U.S. Environmental Protection Agency's WAVE (Water Alliances for Voluntary Efficiency) program[2]	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Ongoing
Form Submitted by:	2013 Wallowa County Steering Committee		
Action Item Status:	Baker: Ongoing	Union: Ongoing	
	Grant: Ongoing	Wallowa: Ongoing	

[2] U.S. EPA WAVE program is a non-regulatory water-efficiency partnership that encourages commercial businesses and institutions to reduce water consumption while increasing efficiency, profitability, and competitiveness

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
DR #3 – Develop community drought emergency plans and policies	Goal 4	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☐ Halfway	☒ Grant County ☒ John Day	☐ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- 1985-1997 was a dry period capped by statewide droughts in 1992 and 1994 (1992 statewide drought emergency declaration). Negative externalities included forest-fires and insect problems.
- 2001: Baker, Union and Wallowa Counties were issued a declaration of a local drought emergency
- 2002: Grant County was issued a declaration of a local drought emergency
- 2003: Baker, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2005: Baker and Wallowa Counties were issued a declaration of a local drought emergency
- 2007: Baker, Grant, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2013: Baker County was issued a declaration of a local drought
- The City of Cove maintains a hydroelectric power plant. Although not dependent on the plant for power needs, Cove is required to produce a certain amount of power per year. Should drought or power outages frequently occur, Cove may financially struggle.
- Drought can affect all segments of a jurisdiction's population, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.). Facilities affected by drought conditions include communications facilities, hospitals, and correctional facilities that are subject to power failures. Storage systems for potable water, sewage treatment facilities, water storage for firefighting, and hydroelectric generating plants also are vulnerable.
- The probability that all four counties will experience future droughts is high; Baker and Grant County describe their vulnerability to drought as high (i.e., more than 10% of the population or assets will be affected by a major drought emergency or disaster). Union and Wallowa described their vulnerability to drought as moderate (i.e. 1 to 10% of the population or assets will be affected by a major drought emergency or disaster)
- The Disaster Mitigation Act of 2000 requires communities to identify comprehensive actions and projects that reduce the effects of hazards on the community [201.6(c)(3)(ii)], such as actions addressing emergency services. Developing community drought emergency plans and policies will help the community to prepare for future drought events and reduce any impact of a future drought.

Ideas for Implementation:

- Review existing plans and look for improvement opportunities
- Identify new and/or build upon existing emergency water supplies
- Develop emergency water surcharge schedule rules

- Adopt orders, rules and regulations for the purpose of implementing and enforcing the provisions of any Executive Orders issued pertaining to a drought emergency.
- Impose restrictions upon the non-essential use of water including the use of water conservation devices, as may be necessary.
- Encourage cities without a water curtailment plan/and or drought emergency plan to produce one
- Inform public of drought conditions via newspaper and/ or local radio advertisement
- Develop education strategies regarding conservation for elementary school students

Coordinating Organization:	County Emergency Services / Emergency Management; Interested Cities

Internal Partners:	**External Partners:**
Water Resources Departments, County and City Governments, County and City Planning Departments, Public Works Departments, Enterprise, City of La Grande, Baker City, John Day, Halfway, Natural Resources Conservation Service	Wallowa Lake Service District, Baker County Cattleman's Association, Relevant Irrigation Districts, OSU Extension Office, United State Department of Agriculture

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Ongoing (Baker, Grant); Short Term (Wallowa)

Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013	
Action Item Status:	Baker: Deferred	Union: Deleted
	Grant: Ongoing	Wallowa: Deferred

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
DR #4 – Conduct an aquifer (groundwater) study for the Pine and Baker Valleys.	Goal 1	☒ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Over-exploitation of aquifers may exceed the practical sustained yield in the near future; Baker County expects that they've reached full capacity, but would like to make sure.
- According to the 2008 Halfway City Addendum in the last 15-20 years, the City of Halfway's water supply has dropped by 50ft. The City would like to better understand its ability to sustain growth, and the amount of water in the Valley will be a crucial determinant.
- Baker City's backup water supply is dependent on the valley's aquifers. Currently, aquifers are tapped for agricultural use; if Baker City's primary water supply failed, aquifer supply may not be adequate in accommodating the City's needs.
- Unknown capacities within aquifers may limit future development.
- 1985-1997: dry period capped by statewide droughts in 1992 and 1994 (1992 drought emergency declaration). Negative externalities included forest-fires and insect problems.
- 2001: Baker, Union and Wallowa Counties were issued a declaration of a local drought emergency
- 2003: Baker, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2005: Baker and Wallowa Counties were issued a declaration of a local drought emergency
- 2007: Baker, Grant, Union, and Wallowa Counties were issued a declaration of a local drought emergency
- 2013: Baker County was issued a declaration of a local drought emergency
- A better knowledge of the hydrodynamic conditions and characteristics of the groundwater is essential for the well-being of the population and the economic development of the region
- Drought can affect all segments of a jurisdiction's population, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.). Facilities affected by drought conditions include communications facilities, hospitals, and correctional facilities that are subject to power failures. Storage systems for potable water, sewage treatment facilities, water storage for firefighting, and hydroelectric generating plants also are vulnerable. A secondary effect of the drought resulted in the Wingville-Pocohontas Community experiencing domestic well issues.
- The Baker Valley has a groundwater study completed and updated in 1965; Pine Valley does not have a completed study through the Oregon Water Resources Department.
- The Disaster Mitigation Act of 2000 requires communities to identify comprehensive actions and projects that reduce the effects of hazards on a community [201.6(c)(3)(ii)], such as actions protecting natural resources. Conducting an aquifer study will help determine the capacity of the Baker and Union

aquifers and help these counties to plan for the effects of a potential drought.

Ideas for Implementation:

- The study is intended to do the following:
    - Improve the understanding of hydrodynamic conditions
    - Estimate recharge trends over past decades to study potential impacts of climate change.
    - Evaluate the vulnerability of water supply
    - Characterize the groundwater quality
- Most issues related to groundwater management are handled by state agencies under the authority of state law. Communication for the aquifer study should begin with the Oregon Water Resources Department or other relevant state agencies.

Coordinating Organization:	Baker County Emergency Management, Powder River Watershed Council	
Internal Partners:	**External Partners:**	
Baker County Water Master, Baker County Planning Department, Baker County Public Works, Baker City, City of Halfway	Oregon Water Resources Department, United States Geological Survey	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Long Term
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013	
Action Item Status:	Baker: Deferred	Union:
	Grant:	Wallowa:

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
DR #5 – Conduct an aquifer (groundwater) study for the Grande Ronde Valley			Goal 1	☐ Baker ☐ Grant	☒ Union ☐ Wallowa
Affected Jurisdictions:					
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande		☐ Wallowa County ☐ Enterprise	
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					

- Over-exploitation of aquifers may exceed the practical sustained yield in the near future;
- Unknown capacities within aquifers may limit future development.
- 1985-1997: dry period capped by statewide droughts in 1992 and 1994 (1992 drought emergency declaration). Negative externalities included forest-fires and insect problems.
- 2001: Union County was issued a declaration of a local drought emergency
- 2003: Union County was issued a declaration of a local drought emergency
- 2007: Union County was issued a declaration of a local drought emergency
- A better knowledge of the hydrodynamic conditions and characteristics of the groundwater is essential for the well-being of the population and the economic development of the region
- Drought can affect all segments of a jurisdiction's population, particularly those employed in water-dependent activities (e.g., agriculture, hydroelectric generation, recreation, etc.). Facilities affected by drought conditions include communications facilities, hospitals, and correctional facilities that are subject to power failures. Storage systems for potable water, sewage treatment facilities, water storage for firefighting, and hydroelectric generating plants also are vulnerable. The Disaster Mitigation Act of 2000 requires communities to identify comprehensive actions and projects that reduce the effects of hazards on the community [201.6(c)(3)(ii)], such as actions protecting natural resources. Conducting an aquifer study will help determine the capacity of the Grande Ronde aquifer and help the county to plan for the effects of a potential drought.
- The City of La Grande is concerned about aquifer capacities, should growth continue. The amount of water within the Grande Ronde Valley is currently unknown.
- The City of La Grande's water is supplied by wells. The Beaver Creek Watershed provides secondary backup, but it currently does not meet water quality standards.
- The Grande Ronde Model Watershed Council produced the Upper Grande Ronde River Watershed Storage Feasibility Study in 2013. The purpose of the study is to evaluate whether managed underground storage alternatives can be used for subsurface storage in the Grande Ronde River watershed.[3]

Ideas for Implementation:

[3]Upper Grande Ronde River Watershed Storage Feasibility Study (2013)

- The study is intended to do the following:
    - Improve the understanding of hydrodynamic conditions
    - Estimate recharge trends over past decades to study potential impacts of climate change.
    - Evaluate the vulnerability of water supply
    - Characterize the groundwater quality
- Most issues related to groundwater management are handled by state agencies under the authority of state law. Communication for the aquifer study should begin with the Oregon Water Resources Department or other relevant state agencies.

Coordinating Organization:	Grande Ronde Model Watershed Council, Union County Commissioners		
Internal Partners:		**External Partners:**	
The City of La Grande, Union County Planning Department, Union County Public Works, Union County Water Master		Oregon Department of Water Resources, United States Geological Survey	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2008 NHMP Steering Committees; revised and confirmed in 2013		
Action Item Status:	Baker:	Union: Deferred	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ # 1 – Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Goal 1 Goal 2	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools. The Steering Committee identified several potentially vulnerable buildings not listed in survey including: La Grande City Hall, the Wallowa County Courthouse, the John Day City Hall, Baker City Hall, the Carnegie Library in Baker City, and the Baker County Courthouse.
- At Eastern Oregon University, Pierce Library and Inlow Hall contain a number of historic documents. The library additionally maintains the communication systems through which the university connects with distance education students.
- Badgley Hall at Eastern Oregon University contains a number of hazardous materials. The building has been secured by deep footings, but should a high-magnitude earthquake occur, these materials may be released.
- Fuel and oil pipelines, as well as electricity, natural gas, telephone, internet, and cable companies are essential resources to Northeast Oregon residents. Infrastructural redundancy does not exist for any community.
- Buildings, bridges, highways and utilities that are better able to withstand earthquakes not only save lives but also enable critical activities to continue with less disruption.
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6(c)(3)(ii)]. Implementing structural and non-structural retrofitting programs will reduce the seismic vulnerability of public buildings, historically important structures, and critical facilities and infrastructure, and assist a community in reducing its overall earthquake risk

Ideas for Implementation:

- Inventory existing facilities to determine future demands for maintenance, repair, rehabilitation or replacement; and to determine adequacy of existing facilities to meet future needs.
- Identify historic structures that represent a significant cultural resource for the community, focusing especially on un-reinforced masonry buildings, and identify mitigation measures to protect them from natural hazards.
- Provide both structural and non-structural retrofits to at risk buildings as required by the risk evaluations.

Coordinating Organization:	Emergency Management

Internal Partners:	External Partners:
Eastern Oregon University, County Public Works Departments, Region 7 Counties,	Relevant utility companies, DOGAMI

Interested Cities, Business Oregon			
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:			
Action Item Status:	Baker: New Action Item	Union: New Action Item	
	Grant: New Action Item	Wallowa: New Action Item	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #2 – Seismically retrofit The Unity Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- DOGAMI estimates the Unity Fire Department was constructed in the1970'sand its building was constructed of reinforced masonry bearing wall building with flexible diaphragms
- The Unity Fire Department has been identified as a critical facility by the Baker County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including fire departments; this assessment determined that the Unity Fire Department has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Baker County has moderate vulnerabilityfor seismic hazards. Retrofitting The Unity Fire Department will significantly reduce the school's vulnerability to seismic hazards and improve the safety of fire department employees and community members
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Unity Fire Department will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Unity Fire Department
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix

Coordinating Organization:	City of Unity Fire Department

Internal Partners:	External Partners:
Emergency Management, County/City Public Works Departments,	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of

		Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Baker County NHMP Steering Committee		
Action Item Status:	Baker: New Action Item	Union:	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #3 – Seismically retrofit North Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- North Baker Elementary School was built in 1913 and is constructed of reinforced masonry bearing wall building with flexible diaphragms
- North Baker Elementary School has been identified as a critical facility by the Baker County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the North Baker Elementary School has buildings with very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Baker County has moderate vulnerability for seismic hazards. Retrofitting North Baker Elementary will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the North Baker Elementary School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting North Baker Elementary School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Baker 5J School District

Internal Partners:	External Partners:
Emergency Management, County Public Works	Business Oregon, Department of Geology and Mineral

Departments, Baker City		Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Baker County NHMP Steering Committee		
Action Item Status:	Baker: New Action Item	Union:	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #4 – Seismically retrofit South Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- South Baker Elementary School was built in 1953 and was constructed with a wood frame
- South Baker Elementary School has been identified as a critical facility by the Baker County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the South Baker Elementary School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Baker County has moderate vulnerability for seismic hazards. Retrofitting South Baker Elementary School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting South Baker Elementary School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting South Baker Elementary
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Baker 5J School District

Internal Partners:	External Partners:
Emergency Management, County/City Public Works Departments, Baker City	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency,

		Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Form Submitted by:	2013 Baker County NHMP Steering Committee		
Action Item Status:	Baker: New Action Item	Union:	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #5 – Seismically retrofit Baker High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The Baker High School was built in 1950 and was constructed with concrete shear walls
- The Baker High School has been identified as a critical facility by the Baker County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Baker City High School has two buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Baker County has moderate vulnerability for seismic hazards. Retrofitting Baker High School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Baker High School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Baker High School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Baker 5J School District

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, Baker City	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management

Potential Funding Sources:		Estimated cost:	Timeline:
			Long Term
Form Submitted by:	2013 Baker County NHMP Steering Committee		
Action Item Status:	Baker: New Action Item	Union:	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #6 – Seismically retrofit Pine Eagle High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Pine Eagle High School was built in 1967 and has buildings constructed with precast concrete frames
- Pine Eagle High School was identified as a critical facility by the Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Pine Eagle High School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Baker County has moderate vulnerability for seismic hazards. Retrofitting Pine Eagle High School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Pine Eagle High School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Pine Eagle High School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Baker 5J School District

Internal Partners:	External Partners:
Emergency Management , County Public Works Departments, Baker City	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of

		Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Baker County NHMP Steering Committee		
Action Item Status:	Baker: New Action Item	Union:	
	Grant:	Wallowa:	

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
EQ #7 – Seismically retrofit Brooklyn Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options			Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa
Affected Jurisdictions:					
☒ Baker County ☒ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande		☐ Wallowa County ☐ Enterprise	
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					
• The Brooklyn Elementary was built in 1955 and has buildings constructed with a wooden frame • The Brooklyn Elementary has been identified as a critical facility by the Baker County Steering Committee • Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Brooklyn Elementary School has buildings with a very high collapse potential. • Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484) • Baker County has moderate vulnerability for seismic hazards. Retrofitting Brooklyn Elementary will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school • The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Brooklyn Elementary School will reduce its vulnerability and ensure the viability of this critical facility.					
Ideas for Implementation:					
• Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Brooklyn Elementary School • Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program • Apply for FEMA project grant funding • Conduct structural evaluation and make recommendations (structural and non-structural) for fix • Align project with School District Maintenance Plan					
Coordinating Organization:	Baker 5J School District				
Internal Partners:		**External Partners:**			
Emergency Management, County Public Works Departments, Baker City		Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of			

		Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Baker County NHMP Steering Committee		
Action Item Status:	Baker: New Action Item	Union:	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #8 – Seismically retrofit Burnt River School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The Burnt River School was built in 1968 and was constructed of a wooden frame
- The Burnt River School has been identified as a critical facility by the Baker County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Burnt River School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Baker County has moderate vulnerability for seismic hazards. Retrofitting Burnt River School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Burnt River School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Burnt River School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Burnt River 30J School District

Internal Partners:	External Partners:	
Emergency Management, County Public Works Departments, City of Unity	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**

			Long Term
Form Submitted by:	2013 Baker County NHMP Steering Committee		
Action Item Status:	Baker: New Action Item	Union:	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #9 – Seismically retrofit the John Day Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☒ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- DOGAMI estimates the John Day Fire Department was built in the 1940's or 1950's and has buildings constructed of concrete shear walls
- The John Day Fire Department has been identified as a critical facility by the John DayWorking Group
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including fire departments; this assessment determined that the John Day Fire Department has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Grant County has moderate vulnerability for seismic hazards. Retrofitting the John Day Fire Department will significantly reduce the school's vulnerability to seismic hazards and improve the safety of fire department employees and community members
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the John Day Fire Department will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting the John Day Fire Department
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Include City Hall and the Police dispatch center within the seismic retrofit plans pending a similar survey (as RVS) is completed.

Coordinating Organization:	The City of John Day

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, Business Oregon	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency,

		Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Form Submitted by:	2013 Grant County NHMP Steering Committee		
Action Item Status:	Baker:	Union:	
	Grant: New Action Item	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #10 – Seismically retrofit Mount Vernon Middle School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Mount Vernon Middle School was built in 1916 and has buildings constructed of concrete shear wall and reinforced masonry bearing wall buildings with flexible diaphragms
- Mount Vernon Middle School has been identified as a critical facility by the Grant Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Mount Vernon Middle School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Grant County has moderate vulnerability for seismic hazards. Retrofitting Mount Vernon Middle School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Mount Vernon Middle School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Mount Vernon Middle School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	John Day SD 3

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of

		Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
Form Submitted by:	2013 Grant County NHMP Steering Committee		
Action Item Status:	Baker:	Union:	
	Grant: New Action Item	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #11 – Seismically retrofit Prairie City School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Prairie City School was built in 1929 and has buildings constructed of both wood frames and reinforced masonry wall buildings with flexible diaphragms
- Prairie City School has been identified as a critical facility by the Grant County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Prairie City School has four buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Grant County has moderate vulnerability for seismic hazards. Retrofitting Prairie City School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Prairie City School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Prairie City School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Prairie City 4 School District,

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, Prairie City	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of

	Emergency Management		
Potential Funding Sources:	**Estimated cost:**	**Timeline:**	
		Long Term	
Form Submitted by:			
Action Item Status:	Baker:	Union:	
	Grant: New Action Item	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #12 – Seismically retrofit Grant Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Grant Union High School was built in 1936 and has buildings constructed of concrete shear wall and reinforced masonry bearing wall buildings with flexible diaphragms
- Grant Union High School has been identified as a critical facility by the Grant County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Grant Union High School has four buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Grant County has moderate vulnerability for seismic hazards. Retrofitting Grant Union High School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Grant Union High School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Grant Union High School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	John Day SD 3,

Internal Partners:	External Partners:
Emergency Management, County Public Works	Business Oregon, Department of Geology and Mineral

Departments, Grant County		Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Grant County NHMP Steering Committee		
Action Item Status:	Baker:	Union:	
	Grant: New Action Item	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #13 – Seismically retrofit Humbolt Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Humbolt Elementary School was built in 1956 and has buildings constructed of a wooden frame
- Humbolt Elementary School has been identified as a critical facility by the Steering Committee
- The Statewide Seismic Needs Assessment Study conducted by DOGAMI identifies Humbolt Elementary School has having a very high risk to seismic activity
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Humboldt Elementary School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Grant County has moderate vulnerability for seismic hazards. Retrofitting Humbolt Elementary School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Humbolt Elementary School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Humbolt Elementary School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	John Day SD 3

Internal Partners:	External Partners:
Emergency Management, County Public Works	Business Oregon, Department of Geology and Mineral

Departments, Canyon City		Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Grant County NHMP Steering Committee		
Action Item Status:	Baker:	Union:	
	Grant: New Action Item	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #14 – Seismically retrofit Seneca Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Seneca Elementary School was built in 1932 and has buildings constructed of a concrete shear wall
- Seneca Elementary School has been identified as a critical facility by the Grant County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Seneca Elementary School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Grant County has moderate vulnerability for seismic hazards. Retrofitting Seneca Elementary School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Seneca Elementary School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Seneca Elementary School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	John Day SD 3

Internal Partners:	External Partners:

Emergency Management, County Public Works Departments, City of Seneca		Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Grant County NHMP Steering Committee		
Action Item Status:	Baker:	Union:	
	Grant: New Action Item	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #15 – Seismically retrofit Monument School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☐ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Monument School was built in 1929 and has buildings constructed of concrete sheer walls
- Monument School has been identified as a critical facility by the Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Monument School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Grant County has moderate vulnerability for seismic hazards. Retrofitting Monument School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Monument School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Monument School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Monument SD 8

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of Monument	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management

Potential Funding Sources:		Estimated cost:	Timeline:
			Long Term
Form Submitted by:	2013 Grant County NHMP Steering Committee		
Action Item Status:	Baker:	Union:	
	Grant: New Action Item	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #16 – Seismically retrofit the Grande Ronde Hospital to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The Grande Ronde Hospital was built in 1966 and has buildings constructed of concrete moment frames
- The Grande Ronde Hospital has been identified as a critical facility by the Union County Steering Committee and La Grande Work Group
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Grande Ronde Hospitals has three buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting the Grande Ronde Hospital will significantly reduce the hospital's vulnerability to seismic hazards and improve the safety of community members that use the hospital
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Grande Ronde Hospital will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting the Grande Ronde Hospital
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix

Coordinating Organization:	The Grande Ronde Hospital

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, The City of La Grande	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of

		Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #17 – Seismically retrofit the La Grande City Police Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The La Grande City Police Department was built in 1977 and has buildings constructed of reinforced masonry wall buildings with flexible diaphragms
- The La Grande City Police Department has been identified as a critical facility by the La Grande Working Group
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the La Grande City Police Department has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting the La Grande City Police Department will significantly reduce the building's vulnerability to seismic hazards and improve the safety of employees and community members
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the La Grande City Police Department will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting the La Grande City Police Department
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix

Coordinating Organization:	City of La Grande

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of

		Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #18 – Seismically retrofit Willow Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Willow Elementary School was built in 1924 and has buildings constructed of concrete shear walls
- Willow Elementary School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Willow Elementary School has two buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Willow Elementary School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting Willow Elementary School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Willow Elementary School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	La Grande SD 1

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of La Grande	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency,

		Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #19 – Seismically retrofit La Grande High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- La Grande High School was built in 1951 and has buildings constructed of concrete shear wall and reinforced masonry wall buildings with flexible diaphragms
- La Grande High School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the La Grande High School has three buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting La Grande High School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the La Grande High School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting La Grande High School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	La Grande SD 1

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of La Grande	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency,

		Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #20 – Seismically retrofit Greenwood Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☒ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Greenwood Elementary School was built in 1960 and has buildings constructed of wood frames and concrete shear walls
- Greenwood Elementary School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Greenwood Elementary School has two buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Greenwood Elementary School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Greenwood Elementary School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Greenwood Elementary School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	La Grande SD 1

Internal Partners:	External Partners:
Emergency Management, County Public Works	Business Oregon, Department of Geology and Mineral

Departments, City of La Grande		Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #21 – Seismically retrofit Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Union High School was built in 1905 and has buildings constructed of concrete shear walls
- Union High School has been identified as a critical facility by the Union County Steering Committee and in discussion with the City of Union City Council
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Union High School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Union High School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Union High School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Union High School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Union SD 5

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of Union	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management

Potential Funding Sources:		Estimated cost:	Timeline:
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #22 – Seismically retrofit Imbler High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Imbler High School was built in 1977 and has buildings constructed of wood frames and reinforced masonry bearing wall buildings with flexible diaphragms
- Imbler High School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Imbler High School has three buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Imbler High School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Imbler High School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Imbler High School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Imbler SD 11

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of Imbler	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency,

		Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #23 – Seismically retrofit Stella Mayfield Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Stella Mayfield Elementary School was built in 1947 and has buildings constructed of concrete shear walls
- Stella Mayfield Elementary School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Stella Mayfield Elementary School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Stella Mayfield Elementary School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Stella Mayfield Elementary School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Stella Mayfield Elementary School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Elgin SD 23

Internal Partners:	External Partners:
Emergency Management, County Public Works	Business Oregon, Department of Geology and Mineral

Departments, City of Elgin		Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #24 – Seismically retrofit Powder Valley School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Powder Valley School was built in 1937 and has buildings constructed of reinforced masonry bearing wall buildings with flexible diaphragms and wood frames
- Powder Valley School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Powder Valley School has two buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Powder Valley School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Powder Valley School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Powder Valley School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	North Powder SD 8J

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of North Powder	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency,

		Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #25 – Seismically retrofit Cove School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Cove School was built in 1935 and has buildings constructed of reinforced masonry bearing wall buildings with flexible diaphragms, wood frames, and concrete shear walls
- Cove School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Cove School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Cove School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Cove School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Cove School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Cove SD 15

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of Cove	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management

Potential Funding Sources:		Estimated cost:	Timeline:
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #26 – Seismically retrofit Elgin High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☒ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Elgin High School was built in 1957 and has buildings constructed of reinforced masonry bearing wall buildings with flexible diaphragms and wood frames
- Elgin High School has been identified as a critical facility by the Union County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Elgin High School has two buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Union County has high vulnerability for seismic hazards. Retrofitting Elgin High School will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Elgin High School will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Elgin High School
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Elgin SD 23

Internal Partners:	External Partners:
Emergency Management, County Public Works Departments, City of Elgin	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management

Potential Funding Sources:		Estimated cost:	Timeline:
			Long Term
Form Submitted by:	2013 Union County NHMP Steering Committee		
Action Item Status:	Baker:	Union: New Action Item	
	Grant:	Wallowa:	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #27 – Seismically retrofit the Enterprise Fire Department and City Hall to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- DOGAMI estimates that the Enterprise Fire Department and City Hall was built in 1950's and is constructed of reinforced masonry bearing walls
- The Enterprise Fire Department and City Hall has been identified as a critical facility by the Wallowa County Steering Committee and the City of Enterprise Working Group
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including fire departments; this assessment determined that the Enterprise Fire Department and City Hall has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Wallowa County has low vulnerability for seismic hazards. Retrofitting the Enterprise Fire Department and City Hall will significantly reduce the school's vulnerability to seismic hazards and improve the safety of employees and community members
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Enterprise Fire Department and City Hall will reduce its vulnerability and ensure the viability of this critical facility.
- The Enterprise Fire Department has been previously assessed with additional bracing included

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting the Enterprise Fire Department and City Hall
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix

Coordinating Organization:	City of Enterprise

Internal Partners:	External Partners:
Emergency Management, County Public Works	Business Oregon, Department of Geology and Mineral

Departments		Industries, Federal Emergency Management Agency, Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:			
Action Item Status:	Baker:	Union:	
	Grant:	Wallowa: New Action Item	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
EQ #28 – Seismically retrofit Wallowa Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☐ Baker County ☐ Baker City ☐ Halfway	☐ Grant County ☐ John Day	☐ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Wallowa Elementary was built in 1922 and has buildings constructed of concrete shear walls and wooden frames
- Wallowa Elementary has been identified as a critical facility by the Wallowa County Steering Committee
- Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities, including schools; this assessment determined that the Wallowa Elementary School has buildings with a very high collapse potential.
- Retrofitting of vital infrastructure, such as schools and community buildings, provides important improvements that reduce hazard exposure and the cost and time associated with recovery (Source: American Planning Advisory Service Report Number 483/484)
- Wallowa County has low vulnerability for seismic hazards. Retrofitting Wallowa Elementary will significantly reduce the school's vulnerability to seismic hazards and improve the safety of students, teachers, and community members that use the school
- The Disaster Mitigation Act of 2000 requires communities to identify actions and projects that reduce the effects of hazards on the community, particularly to buildings and infrastructure [201.6 (c)(3)(ii)]. Seismically retrofitting the Wallowa Elementary will reduce its vulnerability and ensure the viability of this critical facility.

Ideas for Implementation:

- Conduct a detailed structural evaluation that outlines recommendations for building deficiencies, and provides a cost estimate, incorporate DOGAMI's seismic assessment data to assist in retrofitting Wallowa Elementary
- Apply for grant funding through the Oregon Seismic Rehabilitation Grant Program
- Apply for FEMA project grant funding
- Conduct structural evaluation and make recommendations (structural and non-structural) for fix
- Align project with School District Maintenance Plan

Coordinating Organization:	Wallowa SD 12

Internal Partners:	External Partners:
Emergency Management, County Public Works Department, City of Wallowa	Business Oregon, Department of Geology and Mineral Industries, Federal Emergency Management Agency,

		Oregon Department of Education, Oregon Office of Emergency Management	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Long Term
Form Submitted by:			
Action Item Status:	Baker:	Union:	
	Grant:	Wallowa: New Action Item	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
FL #1 – Explore flood mitigation opportunities for homes and critical facilities subject to flooding.	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The City of Halfway has identified Pine Creek as a continual flooding hazard.
- The City of John Day suffers occasional flooding damages from the John Day River. Areas most vulnerable to flood include properties along the intersection of 7th and NW Bridge Streets, the John Day radio station, and the John Day wastewater treatment plant. The wastewater treatment plant is in the river's floodplain, and the facility is 28 years old.
- Flash floods in Canyon City could destroy a number of homes, including an elderly home on the canyon floor.
- Grant County's Sheriff's Office and jail are located in Canyon City. There is a river behind the jail that, if it rose more than five feet, could cause harm to the building.
- The City of La Grande was recently affected by a flood (2011) which did not occur in the flood plain. Debris in streams from homes and landscaping were the primary reasons for the flood. The City is prone to flash floods.
- Flooding is a potential hazard for many of the region's water treatment facilities. The City of Enterprise is in the process of upgrading its facility, and the city of Lostine is working on building a new water system. The John Day wastewater treatment facility is 26-27 years old; a plan for retrofit is underway. The City of Halfway has identified their wastewater treatment plant as being threatened by Pine Creek. The City of Wallowa has its wastewater facility near the Wallowa River and may require flood proofing.
- The City of Enterprise has experienced flooding issues with both the Wallowa River and Prairie Creek, and they're concerned about potential damages to sewer lines.
- The Grande Ronde River has caused flooding damage in the unincorporated town of Troy
- The Imnaha River has damaged homes (several in 1997) and roads. Some homes have resultantly been moved to higher ground.
- Personal homes at the head of Wallowa Lake (South end) have been destroyed by the Wallowa River in past floods.
- The City of Elgin's lagoons are in the flood plain (below Fish Trap Road).
- There is concern about a potential dam failure on the Wallowa Lake Dam.
- The Disaster Mitigation Act of 2000 requires communities to identify mitigation actions that address existing buildings and infrastructure [201.6(c)(3)(ii)]. Exploring flood mitigation opportunities for homes will reduce the effect of a flood hazard on the community and help to protect existing buildings from natural hazard events. Eliminating or limiting development in hazard prone areas, such as floodplains,

can reduce vulnerability to hazards
Ideas for Implementation:
• Assess flooding hazards within each county to determine where mitigation efforts are most needed. Identify suitable mitigation projects for each scenario. • Develop acquisition and management strategies to preserve parks, trails, and open space in the floodplain • Elevate repeat-loss properties at the head of Wallowa Lake • Identify water and wastewater treatment facilities that are in need of flood-proofing (mechanical or structural fixes). • Assess each plant's necessity for retrofit, identifying those that could benefit from immediate help. • Implement mechanical and structural fixes during planned upgrades/expansions. Possibly elevate properties. • Seek qualification for the Flood Mitigation Assistance Program (FMA). Identify the number of buildings and/or structures in the floodplain. • Explore multi-objective stream enhancement projects. • Seek Silver Jackets assistance in completion of mitigation projects

Coordinating Organization:	Relevant City and County Public Works Departments / Emergency Services and Emergency Management

Internal Partners:	**External Partners:**
County Roads Departments, Public Works Departments, County Planning Departments; City of Enterprise City of John Day, City of La Grande, Baker City, City of Halfway	Relevant water treatment facilities, Federal Emergency Management Agency, Homeowner, Army Corps of Engineers, Oregon Department of Fish and Wildlife, Department of State Lands, Oregon Department of Transportation, Silver Jackets

Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Ongoing

Form Submitted by:		
Action Item Status:	Baker: Ongoing	Union: Deferred
	Grant: Deferred	Wallowa: Deferred

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
FL #2 – Explore the costs and benefits for participation in the NFIP's Community Rating System			Goals 1 and 2	☒ Baker ☒ Grant	☐ Union ☐ Wallowa
Affected Jurisdictions:					
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande		☒ Wallowa County ☒ Enterprise	
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					

- The National Flood Insurance Program's (NFIP) Community Rating System (CRS) is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, insurance premiums under the NFIP are discounted to reflect the reduced flood risk resulting from the community actions.
- The Community Rating System rewards communities that undertake floodplain activities beyond the requirements of the National Flood Insurance Program. The CRS is a point system program that reduces flood insurance premiums for the citizens of the participating communities.
- The current amount insurance in force for each county is a substantial amount of money. Participating in the CRS program could reduce this amount. The insurance in force for each county is as follows with the total paid amounts in parentheses:
    - Baker County: $6,709,100 ($4,278.08)
        - Baker City: 15,366,600 ($25,491.01)
        - Halfway: $324,000 ($0.00)
    - Grant County: $2,919,400 ($0.00)
        - John Day: $5,678,800 ($51,094.09)
    - Union County: $8,765,000 ($33,920.52)
        - La Grande: $14,452,300 ($38,334.00)
    - Wallowa County: $7,652,000 ($15,788.18)
        - Enterprise: $10,674,500 ($0.00)
- The Disaster Mitigation Act of 2000 requires communities to identify mitigation actions that address existing buildings and infrastructure [201.6(c)(3)(ii)]. Improving the CRS ratings for communities in Northeast Oregon helps decrease vulnerability to floods.

Ideas for Implementation:

- Assess current community activities to determine whether the city or county is already eligible to apply for a CRS classification better than 10.
- Determine the CRS classification your community would like to obtain, and take steps towards reaching that goal.
- Work towards obtaining higher CRS class ratings (1 being the highest rating obtainable; 10 being a non-participating community). Activities that reduce flood insurance premiums fall under four categories: Public Information, Mapping and Regulations, Flood Damage Reduction, and Flood Preparedness.

• Seek Silver Jackets assistance for CRS credit completion			
Coordinating Organization:	Interested Cities and Counties		
Internal Partners:		**External Partners:**	
County and city planning departments, county emergency services / emergency management, county public works		Federal Emergency Management Agency, Department of Land Conservation and Development, Silver Jackets	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Short Term
Form Submitted by:			
Action Item Status:	Baker: Deferred	Union: Deferred	
	Grant: Deferred	Wallowa: Deferred	

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
FL #3 – Increase awareness of the NFIP program, specifically the Biggert Waters Flood Insurance Reform Act of 2012.	Goals 3 and 4	☒ Baker ☒ Grant	☐ Union ☒ Wallowa

Affected Jurisdictions:			
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☒ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The market penetration of flood insurance is low within each of the counties and cities participating in this NHMP. Shown below are the number of flood insurance policies (pre-FIRM policies) and countywide market penetration rate (i.e., percent of households within the mapped special flood hazard area (100 year flood plain) that have flood insurance:
    - Baker County: 172 (123 Pre-FIRM), 17.3% market penetration
        - Baker City: 125 (91 Pre-FIRM)
        - Halfway: 3 (3 Pre-FIRM)
    - Grant County: 106 (72 Pre-FIRM), 27.1% market penetration
        - John Day: 48 (31 Pre-FIRM)
    - Union County: 193 (128 Pre-FIRM), market penetration not available
        - La Grande: 78 (56 Pre-FIRM)
    - Wallowa County: 109 (74 Pre-FIRM), 19.3% market penetration
        - Enterprise: 68 (48 Pre-FIRM)
- The Disaster Mitigation Act of 2000 requires communities to include a process for continued public involvement in the maintenance of the plan [201.6(c)(4)(iii)].Increasing public awareness of the National Flood Insurance Program (NFIP) will allow continued public involvement and will inform residents and businesses of the benefits of the NFIP program and how the NFIP can protect their property.
- The Biggert Waters Flood Insurance Reform Act of 2012 will remove subsidized rates (pre-FIRM rates) on October 1st, 2013 for the following classes of structures and allows rates to increase by 25% per year until actuarial rates are achieved:
    - Any residential property that is not the primary residence of an individual
    - Any severe repetitive loss property
    - Any property that has incurred flood related damages that cumulatively exceed the fair market value of the property
    - Any business property
    - Any property that after the date of the Bill has incurred substantial damage or has experienced "substantial improvement exceeding 30 percent of the fair market value of the property.
    - Any new policy for which the owner has refused a FEMA mitigation offer under HMGP, or for a repetitive loss property or severe repetitive loss property.
- *Source: Summary of Biggert-Waters Flood Insurance Reform Act of 2012*

Ideas for Implementation:			
• Distribute information to current and future homeowners/renters in flood-prone areas. • Communicate information regarding the Biggert-Waters Flood Insurance Reform Act of 2012 and its implications on (pre-FIRM) NFIP properties. Communicate these changes to NFIP insured property owners, prospective buyers, surveyors, real-estate agents, and the public at large. Seek assistance from the state flood plain manager. • Increase awareness for current homeowners and prospective buyers of property about floodplain issues on their property and actions they can implement to mitigate the impacts of a flood			
Coordinating Organization:	Local flood plain managers, County Emergency Managers		
Internal Partners:		**External Partners:**	
City Planning Departments, Emergency Services / Emergency Management, NFIP Floodplain Coordinator (DLCD), insurers, realtors		FEMA, Baker County Children and Families, County Extension Offices, Eastern Oregon Medical Associates, Elks Lodge, Girl Scouts of the USA , Greater Prairie City Community Association, People Mover, Community Connections of NEOR (Any community organizations capable of distributing information), Blue Mountain Eagle, ACOE	
Potential Funding Sources:		**Estimated cost:**	**Timeline:**
			Short Term
Form Submitted by:			
Action Item Status:	Baker: Deferred	Union: Deferred	
	Grant: Deferred	Wallowa: Deferred	

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
FL # 4 –Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.			Goal 1	☒ Baker ☒ Grant	☐ Union ☒ Wallowa
Affected Jurisdictions:					
☒ Baker County ☒ Baker City ☒ Halfway	☒ Grant County ☒ John Day	☒ Union County ☒ La Grande		☒ Wallowa County ☒ Enterprise	
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					

- Flood Mitigation Assistance funds require that the plan describe the community's vulnerability to flood in terms of the types and numbers of existing buildings (including repetitive loss structures), infrastructure, and critical facilities located in the identified hazard areas.
- Currently, communities in Northeast Oregon are only able to identify the number of NFIP claims that have been made since FIRM adoption. Flood Insurance Rate Maps in each of the Northeast Oregon communities are too old to be currently accurate, and counting the numbers of existing buildings, infrastructure, and critical facilities located in flood-prone areas was not possible during the 20013 Natural Hazards Mitigation Planning Process.
- The Army Corps of Engineers shot new elevations, and is working on developing maps on Canyon Creek and the John Day River, concentrated on areas of recent flooding.
- DOGAMI flew LIDAR in Baker County in 2012, near Baker City and part of the Elk Horn Mountains
- Like many locations in Eastern Oregon, FEMA has not updated the Flood Insurance Rate Maps (FIRMS). Due to their ages, and technology used to create them, the maps may not accurately represent present flood conditions. Additionally, maps are not digital. Dates for the most recent FIRMS are as follows: Baker: 1988; Grant: 1982; Union: 1996;Wallowa: 1988. The number of claims within each county that have experienced flood related losses are as follows:
    - Baker County: 1 paid claim ($4.278)
        - Baker City: 2 paid claims ($25,491)
    - Grant County: 0paid claims
        - John Day: 7 paid claims ($51,094)
    - Union County: 5 paid claims ($33,920); 4 single losses ($38,334)
        - La Grande: 4 paid claims ($33,334)
        - Union City: 4 paid claims ($18,919)
    - Wallowa County: 2 paid claims ($15,788)
- Wallowa City: 1 paid claim ($500)

Ideas for Implementation:

- Hire a person to physically count the number of buildings and/or structures in the floodplain. Assess the types and numbers of existing buildings (including repetitive loss structures), infrastructure, and critical facilities located in the identified flood hazard areas.
- Update the Flood Insurance Rate Maps. Collect topological maps, road maps, base elevation data and a

description of at-risk populations/structures. • Convert then updated maps to digital maps. Using GIS, overlay digital FIRM maps against current property maps. Count and document the number of structures lying within the floodplain. • Determine the locations of flood-prone areas not identified by the FIRMs.			
Coordinating Organization:	Relevant City and County Public Works Departments / Emergency Services and Emergency Management, Relevant City Administrators/City Managers, County Planning Departments, elected officials		
Internal Partners:	**External Partners:**		
County Roads Departments, Public Works Departments,	City of John Day, City of La Grande, Baker City, City of Halfway, Army Corps of Engineers, DOGAMI, DAS-GEO		
Potential Funding Sources:	**Estimated cost:**	**Timeline:**	
		Long Term	
Form Submitted by:			
Action Item Status:	Baker: New Action Item	Union: New Action Item	
	Grant: New Action Item	Wallowa: New Action Item	

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
FL # 5–Explore mitigation opportunities for the Canyon City bridge (bridge # 7)			Goal 1	☐ Baker ☒ Grant	☐ Union ☐ Wallowa
Affected Jurisdictions:					
☐ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☐ Union County ☐ La Grande		☐ Wallowa County ☐ Enterprise	
Alignment with Existing Plans/Policies:					
Rationale for Proposed Action Item:					
• A low hanging bridge (bridge #7) on Canyon Creek built up a debris pile which contributed to flooding of the Grant-Union High School in 2011. • The Disaster Mitigation Act of 2000 requires communities to identify mitigation actions that address existing buildings and infrastructure [201.6(c)(3)(ii)]. Exploring flood mitigation opportunities for homes will reduce the effect of a flood hazard on the community and help to protect existing buildings from natural hazard events. Eliminating or limiting development in hazard prone areas, such as floodplains, can reduce vulnerability to hazards • Flooding is a potential hazard for Grant-Union High school, which sustained an estimated 1 million dollars in damage from the 2011 flood event.					
Ideas for Implementation:					
• Seek Silver Jackets assistance to investigate • Coordinate with ODOT for project engineering; Grant County and Canyon City estimated match is approximately $400,000.					
Coordinating Organization:	Grant County,				
Internal Partners:		**External Partners:**			
Canyon City, John Day School District 3,		Army Corps of Engineers, Oregon Department of Transportation, Silver Jackets			
Potential Funding Sources:		**Estimated cost:**	**Timeline:**		
		($400k match)	Long Term		
Form Submitted by:					
Action Item Status:	Baker:	Union:			
	Grant: New Action Item	Wallowa:			

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
LS #1 – Identify, obtain, and evaluate detailed risk assessments in landslide prone areas and develop mitigation strategies to reduce the likelihood of a potential hazardous event.	Goals 1 & 4	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☒ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- The County Steering Committees identified several landslide prone areas that may need a detailed risk assessment:
    - Baker County: Smith Ditch can block the Powder River; Highway 86 near Huntington has frequent landslide issues
    - Grant County: threat of landslide and debris flow near Rock Creek and Picture Gorge. Highway 63 near Izee is at risk related to flash floods
    - Union County: Hamburger Hill, Highway US 30 on the way to I-84, Minnam Grade – Highway 82 connection to Wallowa County. The EOU NHMP (2012) had an action item calling for a detailed landslide study to be completed near the University. The hill behind the Grande Ronde Hospital was recently assessed for landslide hazards.
    - Wallowa County: Wallowa Lake District has landslide issues; Troy frequently has slides every year; the Imnaha River frequently has landslides.
- The Disaster Mitigation Act of 2000 requires that communities identify actions and projects the reduce the impact of a natural hazard on the community, particularly to new and existing buildings and infrastructure [201.6(c)(3)(ii)]. Identifying areas vulnerable to landslide can reduce the impacts of landslides on new and existing developments and infrastructure.

Ideas for Implementation:

- Improve knowledge of debris flow (rapid moving) landslide hazard areas
- Map steep slope areas.
- Research existing community ordinances related to steep slope developments

Coordinating Organization:	County Public Works Departments

Internal Partners:	External Partners:
County Planning Departments, City of La Grande	Department of Geology and Mineral Industries, United States Geological Survey, irrigation districts, Oregon Department of Transportation, Eastern Oregon University

Potential Funding Sources:	Estimated cost:	Timeline:
		Long Term

Form Submitted by:	

Action Item Status:	Baker: New Action Item	Union: New Action Item
	Grant: New Action Item	Wallowa: New Action Item

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
SW #1 – Participate in the NOAA Storm Ready Program	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☐ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Region 7 experiences extreme cold, high winds, winter storms, heavy rain, thunderstorms, and occasional tornados.
- Typically, winter weather will close interstate traffic, placing increased demands on lodging, rest stops, and local emergency services.
- Extreme winds are not uncommon in Eastern Oregon valleys and canyons.
- Only nine tornados have been recorded in Eastern Oregon since 1888, but they have caused damage to timber resources, personal property, and critical infrastructure.
- Thunderstorms can bring heavy winds, rain, hail, and lightning, which can all lead to mudslides, power outages, and damages to crop-producing fields.
- All structures, particularly those on the valley floor, are subject to severe weather, including ice and snow storms, lightning storms, and hail, heavy rain, and fast winds. Information pertaining to weather-related hazards and mitigation techniques would be helpful for new home-owners and developers in the area.
- The Disaster Mitigation Act of 2000 requires communities to identify a comprehensive range of actions and projects that reduce the effects of hazards on the community [201.6(c)(3)(ii)], such as actions addressing emergency services. Participating in NOAAs Storm Ready Program will reduce the impact of a severe weather event on a community by helping community members strengthen safety programs.
- Wallowa County has recently become a participant in the NOAA Storm Ready Program
- The benefits for becoming a NOAA Storm Ready Program community include:
    - Enhance available coverage through NOAA weather radio
    - Identify and pursue funding sources for weather alert radio purchases
    - Provide staff support to assist with NOAA Storm Spotter program
- Improve warning dissemination to public

Ideas for Implementation:

The steps for becoming a Storm Ready Community include:

- Contact the local National Weather Service (for Grant and Union Counties contact the Pendleton office; for Baker County contact the Boise office); contact the local Warning Coordination Meteorologists (WCM)
- Complete a Storm Ready form and send it to the local WCM

- Arrange a verification visit
- Receive Local Advisory Board Approval
- More information can be found at: http://www.stormready.noaa.gov/apply.htm

- Review Wallowa County's application and approval process for advice on a successful local Storm Ready adoption.

Coordinating Organization:	Emergency Services / Emergency Management	
Internal Partners:	**External Partners:**	
County Public Works Departments, County Roads Departments, Interested Cities, local fire departments	National Oceanic and Atmospheric Administration, National Weather Service (Pendleton or Boise), HAM, Oregon Department of Transportation, American Red Cross, local radio stations, Eastern Oregon University, United States Geological Survey	
Potential Funding Sources:	**Estimated cost:**	**Timeline:**
		Short Term (Baker); Long Term (Grant, Union)

Form Submitted by:		
Action Item Status:	Baker: In Process	Union: Deferred
	Grant: Deferred	Wallowa: Complete

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
SW # 2 – Shorten spans and anchor poles on utility lines in high wind or heavy icing areas	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- High windstorms or winter icing storms can cause damage to long spans between power poles and create power outages during storms. If poles are inserted between spans this reduces the risk of outages. Also by anchoring certain poles this can reduce the amount of line, which would go down in a storm. Both items reduce the cost of repair and replacement.
- The Disaster Mitigation Act of 2000 requires communities to develop comprehensive actions to reduce the impacts of natural hazards, with an emphasis on new and existing buildings and infrastructure [206.6(c)(3)(ii)]. Shortening the spans between long lines and anchoring poles will reduce the likelihood of lines breaking during wind and winter icing storms.
- Windstorm and winter storm events were given a high probability ranking in the risk assessment for all four Northeast counties; they were given a high vulnerability in every county except Wallowa which gave windstorm and winter storm events a moderate score.
- Non-profit electric cooperatives are eligible to receive grant funding through the Hazard Mitigation Grant Program (HMGP)

Ideas for Implementation:

- The utility company would be responsible for identifying high wind and icing areas from previous outages and apply for grants to strengthen the areas by pole inserts and anchoring.
- Inform the following electric cooperatives about this action item and provide guidance on the available funding sources:
    - Central Electric Cooperative
    - Columbia Power Cooperative
    - Oregon Trail Electric Cooperative

Coordinating Organization:	NE Oregon Electric Cooperatives

Internal Partners:	External Partners:
County Emergency Management, County Public Works	Other relevant utility companies

Potential Funding Sources:	Estimated cost:	Timeline:
		Ongoing

Form Submitted by:		
Action Item Status:	Baker: New Action Item	Union: New Action Item
	Grant: New Action Item	Wallowa: New Action Item

Proposed Action Item:	Alignment with Plan Goals:	High Priority Action Item?	
SW # 3 - Bury overhead power lines in winter storm and windstorm prone areas	Goal 1	☐ Baker ☐ Grant	☐ Union ☐ Wallowa

Affected Jurisdictions:			
☒ Baker County ☐ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande	☒ Wallowa County ☐ Enterprise

Alignment with Existing Plans/Policies:

Rationale for Proposed Action Item:

- Overhead electrical lines are subject to high winds and winter storm damage. During winter storms access to the line by the utility can be difficult and this delays the time for restoration of power to the services. Bury overhead power lines would remove the risk of damage from wind and winter storm events.
- The Disaster Mitigation Act of 2000 requires communities to develop comprehensive actions to reduce the impacts of natural hazards, with an emphasis on new and existing buildings and infrastructure [206.6(c)(3)(ii)]. Burying overhead lines in winter storm and windstorm prone areas will reduce the impact of severe weather on power lines, and will continue power service to rural customers as well as ODOT, State Police, county sheriff, emergency services, telephone utilities, and cell phone companies.
- Windstorm and winter storm events were given a high probability ranking in the risk assessment for all four Northeast counties; they were given a high vulnerability in every county except Wallowa which gave windstorm and winter storm events a moderate score.
- Non-profit electric cooperatives are eligible to receive grant funding through the Hazard Mitigation Grant Program (HMGP)

Ideas for Implementation:

- The utility company would be responsible to identifying high wind and icing areas from previous outages and apply for grants to bury overhead power lines.
- Inform the following electric cooperatives about this action item and provide guidance on the available funding sources:
    - Central Electric Cooperative
    - Columbia Power Cooperative
    - Oregon Trail Electric Cooperative

Coordinating Organization:	NE Oregon Electric Cooperatives

Internal Partners:	External Partners:
County Emergency Management, County Public Works	Other relevant utility companies

Potential Funding Sources:	Estimated cost:	Timeline:
		Ongoing

Form Submitted by:		
Action Item Status:	Baker: New Action Item	Union: New Action Item
	Grant: New Action Item	Wallowa: New Action Item

Proposed Action Item:			Alignment with Plan Goals:	High Priority Action Item?	
WF #1 – Implement wildfire mitigation action items as identified in each county's Community Wildfire Protection Plan.			Goals 1 & 4	☐ Baker ☐ Grant	☐ Union ☐ Wallowa
Affected Jurisdictions:					
☒ Baker County ☒ Baker City ☐ Halfway	☒ Grant County ☐ John Day	☒ Union County ☐ La Grande		☒ Wallowa County ☐ Enterprise	
Alignment with Existing Plans/Policies:					
Baker County CWPP 2006, Grant County CWPP 2013, Union County CWPP 2004, Wallowa County CWPP 2006					
Rationale for Proposed Action Item:					
• The Disaster Mitigation Act of 2000 requires that mitigation plans provide a comprehensive range of actions and projects to mitigate against natural hazards [201.6(c)(3)(ii)], such as actions that protect natural resources. Encouraging the implementation of existing action items with the Counties' Community Wildfire Protection Plans will help to ensure that wildfire mitigation remains a cooperative priority in Northeast Oregon • The Baker County CWPP, Grant County CWPP, Union County CWPP, and Wallowa County CWPP, developed extensive risk assessments and identified mitigation actions. The CWPPs should be considered as a supplement to the Wildfire section of this NHMP as it contains accurate, updated and extensive information about the vulnerability, risk, and mitigation actions than this NHMP. • Action items included within the CWPPs should be referred to and coordinated as a component of this NHMP					
Ideas for Implementation:					
• Include persons who created and/or maintain the CWPP at semi-annual meetings. Incorporate CWPP actions into the project prioritization process. • Continue fuels protection activities within the Baker City watershed and surrounding areas • Create a Rural Fire Protection District in the Wallowa Lake Fire District.					
Coordinating Organization:	County Steering Committee Convener, Emergency Management				
Internal Partners:		**External Partners:**			
County Emergency Services / Emergency Management, County Planning Departments, City of Baker City, City of Halfway, Local Public Safety Coordinating Council (LPSCC), local fire departments,		Oregon Department of Forestry, Bureau of Land Management, OSU Extension Services, US Forest Service, Soil and Water Conservation Districts, Oregon Department of Fish and Wildlife; Homeowners in Wildland/Urban Interface zones; Hells Canyon Preservation Council			
Potential Funding Sources:		**Estimated cost:**		**Timeline:**	
				Ongoing	
Form Submitted by:					
Action Item Status:	Baker: Ongoing	Union: Ongoing			
	Grant: Ongoing	Wallowa: Ongoing			

APPENDIX B:
PLANNING AND PUBLIC PROCESS

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Memo

To: Federal Emergency Management Agency

From: **Oregon Partnership for Disaster Resilience**

Date: February 24, 2013

Re: **List of changes to the 2008 Northeast Oregon NHMP for the 2013 Plan Update**

Purpose

This memo describes the changes made to the 2008 Northeast Oregon RegionalNatural Hazards Mitigation Plan (NHMP) during the 2013 plan update process. Major changes are documented by plan section.

Project Background

Baker, Grant, Union, and Wallowa Counties (Northeast Oregon) partnered with the Oregon Partnership for Disaster Resilience (OPDR) and Resource Assistance for Rural Environments (RARE) to update the 2008 Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). The Disaster Mitigation Act of 2000 requires communities to update their mitigation plans every five years to remain eligible for Pre-Disaster Mitigation (PDM) program funding, Flood Mitigation Assistance (FMA) program funding, and Hazard Grant Mitigation Program (HMGP) funding. OPDR met with members of each of the Northeast Oregon county steering committees in May, June, July, and September of 2013 to update all content within the region's NHMP. During this update cycle the cities of Baker City, Enterprise, Halfway, John Day, and La Grande opted to participate; as such the 2013 plan is multi-jurisdictional. Meetings with the working groups for the five participating cities occurred during June and September, 2013. OPDR and the steering committees made several changes to the 2008 NHMP. Major changes are documented and summarized in this memo.

2013 Plan Update Changes

The sections below only discuss *major* changes made to the 2008 Northeast Oregon NHMP during the 2013 plan update process. Major changes include the replacement or deletion of large portions of text, changes to the plan's organization, new mitigation action items and new additions to the plan. If a section is not addressed in this memo, then it can be assumed that no significant changes occurred.

The plan's format and organization have been altered to fit within OPDR's plan templates. Table B.1 below lists the 2008 plan section names and the corresponding 2013 section names, as updated (major Volumes are highlighted in grey). This memo will use the 2013 plan update section names to reference any changes, additions, or deletions within the plan.

Table B-1 Changes to Plan Organization

2008 Northeast Oregon Multi-jurisdictional NHMP	2013 Northeast Oregon Multi-jurisdictional NHMP
	FEMA Approval Letter and Letters of Adoption
Special Thanks & Acknowledgements	Acknowledgements
Table of Contents	Table of Contents
Volume I: Natural Hazard Mitigation Plan	Volume I: Basic Plan
Executive Summary	Executive Summary
Section 1: Introduction	Section 1: Introduction
Section 2: Baker County Risk Assessment Summary	Section 2: Risk Assessment
Section 3: Grant County Risk Assessment Summary	
Section 4: Union County Risk Assessment Summary	
Section 5: Wallowa County Risk Assessment Summary	
Section 6: Mission, Goals and Action Items	Section 3: Mitigation Strategy
Section 7: Plan Implementation and Maintenance	Section 4: Plan Implementation and Maintenance
Volume II: City Addendums	Volume III: Jurisdictional Addenda
Baker City	Baker City
-	City of Enterprise
City of Halfway	City of Halfway
City of John Day	City of John Day
City of La Grande	City of La Grande
Volume III: Resource Appendices	Volume IV: Mitigation Resources
Appendix A: Planning and Public Process	Appendix B: Planning and Public Process
Appendix B: Northeast Oregon Profile and Risk Assessment	Appendix C: Community Profile
Appendix C: Hazard Annexes	Volume II: Hazard Annexes
Appendix D: Economic Analysis of Natural Hazards Mitigation Projects	Appendix D: Economic Analysis of Natural Hazards Mitigation Projects
Appendix E: Regional Household Preparedness Survey	Appendix F: Regional Household Preparedness Survey
Appendix F: Resource Directory	Appendix E: Grant Programs and Resource
Appendix G: Community Profiles	Appendix C and Volume III
Appendix H: Community Wildfire Protection Plans	Not included in the 2013 NHMP
Appendix I: Action Item Worksheets	Appendix A: Action Items

Several new sections were added and formatting was changed throughout the 2013 Northeast Oregon Multi-jurisdictional NHMP.

All of the appendices from the 2008 Plan were replaced and/or updated with new appendices for the 2013 update. Appendices B and G were integrated into Appendix C: Community Profile, which addresses the regional community profile and the city addenda, which addresses city and county profiles. Appendix F was reconfigured as Appendix E: Grant Programs to provide emphasis on available grant programs. Appendix C was converted into Volume II. The Mitigation Action Item forms are now within Appendix A. The Jurisdictional Addenda section was moved from Volume II to Volume III and it includes an addendum for the City of Enterprise.

Front Pages

1. The plan's cover has been updated.
2. Acknowledgements have been updated to include the 2013 project partners and planning participants.

Volume I: Natural Hazard Mitigation Plan

Volume I provides the overall plan framework for the 2013 Multi-jurisdictional NHMP update. Volume I contains the following sections: an Executive Summary; Section 1: Introduction; Section 2: Risk Assessment; Section 3: Mitigation Strategy; and Section 4: Plan Implementation and Maintenance.

Executive Summary

The 2013 NHMP now includes an executive summary that provides information about the purpose of natural hazards mitigation planning, the results of the risk assessment, and it describes how the plan will be implemented.

Section 1: Introduction

Section 1 introduces the concept of natural hazards mitigation planning and answers the question, "Why develop a mitigation plan?" Additionally, Section 1 summarizes the 2013 plan update process, and provides an overview of how the plan is organized. Major changes to Section 1 include the following:

1. Most of Section 1 includes new information that replaces out of date text found in the 2008 NHMP. The new text describes the federal requirements that the plan addresses and gives examples of the policy framework for natural hazards planning in Oregon.
2. Section 1 of the 2013 update, outlines the entire layout of the plan update, which has been altered as described above.

Section 2: Risk Assessment

Section 2, Risk Assessment, consists of three phases: hazard identification, vulnerability assessment, and risk analysis. Hazard identification involves the identification of hazard geographic extent, its intensity, and probability of occurrence. The second phase, attempts to predict how different types of property and population groups will be affected by the hazard. The third phase involves estimating the damage, injuries, and costs likely to be incurred in a geographic area over a period of time. Changes to Section 2 include:

1. Hazard identification, characteristics, history, probability, vulnerability, and hazard specific mitigation activities were updated.
2. NFIP information was updated.
3. Updated Hazard Analyses were created for each of the identified hazards: Drought, Earthquake (crustal and Cascadia Subduction Zone), Flood, Landslide, Severe Weather (including Dust Storm, Extreme Temperatures, Windstorm, and Winter Storm) Volcanic Event and Wildfire.
4. Updated hazard history, maximum threat, probability, and vulnerability scores for the cities of Baker City, Halfway, John Day, and La Grande; added those scores for Enterprise.
5. Added relative risk rankings for each hazard at the county level.

Section 3: Mitigation Strategy

This section provides the basis and justification for the mission, goals, and mitigation actions identified in the NHMP. Major changes to Section 3 include the following:

1. The name of the section was changed from "Mission, Goals and Action Items" to "Mitigation Strategy"
2. The 2013 NHMP County and City Steering Committees opted to prioritize individual Action Items; prioritized actions are denoted as "High" priority.
3. The goals were reviewed and confirmed by the 2013 Steering Committees with changes made to the second and third goalsas indicated (added text in bold, removed text is noted with strike-through marks); the changes below reflect the goals from the 2012 Oregon NHMP:

   Goal 2:~~Safeguard economy~~**Increase the resilience of local and regional economies**

   Goal 3:~~Increase education, outreach, and awareness~~ **Motivate mitigation activity against the effects of natural hazards through education, outreach, and awareness**

4. The deletion of three action items that are not considered relevant since they are covered under new action items or within Section 4: Implementation and Maintenance (as documented in the table below).
5. Two action items were completed and are documented in the table below.
6. The addition of several new action items as documented in the table below.
7. The revision of existing actions, lead agency and partner designations.

Each of the four northeast counties met individually on September 10th, 11th, 12th, and 13th to review the 2008 NHMP action items. The northeast Oregon steering committees reviewed and identified which of the 2008 NHMP's action items had been completed or not, or whether they should be deleted. Action items were deleted for a number of reasons, including not meeting basic action item criteria such as being measurable, assignable, or achievable, as well as action items that could be supplemented elsewhere in the plan.

After deciding which actions to delete, OPDR worked with the steering committee to formulate new action items for the 2013 NHMP. These new action items arebased upon continuous community needs, the identification of new hazards, deferred action items, and current needs based upon the community risk assessment. They are designed to be feasibly accomplished within the next five years, and can be found in Appendix A. Several of these actions were identified at the steering committee meeting and later drafted by OPDR and steering committee members, reviewed and accepted by the committee.

The action items from the 2008 NHMP and their status are discussed in table B.2 below. Several Action Items were prioritized as High priority actions during the steering committee meetings by one or more steering committee. Changes and new actions are listed in the table with blue text; actions that have been deleted or completed are indicated in grey text. The table also provides explanation on progress that has been made towards the action within the "explanation" section.

Table B-2 Accomplishments and Comparison of 2008and 2013 Northeast Oregon NHMP Action Items

2013 Action Item	2008 Action Item	Proposed Action Title	Timeline	Status	Priority	Affected Jurisdictions								Alignment with Plan Goals			
						Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise	Goal 1	Goal 2	Goal 3	Goal 4
MH #1	MH #3	Complete Continuity of Operations Plans (COOPs) within all interested municipalities and counties.	Short Term	Deferred	High (Wallowa; La Grande)	X	X	X	X	X	X	X	X	X				X
MH #2	-	Incorporate the Natural Hazards Mitigation Plan into the Comprehensive Plan (in particular Goal 7)	Short Term (Grant, Wallowa) Long Term (Baker, Union)	NEW ACTION ITEM	High (Wallowa)	X	X	X	X	X	X	X	X	X				X
MH #3	MH #8	Inform public officials about hazard mitigation and the Natural Hazards Mitigation Plan	Short Term	Deferred		X	X	X	X	X	X	X	X	X			X	
MH #4	MH #7	Develop and implement education and outreach programs to increase public awareness of the risk associated with natural hazards. Specifically target vulnerable populations.	Ongoing (Baker, Union); Short Term (Grant, Wallowa)	Ongoing (Baker, Union), Deferred (Grant, Wallowa)		X	X		X	X	X	X	X	X	X		X	
MH #5	MH #5	Increase the resilience of small businesses to natural hazards	Short Term (Baker); Long Term (Grant, Union, Wallowa)	Deferred		X			X		X		X			X		
MH #6	MH #11	Enhance communication and response coordination between all of the incorporated areas in each county.	Ongoing	Ongoing	High (Wallowa)	X			X		X		X					X
MH #7	MH #13	Develop a Memorandum of Understanding to establish a regional committee responsible for oversight and implementation of the regional plan, and to oversee reviewing and updating the NE Natural Hazards Mitigation Plan.	~~Short Term~~ Long Term	Deferred	High (Wallowa)	X			X		X		X					X
MH #8	MH #14	Create a position for a Regional Hazards Mitigation Project Coordinator	Long Term	Deferred	High (Grant, Wallowa)	X			X		X		X				X	X
MH #9	MH #10	Develop a warning and emergency evacuation protocol for vulnerable populations.	Short Term	Deferred; Deleted (Baker)		X	X	X	X	X	X	X	X	X				X
MH #10	MH #19 (Grant County)	Ensure that critical airport services are available in the event of an emergency. Critical elements include: adequate fuel systems, appropriate lighting, functioning weather services, ground-access to the airport, and safe runways/taxiway infrastructure	~~Long Term~~ Short Term	Ongoing					X	X					X			
MH #11	MH #12	Build partnerships with local jurisdictions to develop emergency management planning for Eastern Oregon University	~~Long Term~~ Ongoing	Ongoing							X	X						X
MH #12	MH #15 (Union County)	Update city and county addresses within Union County's GIS database	~~Short Term~~ Long Term	Ongoing	High (Union; La Grande)						X	X						X

Source: Northeast Oregon Steering Committees, 2007/2013

Table B-2 Accomplishments and Comparison of 2008 and 2013 Northeast Oregon NHMP Action Items (continued)

2013 Action Item	2008 Action Item	Proposed Action Title	Timeline	Status	Priority	Affected Jurisdictions									Alignment with Plan Goals			
						Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise	Goal 1	Goal 2	Goal 3	Goal 4
MH #13	-	Improve Wallowa Mountain Loop road in relation to natural hazard events	Long Term	NEW ACTION ITEM									X		X			
MH #14	MH #4 (Wallowa County)	Continue to pursue a secondary emergency access route along the west bank of the Wallowa Lake (between Wallowa Lake and Lake Shore Drive).	Short Term	Deferred (Wallowa)	High (Wallowa)								X		X			
MH #15	MH #17 (City of Halfway)	Complete, and implement, the Pine Creek Floodplain Management Plan	Long Term	In Process				X							X			
MH #16	MH #18 (City of La Grande)	Secure funding to filter water within the Beaver Creek Watershed, La Grande's backup water supply	~~Short Term~~ Long Term	Deferred								X			X			
MH #17	-	Encourage ODOT to reclassify the Prairie Creek, Hwy 10 bridge near the Enterprise High School football field	Long Term	NEW ACTION ITEM	High (Enterprise)									X	X			
-	MH#2	Continue to assess the vulnerability of all county and city bridges that are not under the state's authority.	Long Term	DELETE											X			
	MH#6	Involve the public in updating the Natural Hazards Mitigation Plan	Long Term	DELETE													X	
	MH#9	Bring mitigation-awareness training to county planning and public works staff, GIS technicians, and persons responsible for maintaining or implementing the natural hazards mitigation plan.	Short Term	DELETE													X	
-	MH#16 (City of Halfway)	Implement actions identified in the City of Halfway's Water System Master Plan	Long Term	Complete				X							X			
DR #1	DR #1	Identify Incentive programs to ~~install water efficient devices~~ increase water efficiency among agricultural water users	~~Short Term~~ Ongoing	Ongoing		X			X		X		X		X			X
DR #2	DR #1	Identify Incentive programs to ~~install water efficient devices~~ increase water efficiency among municipal water users	~~Short Term~~ Ongoing	Ongoing	High (Baker City)	X	X	X	X	X	X	X	X	X	X			X
DR #3	DR #2	Develop community drought emergency plans and policies	Ongoing (Baker, Grant); Short Term (Wallowa)	Ongoing (Baker, Grant) Deferred (Wallowa); Deleted (Union)		X	X		X	X	X	X	X	X				X
DR #4	DR #3 (Baker County)	Conduct an aquifer (groundwater) study for the Pine and Baker Valleys.	Long Term	Deferred	High (Baker, Baker City, Halfway)	X	X	X										X
DR #5	DR #4 (Union County)	Conduct an aquifer (groundwater) study for the Grande Ronde Valley	Long Term	Deferred	High (Union, La Grande)						X	X			X			

Source: Northeast Oregon Steering Committees, 2007/2013

Table B-2 Accomplishments and Comparison of 2008 and 2013 Northeast Oregon NHMP Action Items (continued)

2013 Action Item	2008 Action Item	Proposed Action Title	Timeline	Status	Priority	Affected Jurisdictions									Alignment with Plan Goals			
						Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise	Goal 1	Goal 2	Goal 3	Goal 4
EQ #1	-	Perform an earthquake risk evaluation in critical buildings not listed in the DOGAMI RVS report	Long Term	NEW ACTION ITEM		X	X	X	X	X	X	X	X	X	X	X		
EQ #2	-	Seismically retrofit The Unity Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM		X									X			
EQ #3	-	Seismically retrofit North Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM		X	X								X			
EQ #4	-	Seismically retrofit South Baker Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM		X	X								X			
EQ #5	-	Seismically retrofit Baker High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM		X	X								X			
EQ #6	-	Seismically retrofit Pine Eagle High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM		X	X								X			
EQ #7	-	Seismically retrofit Brooklyn Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM		X	X								X			
EQ #8	-	Seismically retrofit Burnt River School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM		X									X			
EQ #9	-	Seismically retrofit the John Day Fire Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM					X	X					X			
EQ #10	-	Seismically retrofit Mount Vernon Middle School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM					X						X			
EQ #11	-	Seismically retrofit Prairie City School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM					X						X			
EQ #12	-	Seismically retrofit Grant Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM					X						X			
EQ #13	-	Seismically retrofit Humbolt Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM					X						X			
EQ #14	-	Seismically retrofit Seneca Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM					X						X			
EQ #15	-	Seismically retrofit Monument School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM					X						X			

Source: Northeast Oregon Steering Committees, 2007/2013

Table B-2 Accomplishments and Comparison of 2008 and 2013 Northeast Oregon NHMP Action Items (continued)

2013 Action Item	2008 Action Item	Proposed Action Title	Timeline	Status	Priority	Affected Jurisdictions									Alignment with Plan Goals			
						Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise	Goal 1	Goal 2	Goal 3	Goal 4
EQ #16	-	Seismically retrofit the Grande Ronde Hospital to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X	X			X			
EQ #17	-	Seismically retrofit the La Grande City Police Department to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X	X			X			
EQ #18	-	Seismically retrofit Willow Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X	X			X			
EQ #19	-	Seismically retrofit La Grande High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X	X			X			
EQ #20	-	Seismically retrofit Greenwood Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X	X			X			
EQ #21	-	Seismically retrofit Union High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X				X			
EQ #22	-	Seismically retrofit Imbler High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X				X			
EQ #23	-	Seismically retrofit Stella Mayfield Elementary School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X				X			
EQ #24	-	Seismically retrofit Powder Valley School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X				X			
EQ #25	-	Seismically retrofit Cove School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X				X			
EQ #26	-	Seismically retrofit Elgin High School to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM							X				X			
EQ #27	-	Seismically retrofit the Enterprise Fire Department and City Hall to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM									X	X	X			
EQ #28	-	Seismically retrofit Wallowa Elementary to reduce the building's vulnerability to seismic hazards. Consider both structural and non-structural retrofit options	Long Term	NEW ACTION ITEM									X		X			
-	EQ #1	Implement structural and non-structural retrofitting programs for public buildings, historically important structures, and critical facilities and infrastructure.	Short Term	Deleted		X			X		X		X		X			

Source: Northeast Oregon Steering Committees, 2007/2013

Table B-2 Accomplishments and Comparison of 2008 and 2013 Northeast Oregon NHMP Action Items (continued)

2013 Action Item	2008 Action Item	Proposed Action Title	Timeline	Status	Priority	Affected Jurisdictions								Alignment with Plan Goals			
						Baker County	Baker City	Halfway	Grant County	John Day	Union County	La Grande	Wallowa County	Enterprise	Goal 1	Goal 2	Goal 3	Goal 4
FL #1	FL #1	Explore flood mitigation opportunities for homes and critical facilities subject to flooding	~~Long Term~~ Ongoing	Ongoing (Baker) Deferred (Grant, Union, Wallowa)		X	X	X	X	X	X	X	X	X	X			
FL #2	FL #2	Explore the costs and benefits for participation in the NFIP's Community Rating System.	~~Long Term~~ Short Term	Deferred	High (Baker, Grant, Baker City, Enterprise)	X	X	X	X	X	X	X	X	X	X	X		
FL #3	FL #3	Increase awareness of the National Flood Insurance Program (NFIP), specifically the Biggert Waters Flood Insurance Reform Act of 2012	Short Term	Deferred	High (Baker, Grant, Wallowa; Baker City, John Day, Enterprise)	X	X	X	X	X	X	X	X	X			X	X
FL #4	-	Update the County and City FEMA Flood Insurance Rate Maps and digitize the updated maps.	Long Term	NEW ACTION ITEM	High (Baker, Grant, Wallowa; Baker City, John Day)	X	X	X	X	X	X	X	X	X	X			
FL #5	-	Explore mitigation opportunities for the Canyon City bridge (bridge # 7)	Long Term	NEW ACTION ITEM	High (Grant)				X						X			
Fl #6 (Halfway)	-	Seek Silver Jackets assistance to investigate opportunities to prevent large infiltration of flood waters into the wastewater treatment facility	Short Term	NEW ACTION ITEM	High (Halfway)			X										X
FL #7 (La Grande)	-	Incorporate recommended action items created in the Morgan Lake Study	Short Term	NEW ACTION ITEM								X			X			
	FL #4	Assess the types and numbers of existing buildings (including repetitive loss structures), infrastructure, and critical facilities located in the identified hazard areas.	Long Term	Deleted		X	X	X	X	X	X	X	X	X	X			
LS #1	-	Identify, obtain, and evaluate detailed risk assessments in landslide prone areas and develop mitigation strategies to reduce the likelihood of a potential hazardous event.	Long Term	NEW ACTION ITEM		X			X		X	X	X		X			X
SW #1	MH #1	Participate in the NOAA Storm Ready Program.	Short Term (Baker) Long Term (Grant,Union)	Complete (Wallowa); In Process (Baker) Deferred (Grant, Union)		X			X		X		X		X			
SW #2	-	Shorten spans and anchor poles on utility lines in high wind or heavy icing areas	Ongoing	NEW ACTION ITEM		X			X		X		X		X			
SW #3	-	Bury overhead power lines in winter storm and windstorm prone areas	Ongoing	NEW ACTION ITEM		X			X		X		X		X			
WF #1	WF #1	Advocate for the implementation of the actions identified in each county's Community Wildfire Protection Plan	~~Long Term~~ Ongoing	Ongoing	High (Baker City)	X	X		X		X		X		X			X

Source: Northeast Oregon Steering Committees, 2007/2013

Explanation for Changes to Action Items

Below is the explanation for the accomplishments and changes between the 2008 and 2013 action items. Listed below are the 2008 action item number followed by the 2013 action item number listed in brackets (e.g., MH #1 [SW #1]). If an action is new for 2013 the action is listed only in brackets (e.g., [EQ #2]).

MH #1 [SW #1]

Baker County

In the process of completing this action item, the county is currently in coordination with the NOAA office in Boise, Idaho.

Baker City

Deferred due to financial and staff limitations

Grant County

Deferred due to financial and staff limitations

Union County

Deferred due to financial and staff limitations

Wallowa County

Recently completed this action item and Wallowa County is now designated NOAA Storm Ready.

MH #2 [DELETED]

This is already a function of the Oregon Department of Transportation and does not require the participation of the Northeast Oregon counties or cities.

MH #3 [MH #1]

Baker County

Deferred due to financial and staff limitations

Baker City

Baker City's city manager has done some assessment through Citycounty Insurance

Halfway

Deferred due to financial and staff limitations

Grant County

Deferred due to financial and staff limitations

City of John Day

The City of John Day also participated in a webinar in 2009/2010 regarding the Citycounty Insurance, Agility Recovery Solutions plan which provides similar recovery planning as a COOP

Union County

Deferred due to financial and staff limitations

City of La Grande

Deferred due to financial and staff limitations

Wallowa County

Deferred due to financial and staff limitations. Wallowa has created a redundant infrastructure network to maintain services, though some historic archives are not included.

Enterprise

The City of Enterprise has begun work on a Citycounty Insurance, Agility Recovery Solutions plan which provides similar recovery planning as a COOP. The City of John Day also participated in a webinar in 2009/2010 regarding this topic.

MH #4 [MH #14]

Wallowa County

Deferred due to staff limitations. The Wallowa County steering committee determined that contacting the property owners could be an achievable, short term process.

MH #5 [MH #5]

Deferred. There has been no known action from the coordinating organization: the Northeast Oregon Economic Development District (NEODD). The NEODD does not have jurisdiction in Grant County.

Grant County

Deferred. Grant County steering committee determined that Grant County Economic Development would be the appropriate local coordinating organization.

MH #6 [DELETED]

Involving the public in updating the Natural Hazards Mitigation Plan is better addressed in the implementation and maintenance portion of the plan and therefore does not need an action item

MH # 7 [MH #4]

Baker County

Ongoing: Baker County uses the Interagency Fire Prevention Team apparatuses to carry out education and outreach about various natural hazards to vulnerable populations. Reverse 9-11 is an effective method of outreach.

Baker City

Ongoing: Baker County uses the Interagency Fire Prevention Team apparatuses to carry out education and outreach about various natural hazards to vulnerable populations. Baker City makes use of the Interagency Fire Prevention Team as well.

Grant County

Deferred due to financial and staff limitations.

John Day

Ongoing: There is some outreach to senior populations; there is also a newsletter for defensible space. However, there is not a local resource to assist.

Union County

Ongoing: Union County uses the Union County Emergency Preparedness Coalitions apparatuses to carry out education and outreach about various natural hazards to vulnerable populations.

La Grande

Deferred due to financial and staff limitations

Wallowa County

Deferred due to financial and staff limitations

MH #8 [MH #3]

Baker County

Deferred due to financial and staff limitations

Baker City

Deferred due to financial and staff limitations

Halfway

Deferred due to financial and staff limitations

Grant County

Deferred due to financial and staff limitations

John Day

Deferred due to financial and staff limitations

Union County

Deferred due to financial and staff limitations

La Grande

Deferred due to financial and staff limitations

Wallowa County

Deferred due to financial and staff limitations

MH #9 [DELETED]

This Action Item is now supplemented within MH #8

MH # 10 [MH #9]

Baker County

Baker County and Baker City determined that it is unfeasible to create an evacuation protocol for vulnerable populations despite attempting to put a procedure in place.

Grant County

Deferred due to financial and staff limitations. The Grant EOP has some information but does not have specific protocols; there is informal protocol but no specific plan.

John Day

Deferred, there is no policy or procedure in place but there is an informal practice and good coordination with the county.

Union County

Deferred due to financial and staff limitations

La Grande

Deferred due to financial and staff limitations

Wallowa County

Deferred due to financial and staff limitations. Evacuation places have been identified in the past but no comprehensive plan created.

MH #11 [MH #6]

Baker County

Ongoing process: Baker County has ongoing communication across the county the frequency lines provide excellent communication capability. There is perhaps a need for more public works communication, but it is mostly adequate.

Grant County

Ongoing process: mutual aid agreements exist for the fire departments/ fire services equipment is available to share. The county also has intergovernmental agreements with ODOT, county roads and other cities. The county feels as though they have good intergovernmental cooperation.

Union County

Ongoing: the cities and county meet informally to discuss potential to share resources.

Wallowa County

Ongoing: cities and counties do not regularly meet but do so informally. The Wallowa County Steering Committee noted the need to hold meetings among public works staff to discuss resource sharing opportunities.

MH #12 [MH #11]

Union County and La Grande:

Ongoing: In 2012 Eastern Oregon University Completed a Natural Hazards Mitigation Plan, which contributed to, but did not complete, the progress towards this action item.

MH #13 [MH #7]

All Counties

Action item deferred this action item due to logistical limitations. Eastern Oregon County commissioners meet regularly in John Day/ Baker.

MH #14 [MH #8]

All Counties

Action item deferred due to financial limitations.

MH #15 (Union County) [MH #12]

Union County and La Grande

Ongoing: there has been some progress on this action item but it requires additional funding to complete.

MH#16 (City of Halfway) [COMPLETE]

Action item is complete and the Water System Master Plan actions have been implemented.

MH #17 City of Halfway [MH #15]

Halfway

In process: the Pine Creek Floodplain Management Plan has been completed; the actions still need to be implemented.

MH #18 (City of La Grande) [MH #16]

La Grande

Deferred: to be completed pending on the results of the aquifer study (DR #4). The La Grande working group determined that it may be premature to filter the water without a aquifer (groundwater) analysis.

MH #19 (Grant County) [MH #10]

Grant County

Ongoing: There has been recent progress on this action item, however, an adequate power source is needed to support the airport terminal

John Day

Ongoing: the City of John Day has done a good job ensuring access to the airport.

[MH #2]

This action item was added to help increase plan integration between the Comprehensive Plan and the Natural Hazards Mitigation Plan. The Natural Hazards Mitigation Plan's current actions have no regulatory or statutory requirements for compliance. Requiring this incorporation would give the plan 'teeth.'

[MH #13]

This action item was added because Wallowa Mountain Loop Road is a critical road and snow mobile route in the winter. It is crucial to the economic base nearby.

[MH #17]

This action item was added because the bridge is in a critical location – near a school, serves as an evacuation route, and is at risk to flooding. There is concern that a potential build up of debris could lead to an eventual flood.

DR #1 [DR #1]

Baker County

Ongoing: this is an ongoing function of the Baker County water master.]

Grant County

Ongoing: this is an ongoing function of the Grant County water master.

Union County

Ongoing: this is an ongoing function of the Union County water master.

Wallowa County

Ongoing: this is an ongoing function of the Union County water master. Wallowa County is also working towards creating a position for their own water master.

DR #1 [DR #2]

Baker City

Ongoing: OTEC has a low-flow shower head program in place to encourage water efficiency.

Enterprise

This action was added to help ensure water efficiency within the city of Enterprise. The city has a mailing list on watering techniques to conserve water.

Halfway

Ongoing: the City of Halfway has flat rate for 7,500 gallons of water use which then increases with to as a disincentive for water use.

John Day

Ongoing: OTEC offers low volume shower head, faucets, etc., to encourage water efficiency.

La Grande

This action was added to help ensure water efficiency within the city of La Grande.

DR #2 [DR #3]

Baker County

Deferred due to financial and staff limitations.

Baker City

Complete: Baker City has a recently created a water conservation management plan. Baker City provides outreach for drought resistant gardening as well.

Grant County

Ongoing: Grant County interacts with the already existing drought emergency plans created by the state Water Resources Department

John Day

Ongoing: Currently have city level procedures for a drop in water level of reservoir or wells.

Union County

Deleted: this action item was determined to be unnecessary by the Union County Steering Committee

Wallowa County

Deferred due to financial and staff limitations.

DR #3 [DR #4]

Baker County

Deferred due to financial and staff limitations. It is unknown whether the department of water resources is working on this plan

Baker City

Deferred due to financial and staff limitations

Halfway

Deferred due to financial and staff limitations

DR #4 [DR #5]

Union County

Deferred due to financial and staff limitations

La Grande

Deferred due to financial and staff limitations

[EQ #1]

This action item was added because the Steering Committees identified several potentially vulnerable buildings not listed in survey including: La Grande City Hall, the Wallowa County Courthouse, the John Day City Hall, Baker City Hall, the Carnegie Library in Baker City, and the Baker County Courthouse among others.

[EQ #2-28]

Oregon Senate Bill 2 (2005) directed DOGAMI to develop a statewide seismic needs assessment that includes a FEMA 154 Rapid Visual Screening survey of specific critical facilities. Action items EQ # 2-28 were identified as critical facilities that the DOGAMI survey determined to be at a very high risk of collapse.

FL #1 [FL #1]

Baker County

Ongoing: the county has ongoing projects including a current project near Halfway.

Baker City

Ongoing: Recent mitigation activity has occurred: Baker City recently updated its flood plain ordinance in 2012. Baker City provides community education. The last section of multi-use path was completed in 2010/11.

Halfway

Ongoing: The city of Halfway is currently working on a mitigation project with ODOT concerning Prairie Creek

Grant County

Ongoing: Grant County is currently engaged in flood mitigation projects. One example is at mile post 5.5 in Canyon City, there is an ODOT identified project where a culvert needs to be moved

John Day

Ongoing: John Day engages in flood mitigation projects and has unplugged the Bridge Street Bridge (in John Day) in the past.

Union County

Ongoing: Union County has recently engaged in flood mitigation projects including projects at Gekeler Lane.

Union County

Ongoing: La Grande engages in flood mitigation project and has recently assessed the Morgan Lake Dam area by the City of La Grande's Park Director.

Wallowa County

Ongoing: Wallowa Lake has done some work along river to mitigate against flood and there was recently a bridge replaced in Imnaha.

FL #2 [FL #2]

Baker County

Deferred due to financial and staff limitations.

Baker City

Deferred due to financial and staff limitations.

Halfway

Deferred due to financial and staff limitations.

Grant County

Deferred due to financial and staff limitations, Grant County is interested in learning more given the changes to the NFIP and have given this action item a high priority.

John Day

Deferred due to financial and staff limitations.

Union County

Deferred due to financial and staff limitations.

La Grande

Deferred due to financial and staff limitations.

FL #3 [FL #3]

Baker County

Deferred due to financial and staff limitations. The county has provided NFIP related information to realtors in the past.

Baker City

Deferred. The city contracts with the county for planning services.

Baker City

Deferred due to financial and staff limitations.

Grant County

Deferred due to financial and staff limitations.

John Day

Deferred due to financial and staff limitations. John Day assigned this action a high priority.

Union County

Deferred due to financial and staff limitations.

La Grande

Deferred due to financial and staff limitations.

Wallowa County

Deferred due to financial and staff limitations.

FL #4 [DELETED]

Action item was deleted and partially rephrased in FL #4

[FL #4]

Currently, communities in Northeast Oregon are only able to identify the number of NFIP claims that have been made since FIRM adoption. Flood Insurance Rate Maps in each of the Northeast Oregon communities are too old to be currently accurate. Some of the communities have already partially completed this action. Floodplain mapping was partially complete on the Silvies Watershed and in John Day. The ACOE shot new elevations, working on developing maps near Canyon Creek and on the John Day River,

[FL #5]

Grant County

The recent flooding event on Canyon Creek in 2011 caused an estimated 1 million dollars in damage to the Grant-Union High School and surrounding area due to a low hanging bridge. This action item was added so the county could coordinate with ODOT about

[FL #6]

Halfway

In June 2010 a large infiltration of flood water climbed above the banks of Eagle Creek, Pine Creek and their tributaries and caused damage to the City of Halfway, specifically threatening the city's wastewater treatment facility. A similar future event is possible and could be devastating to the facility.

[FL #7]

La Grande

A study conducted by La Grande Parks Director is currently pending approval and includes mitigation actions to improve the resilience of La Grande from a Morgan Lake flood event

[LS #1]

This action was added to help mitigate against potential landslide hazards by improving knowledge of debris flow, improving the mapping of steep slopes, and improving community ordinances related to steep slope development.

[SW #2] and [SW #3]

All Counties

These action items have been successful mitigation strategies used by the Harney County Electric Company and implemented in the Harney County Natural Hazards Mitigation Plan. These action items can be utilized by any of the electric cooperatives in Northeast Oregon including Central Electric Cooperative, Columbia Power Cooperative, and Oregon Trail Electric Cooperative with HMGP funding.

WF #1 [WF #1]

Baker County

Ongoing: The Baker County CWPP (2006) developed extensive risk assessments and identified mitigation actions. The CWPP should be considered as a supplement to the Wildfire section of this NHMP as it contains accurate, updated and extensive information about the vulnerability, risk, and mitigation actions for wildfire.

Baker City

Ongoing: The Baker County CWPP (2006) developed extensive risk assessments and identified mitigation actions. The CWPP should be considered as a supplement to the Wildfire section of this NHMP as it contains accurate, updated and extensive information about the vulnerability, risk, and mitigation actions for wildfire. Baker City participated in the creation of the CWPP.

Grant County

Ongoing: the Grant County CWPP (2013) developed extensive risk assessments and identified mitigation actions. The CWPP should be considered as a supplement to the Wildfire section of this NHMP as it contains accurate, updated and extensive information about the vulnerability, risk, and mitigation actions for wildfire.

Union County

Ongoing: the Union County CWPP (2004) developed extensive risk assessments and identified mitigation actions. The CWPP should be considered as a supplement to the Wildfire section of this NHMP as it contains accurate, updated and extensive information about the vulnerability, risk, and mitigation actions for wildfire.

Wallowa County

Ongoing: the Wallowa County CWPP (2006) developed extensive risk assessments and identified mitigation actions. The CWPP should be considered as a supplement to the Wildfire section of this NHMP as it contains accurate, updated and extensive information about the vulnerability, risk, and mitigation actions for wildfire.

Section 4: Implementation and Maintenance

The steering committee did not formally meet since the previous version of this NHMP. Progress towards action items is documented in the table above. The steering committees agreed to meet either annually or semi-annually (example: before and after fire/irrigation season). The following will act as the convener for each of the Northeast Oregon county coordinating bodies:

Jurisdiction	Convener
Baker County	Emergency Management Coordinator
Grant County	County Judge
Union County	Emergency Manager
Wallowa County	Planning Director

The steering committee will discuss options to integrate the NHMP into other planning documents (including the comprehensive plan) during their semi-annual meetings.

Volume II: Hazard Annexes

All hazard annexes were reformatted and updated to include new history, data, vulnerability information and resources as available. Action items were updated as referenced in Volume I, Section 3: Mitigation Strategy.

Volume III: Jurisdictional Addenda

The cities of Baker City, Halfway, John Day, and La Grande updated their addenda during the 2013 update to the Northeast Oregon NHMP. The City of Enterprise opted to participate with an addendum and did not have an addendum in 2008. Below is a brief summary of the updates to the addenda:

Baker City

- The format of the addendum was updated to provide more detail on hazards, jurisdictional risk assessment and mitigation strategies.
- Updates were made to the Baker County community profile that affects vulnerabilities of Baker City and the surrounding communities; these updates are included within the Baker City Addendum
- Updates to hazards were noted.
- Action items were added, deleted or modified and prioritized as reflected in the Action Item Forms within the Addendum and as noted in Appendix B.
- The implementation and maintenance program was updated to reflect changes at the county level. The City's working group will convene semi-annually during the

June and November department head meetings to discuss implementation and plan maintenance.

City of Enterprise

- Addendum added in 2013.
- The community profile was created (and updated from that provided for Wallowa County in the previous plan).
- Hazard identification and location are noted; a hazard analysis was also performed by the steering committee.
- Action items were added and prioritized as reflected within the Addendum and as noted in Appendix A and Appendix B.
- The implementation and maintenance program was included to reflect the local process. The City's working group will convene semi-annually during the June and November department head meetings to discuss implementation and plan maintenance.

City of Halfway

- The format of the addendum was updated to provide more detail on hazards, jurisdictional risk assessment and mitigation strategies.
- Updates were made to the Baker County community profile that affects vulnerabilities of the City of Halfway and the surrounding communities; these updates are included within the Halfway Addendum
- Updates to hazards were noted.
- Action items were added, deleted or modified and prioritized as reflected in the Action Item Forms within the Addendum and as noted in Appendix B.
- The implementation and maintenance program was updated to reflect changes at the county level. The City's working group will convene annually in coordination with the monthly city council meetings.

City of John Day

- The format of the addendum was updated to provide more detail on hazards, jurisdictional risk assessment and mitigation strategies.
- Updates were made to the Grant County community profile that affects vulnerabilities of John Day and the surrounding communities; these updates are included within the John Day Addendum
- Updates to hazards were noted.
- Action items were added, deleted or modified and prioritized as reflected in the Action Item Forms within the Addendum and as noted in Appendix B.
- The implementation and maintenance program was updated to reflect changes at the county level. The City's working group will convene semi-annually during the department head meetings to discuss implementation and plan maintenance.

City of La Grande

- The format of the addendum was updated to provide more detail on hazards, jurisdictional risk assessment and mitigation strategies.
- Updates were made to the Union County community profile that affects vulnerabilities of La Grande and the surrounding communities; these updates are included within the La Grande Addendum
- Updates to hazards were noted.
- Action items were added, deleted or modified and prioritized as reflected in the Action Item Forms within the Addendum and as noted in Appendix B.
- The implementation and maintenance program was updated to reflect changes at the county level. The City Planner of the City of La Grande will serve as the local convener and will be responsible for convening the working group in cooperation with the County convener (Union County Emergency Manager).

Volume IV: Mitigation Resources

All of the appendices from the 2008 Plan were replaced and/or updated with new appendices for the 2013 update. Below is a summary of the major changes to plan appendices; appendix names are the 2013 references:

Appendix A:

The action item forms were updated with new information provided by the county steering committees and jurisdictional working groups. Action Item changes are provided in the tables above. The action item forms now reference the status of the action item,the affected jurisdictions, and the action item's priority.

Appendix B:

This planning and public process appendix now reflects changes made to the Northeast Oregon NHMP and documents the 2013 planning and public process and provides a summary of the 2008 planning and public process.

Appendix C:

The community profile section has been updated and is now a regional profile. The community profile section previously had a section for each county. County and city specific information can now be found in Volume III: Jurisdictional Addenda.

Appendix D:

Updates are provided for the economic analysis of natural hazard mitigation projects.

Appendix E:

Some resources were deemed unnecessary since this material is covered within the Oregon NHMP and appropriate resources are provided within the Hazard Annexes of Volume II. Updates were made to the remaining grant programs and resources.

Appendix F:

No updates were made to this appendix. The previous survey is provided as documentation and to serve as a resource for future planning efforts.

2013 NHMP
PUBLIC PARTICIPATION PROCESS

2013 NHMP Update

Northeast Oregon is dedicated to directly involving the public in the review and update of the natural hazard mitigation plan. Although members of the steering committee represent the public to some extent, the residents of Baker, Grant, Union and Wallowa County and the cities of Baker City, Enterprise, Halfway, John Day and La Grande are also given the opportunity to provide feedback about the Plan. The Plan will undergo review on an annual basis.

Each northeast Oregon County made the Plan available via their website and the project website hosted by OPDR for public comment from November 11 – November 25 (the plan continued to be posted for public comment through February 25, 2014).

Baker County (Baker City, Halfway)

Press release provided to local radio station KCMB and local newspapers the "Baker City Herald", "Hells Canyon Journal" and "The Record Courier" on November 5, 2013. The county and cities also provided a link or a copy of the press release on their websites along with links to the draft plan via the OPDR hosted website. Additionally, Baker City provided notice to the city council, planning commission, staff directors, the county courthouse and the senior center.

Grant County (John Day)

Press release provided to local radio station KJDY and local newspaper the "Blue Mountain Eagle" on November 4, 2013. The county and city also provided a copy of the draft plan on their websites and provided a link to the OPDR hosted website.

Union County (La Grande)

Press release published in "The Observer: Union and Wallowa Counties News Leader" on Monday November 11, 2013. The county and city also provided a link on their websites.

Wallowa County (Enterprise)

Press release published in "The Cheiftan" and a link was provided via he county and city websites.

Public Involvement Summary

During the public review period there were zero comments received via the OPDR website page for the Northeast Oregon NHMP Update. Comments were provided from steering

committee members and the Oregon Military Departments Office of Emergency Management, which were incorporated into the NHMP, update.

Northeast Oregon Regional NHMP
Pre-Disaster Mitigation Planning
PRESS RELEASE

DATE: November 4, 2013
TO:
FROM: Gary Timm, Emergency Management
SUBJECT: Press Release for the Northeast Oregon Regional Natural Hazards Mitigation Plan Update – Notice and Opportunity for Public Comment

For Immediate Release

Baker County seeks additional public input on updated Natural Hazards Mitigation Plan

(Baker City, OR) – Baker County is currently in the process of updating the existing Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey. This NHMP affects the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

To comment on the hazard mitigation planning in the Northeast Oregon Regional NHMP, please visit **http://csc.uoregon.edu/opdr/current/easternoregon/northeast**. A draft version of the updated Northeast Oregon Regional NHMP will be available for formal public comment from **November 11, 2013 through November 25, 2013**. Electronic copies of the draft plan will be available on the OPDR and County websites.

If you have any questions regarding Northeast Oregon Regional NHMP or the update process in general, please contact: Gary Timm, Baker County Emergency Management at (541) 524-2003 or gtimm@bakercounty.org; or Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

Northeast Oregon Regional NHMP
Pre-Disaster Mitigation Planning
PRESS RELEASE

DATE: November 4, 2013
FROM: Michelle Owen, Public Works
SUBJECT: Press Release for the Northeast Oregon Regional Natural Hazards Mitigation Plan Update – Notice and Opportunity for Public Comment

For Immediate Release

Baker City seeks additional public input on updated Natural Hazards Mitigation Plan

(Baker City, OR) – Baker City is currently in the process of updating the existing Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments, and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey. This NHMP affects the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

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If you have any questions regarding the Northeast Oregon Regional NHMP or the update process in general, please contact: Michelle Owen, Baker City Public Works at (541) 524-2031 or mowen@bakercity.com; or Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

first semester, it is worthwhile reminding students and their parents that the thought-out program that other libraries and states are watching. Once again, Or-

The City of Halfway seeks additional public input on updated Natural Hazards Mitigation Plan

The City of Halfway is currently in the process of updating the existing Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments, and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey. This NHMP affects the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

To comment on the hazard mitigation planning in the Northeast Oregon Regional NHMP, please visit http://csc.uoregon.edu/opdr/current/easternoregon/northeast. A draft version of the updated Northeast Oregon Regional NHMP will be available for formal public comment from November 11, 2013 through November 25, 2013. Electronic copies of the draft plan will be available on the OPDR and county websites.

If you have any questions regarding the Northeast Oregon Regional NHMP or the update process in general, please contact: Page Frederickson, City of Halfway Public Works Director at (541) 742-4741 or thecitybypage@hotmail.com; or Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

WINTER DISCONNECT PROGRAM

Pine Telephone is setting up a special program for people who leave during the winter months and disconnect their phone lines.

This new program will save money for those who disconnect their telephone seasonally and then reconnect their phone line when they return.

If you are planning to disconnect your line next fall or winter, please contact Pine Telephone when you are ready to do so for details on how we can help you save money.

Pine Telephone System, Inc.
Friendly People, Cutting Edge Technology
104 Center Street · Halfway · 541-742-2201

Meeting Room Use

The library meeting room gets used regularly by a variety of organizations and individuals. It is an ideal neutral zone for a meeting or conference of two or more individuals. Among regular users are TOPS, Al-Anon, Pine Valley Community Museum Committee and the Pine Eagle Booster Club. Occasionally, classes are scheduled to meet in this space, and seasonally a local ditch company might meet here. Use of the room must be scheduled beforehand to avoid time conflicts.

It is an important policy of the library to "not exclude any group based on the subject matter to be discussed or based on the ideas that the group advocates... The library does not advocate or endorse the viewpoints of meetings or meeting room users." Likewise, the library district applies the same neutrality for viewpoints in the materials it loans and makes available to the public, with First Amendment rights as a legal guide.

Want To Volunteer?

The Halfway Branch would welcome a volunteer or two willing to drop in on a weekly or monthly basis to shelve books, and to "shelf-read," that is – check to be sure that books on the shelf are where they belong and easily found. If you are not familiar with this, it is fairly easy to learn. Helping out at the library is a great way to get acquainted with the many incoming new books on a regular basis, and to become familiar with the variety of materials – magazines, travel books, biographies, favorite authors, etc. – made available to the public at the library. Thirty to 60 minutes each week adds up to a big help. Students take note: regular volunteer work at the library can contribute to any community work you may wish to do – and it's a good way to gain experience or credentials, and can accelerate your research capabilities if you are college-bound.

See you at the library.

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course of the next decade
was recognized as the S

Calling All



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Pine-E
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Senior
Jamie Butle
Ben Hanl
Jacob Hu
Keelee Jense
Tyler Newbe
Jessey O'Qu

Northeast Oregon Regional NHMP
Pre-Disaster Mitigation Planning
PRESS RELEASE

DATE: November 4, 2013
TO:
FROM: Scott Myers, Grant County Judge
SUBJECT: Press Release for the Northeast Oregon Regional Natural Hazards Mitigation Plan Update – Notice and Opportunity for Public Comment

For Immediate Release

Grant County seeks additional public input on updated Natural Hazards Mitigation Plan

(Canyon City, OR) – Grant County is currently in the process of updating the existing Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments, and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey. This NHMP affects the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

To comment on the hazard mitigation planning in the Northeast Oregon Regional NHMP, please visit **http://csc.uoregon.edu/opdr/current/easternoregon/northeast**. A draft version of the updated Northeast Oregon Regional NHMP will be available for formal public comment from **November 11, 2013 through November 25, 2013**. Electronic copies of the draft plan will be available on the OPDR and County websites.

If you have any questions regarding the Northeast Oregon Regional NHMP or the update process in general, please contact: Scott Myers, Grant County Judge at myerssw@grantcounty-or.gov; or Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

Northeast Oregon Regional NHMP
Pre-Disaster Mitigation Planning
PRESS RELEASE

DATE: November 4, 2013
TO:
FROM: Peggy Gray, John Day City Manager
SUBJECT: Press Release for the Northeast Oregon Regional Natural Hazard Mitigation Plan Update – Notice and Opportunity for Public Comment

For Immediate Release

The City of John Day seeks additional public input on updated Natural Hazards Mitigation Plan

(John Day, OR) – The City of John Day is currently in the process of updating the existing Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments, and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey. This NHMP affects the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

To comment on the hazard mitigation planning in the Northeast Oregon Regional NHMP, please visit **http://csc.uoregon.edu/opdr/current/easternoregon/northeast**. A link to the Northeast Oregon Regional NHMP can also be found on the City of John Day's website at www.cityofjohnday.com click on links. A draft version of the updated Northeast Oregon Regional NHMP will be available for formal public comment from **November 11, 2013 through November 25, 2013**. Electronic copies of the draft plan will be available on the OPDR and County websites.

If you have any questions regarding the Northeast Oregon Regional NHMP or the update process in general, please contact: Peggy Gray, John Day City Manager at (541)-575-0028 or grayp@grantcounty-or.gov; or Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

Northeast Oregon Regional NHMP
Pre-Disaster Mitigation Planning
PRESS RELEASE

DATE: November 4, 2013
TO:
FROM: JB Brock, Union County Emergency Manager
SUBJECT: Press Release for the Northeast Oregon Regional Natural Hazards Mitigation Plan Update – Notice and Opportunity for Public Comment

For Immediate Release

Union County seeks additional public input on updated Natural Hazards Mitigation Plan

(La Grande, OR) – Union County is currently in the process of updating the existing Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments, and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey. This NHMP affects the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

To comment on the hazard mitigation planning in the Northeast Oregon Regional NHMP, please visit **http://csc.uoregon.edu/opdr/current/easternoregon/northeast**. A draft version of the updated Northeast Oregon Regional NHMP will be available for formal public comment from **November 11, 2013 through November 25, 2013**. Electronic copies of the draft plan will be available on the OPDR and County websites.

If you have any questions regarding the Northeast Oregon Regional NHMP or the update process in general, please contact: JB Brock, Union County Emergency Manager at (541) 963-1009 or jbrock@union-county.org; or Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

Timber company receives award for fo

By Katy Nesbitt
Observer staff

Collins Timber of Lakeview was awarded the 2013 Operator of the Year award by the Eastern Oregon Regional Forest Practice Committee at its quarterly meeting in La Grande Thursday.

In 2012, the Barry Point Fire burned 93,000 acres along the Oregon/California border, almost 24,000 of it owned by Collins Timber, said Lee Fledderjohann, the mill's resource manager.

The fire burned up 25 percent of Collins' timber land, said Fledderjohann. The last big fire to affect the company to a large degree was in 2007 when the company lost 4,000 acres.

Besides the industrial land owned by Collins, Kellie Carlsen, stewardship forester for Oregon Department of Forestry, said 53 landowners were affected and 30 had timber.


Carlsen


Fledderjohann

"Collins had a large salvage operation getting out a lot of timber in a timely manner," Carlsen said.

Collins not only logged its own land, it helped neighboring landowners remove burned timber and get it to its Lakeview mill. Fledderjohann said during the summer the mill normally receives 65 to 70 loads of logs a day. The Barry Point Fire salvage operation sent as many as 148 loads a day to the mill.

Carlsen said she sent letters to landowners and held public meetings salvage logging ing their land.

"We tried to people understo Forest Practice she said.

"Private land respectful of wl to do when we the ground," Je of Collins said. them our ideas thought we cou

Local Briefing

From staff reports

Rotarians serve T-Day breakfast

La Grande Rotarians will serve seniors and veterans a free Thanksgiving Day breakfast from 6:30 a.m. to 9:30 a.m. at McDonald's restaurant on Island Avenue.

For the 23rd year in a row, the club will partner with the local restaurant to provide seniors and veterans a free breakfast. Beau Willadsen, owner of the La Grande McDonald's, said he is proud to continue the tradition his father, Swend Willadsen, began when he operated the restaurant 23 years ago. The La Grande Rotary Club appreciates the tremendous support from the restaurant and the Willadsen family over the years.

"Club members volunteer to help welcome and serve the seniors and military guests who join us each year," said Craig Nightingale, Rotarian and chair of the Thanksgiving Day Breakfast Committee. "It's a way that we can say 'thank you' to those who have given so much for all of us."

For more information, contact Nightingale at

The center is normally open from 2:30 p.m. to 4:30 p.m. Tuesdays, Wednesdays and Thursdays and from 11 a.m. to 1 p.m. Saturdays. For information on getting help, being tutored or volunteering to help others, call 541-962-1339.

Episcopal Church offers Holiday Bazaar

St. Peter's Episcopal Church, corner of Fourth Street and O Avenue, will have a Holiday Bazaar from 9 a.m. to 2 p.m. Saturday.

LHS Class of 1947 meets Monday

The La Grande High School Class of 1947 will meet at 1 p.m. Monday at the Flying J Travel Plaza.

Soroptimists seek award nominations

Soroptimist International of La Grande is searching for applicants for its Soroptimist Ruby Award: For Women Helping Women. The award honors women who — through their professional or personal activities — make extraordinary efforts on behalf of women and girls. Women can nominate them-

County updating hazards plan

Union County is currently updating the Northeast Oregon Regional Natural Hazards Mitigation Plan.

The regional effort includes the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

A natural hazards mitigation plan provides goals, action items and resources designed to reduce future natural disaster risk. To comment, visit cscuoregon.edu/opdr/current/easternoregon/northeast. A draft version of the updated plan will be available for public comment through Nov. 25. Electronic copies of the draft plan are available at county websites.

For more information, contact Union County Emergency Services at 541-963-1001 or em@union-county.org or Michael Howard at Oregon Partnership for Disaster Resilience at 541-346-8413 or mrhoward@uoregon.edu.

Holiday Bazaar unfolds Saturday

St. Peter's annual Holiday

Union County Senior Center to celebrate more than 1,100 years of railroad service.

Hosted by the Union Pacific Employees Club No. 17, the party will honor the 32 people who have retired or become disabled in the last 18 months. Altogether, they worked more than 1,100 years.

Guests of honor and their significant others get in for free. Others will pay $10.

The party will include live music by Rusty Roe and the Outsiders, finger foods and a no-host bar.

Hosts are encouraging people to submit old photos or historical information. To display something or for more information, contact Larry Romine at 541-910-4568.

View Christmas trees to be raffled

UNION — Friends of the Union Carnegie Public Library encourage everyone to stop by the library to view the Christmas trees that are being raffled and to guess the number of M&Ms in Frosty. Raffle tickets are being sold for $1 each, or six for $5. The drawings will take place during the Holiday Open House

John Ar Jr.
Union

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Milo 'G Walker
La Grande
1931-2013

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Gene wa 8, 1931, in Kenny En (Irvin) Wa La Grand Eastern O He moved Calif., whe the Califo

PRESS RELEASE

Notice and Opportunity for Public Comment

The City of La Grande seeks public input on updates to the Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). The Northeast Oregon NHMP encompasses the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande. The City of La Grande is in the process of updating its NHMP Addendum and is seeking public comment. This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments, and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With adoption of the updated plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. The local planning process has included a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

To comment on the hazard mitigation planning in the Northeast Oregon Regional NHMP, please visit **http://csc.uoregon.edu/opdr/current/easternoregon/northeast**. A draft version of the updated Northeast Oregon Regional NHMP will be available for formal public comment from **November 11, 2013 through November 25, 2013**. Electronic copies of the draft plan are available on the OPDR website. The La Grande Addendum is available on both the OPDR website and the City of La Grande website – Planning Division page, please visit **http://planning.cityoflagrande.org**.

If you have any questions regarding the Northeast Oregon Regional NHMP or the update process in general, please contact: Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

PUBLISH: November 11, 2013

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Northeast Oregon Regional NHMP
Pre-Disaster Mitigation Planning
PRESS RELEASE

DATE: November 4, 2013
TO:
FROM: Harold Black, Wallowa County Planning Director
SUBJECT: Press Release for the Northeast Oregon Regional Natural Hazards Mitigation Plan Update – Notice and Opportunity for Public Comment

For Immediate Release

Wallowa County seeks additional public input on updated Natural Hazards Mitigation Plan

(Enterprise, OR) – Wallowa County is currently in the process of updating the existing Northeast Oregon Regional Natural Hazards Mitigation Plan (NHMP). This work is being performed in cooperation with the Oregon Partnership for Disaster Resilience, Resource Assistance for Rural Environments, and Oregon Emergency Management utilizing funds obtained from the Federal Emergency Management Agency (FEMA) Pre-Disaster Mitigation Grant Program. With re-adoption of the plan, the participating jurisdictions will maintain their eligibility to apply for federal funding towards natural hazard mitigation projects. This local planning process includes a wide range of representatives from city and county government, emergency management personnel, and outreach to members of the public in the form of a mailed survey. This NHMP affects the counties of Baker, Grant, Union and Wallowa and the cities of Baker City, Enterprise, Halfway, John Day and La Grande.

A natural hazards mitigation plan provides communities with a set of goals, action items, and resources designed to reduce risk from future natural disaster events. Engaging in mitigation activities provides jurisdictions with a number of benefits, including reduced loss of life, property, essential services, critical facilities and economic hardship; reduced short-term and long-term recovery and reconstruction costs; increased cooperation and communication within the community through the planning process; and increased potential for state and federal funding for recovery and reconstruction projects.

To comment on the hazard mitigation planning in the Northeast Oregon Regional NHMP, please visit **http://csc.uoregon.edu/opdr/current/easternoregon/northeast**. A draft version of the updated Northeast Oregon Regional NHMP will be available for formal public comment from **November 11, 2013 through November 25, 2013**. Electronic copies of the draft plan will be available on the OPDR and County websites.

If you have any questions regarding the Northeast Oregon Regional NHMP or the update process in general, please contact: Harold Black, Wallowa County Planning Director at (541) 426-4543 ext 169 or plandir@co.wallowa.or.us; or Michael Howard, Project Specialist for the Oregon Partnership for Disaster Resilience at (541) 346-8413 or mrhoward@uoregon.edu.

Steering Committee

Four different steering committees represented the four northeast Oregon counties: Baker, Grant, Union, and Wallowa. Steering committee members possessed familiarity with their communities and how it's affected by natural hazard events. The steering committees guided the update processes through several steps including goal confirmation and prioritization, action item review and development and information sharing to update the plan and to make the plan as comprehensive as possible.

Baker County

The Baker County steering committee met on the following dates:

- **Kickoff and Hazard Identification**: May 9th, 2013
- **Risk Assessment**: June 26th, 2013
- **Mitigation Strategy**: September 13th, 2013

Representatives from the following organizations served as steering committee members for the Baker County natural hazard mitigation planning process.

Convener, Gary Timm	Baker County Emergency Management (Fire Division)
Convener, Jason Yencopal	Baker County Emergency Management
Val Bogdanowitz	United States Army Corps of Engineers
Mark Bennett	Baker County Commissioner
Willy Crippen	United States Forest Service
Page Frederickson	City of Halfway Public Works
Holly Kerns	Baker County Planning Department
Rick Lusk	Baker County Water Master
Jason McClaughry	Oregon Department of Geology and Mineral Industries
Jeff Stidham	United States Army Corps of Engineers
Grant Young	DLCD Regional Representative

Grant County

The Grant County steering committee met on the following dates:

- **Kickoff and Hazard Identification:** May 8th, 2013
- **Risk Assessment:** June 25th, 2013
- **Mitigation Strategy:** September 12th, 2013

Representatives from the following organizations served as steering committee members for the Grant County natural hazards mitigation planning process.

Convener, Scott Myers	Grant County Judge
Patrick Bentz	Grant County Regional Airport Manager
Peggy Gray	City of John Day

Richard Gray	John Day Police Department
Angia Hannibal	John Day Dispatch
Dean Hicks	Prairie City Fire Department
David Holland	John Day Public Works
Susan Horn	Grant County Road Department
Irene Jerome	CWPP/Firewise – Grant County
Eric Julsrud	Oregon Water Resources Department
Valerie Luttrell	John Day Dispatch
Les Miller	United States Army Corps of Engineers
Rob Pentzer	Oregon Department of Forestry
Corry Rider	Town of Canyon City
Ron Smith	John Day Fire Department
Shannon Springer	Grant County Planning Department

Union County

The Union County steering committee met on the following dates:

- **Kickoff and Hazard Identification:** May 9th, 2013
- **Risk Assessment:** July 11th, 2013
- **Mitigation Strategy:** September 10th, 2013

Representatives from the following organizations served as steering committee members for the Union County natural hazards mitigation planning process.

Convener, JB Brock	Union County Emergency Manager
Convener, Annette Powers	Union County Department Specialist
Bill Benson	Eastern Oregon University
April Brock	Grande Ronde Hospital
Candice Cornford	Grande Ronde Hospital
Dennis Hackney	Oregon Department of Transportation
Scott Hartell	Union County Planning Department
Charlie Mitchell	City of La Grande Economic Development
Rob Shanks	Grande Ronde Hospital
Dan Stark	Union County Economic Development Corporation
Don Voetberg	City of Union City Council
Craig Ward	Union County Sheriff's Office
Andi Walsh	Center for Human Development
Bruce Weimer	La Grande Fire Department
Larry Wooldridge	La Grande Rural Fire Protection District
Doug Wright	Union County Public Works

Wallowa County

The Wallowa County steering committee met on the following dates:

- **Kickoff and Hazard Identification:** May 10th, 2013

- **Risk Assessment:** July 10th, 2013
- **Mitigation Strategy:** September 11th, 2013

Representatives from the following organizations served as steering committee members for the Wallowa County natural hazards mitigation planning process.

Convener, Harold Black	Wallowa County Planning Director
Nils Cristoffersen	Wallowa Resources
Nathan Goodrich	United States Forest Service
Mike Hayward	Wallowa County Commissioner
Matt Howard	Oregon Department of Forestry
Paul Karvoski	Wallowa County Emergency Services
Russ McMartin	Wallowa County Road Department
Steve Rogers	Wallowa County Sheriff
Dennis Sands	City of Joseph Mayor
Mike Shaw	Oregon Department of Forestry
Michele Young	City of Enterprise City Administrator

Working Groups - Addendum

Working groups are composed of representatives of the five cities. Members possessed familiarity with their represented city and how it is affected by natural hazard events. The working groups guided the update process through several steps including goal confirmation and prioritization, action item review and development, and information sharing to update the plan and to make the addenda as comprehensive as possible. The working groups met on the following dates:

- **Jurisdictional Addenda Work Sessions:**
  - **City of Baker City**: September 13th, 2013
  - **City of Enterprise**: September 11th, 2013
  - **City of Halfway**: June 27th, 2013
  - **City of John Day**: September 12th, 2013
  - **City of La Grande**: September 9th, 2013

City of Baker City

Representatives from the following organizations served as working group members for the Baker City natural hazards mitigation planning process.

Convener, Michelle Owen	Baker CityPublic Works
Cliff Hall	Baker City Fire Department
Holly Kerns	Baker County Planning Department
Michael Regan	Baker City Police Department
Gary Timm	Baker County Emergency Management
Jason Yencopal	Baker County Emergency Management

City of Enterprise

Representatives from the following organizations served as working group members for the City of Enterprisenatural hazards mitigation planning process.

Convener, Michele Young	City Administrator
Paul Karvoski	Wallowa County Emergency Services

City of Halfway

Representatives from the following organizations served as working group members for the City of Halfway natural hazards mitigation planning process.

Convener, Page Frederickson	City of Halfway Public Works
Sheila Farwell	Mayor

City of John Day

Representatives from the following organizations served as working group members for the City of John Daynatural hazards mitigation planning process.

Convener, Peggy Gray	City Manager
David Holland	John Day Public Works
Ron Smith	John Day Fire Department
Richard Tirico	John Day Police

City of La Grande

Representatives from the following organizations served as working group members for the City of La Grandenatural hazards mitigation planning process.

Convener, Michael Boquist	City Planner
Charlie Mitchell	City of La Grande Economic Development
Dan Stark	Union County Economic Development Corporation
Bruce Weimer	La Grande Fire Department

The following pages provide copies of meeting agendas and sign-in sheets from steering committee and working group meetings. The material is organized alphabetically by meeting topic:

- **Kickoff and Hazard Identification**
- **Risk Assessment**
- **Mitigation Strategy**
- **Jurisdictional Addenda**

Kickoff and Hazard Identification: Baker County

Meeting: **Natural Hazards Mitigation Plan Update: Kickoff Meeting**

Date: **May 9th, 2013**

Time: 9:00 – 11:00 AM

Location: Baker County Courthouse (1995 3rd Street, Baker City)

Room: TBD

AGENDA

I. Introductions and Background (30 minutes)

- Welcome & Introductions
- Review Meeting Goals and Objectives
- Process Overview
  - Why Are We Here?
  - Who is Involved?
  - RARE/OPDR Involvement

II. Natural Hazards Mitigation Planning Overview (30 minutes)

- What is Natural Hazards Mitigation Planning?
  - Challenges and Opportunities
- Funding Overview
  - Available Grants: PDM, HMGP, FMA
- City Addendum(s)
- Next Steps

III. Public Participation (25 minutes)

- Steering Committee Overview
- Public Involvement Discussion
- Public Involvement Examples
- Stakeholder Exercise

IV. Review Regional NHMP Process (15 minutes)

- Regional NHMP Opportunities
- Regional NHMP Implications

V. Community Profile Update (15 minutes)

- Current Community Planning Documents
- Community Profile Discussion

Questions? (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

Oregon Partnership for Disaster Resilience
Community Service Center • 1209 University of Oregon
Eugene • Oregon • 97403-1209
Phone: 541.346.7326 • Fax: 541.346.2040

Meeting Sign-In

Baker County NHMP Update: Meeting #1: Kickoff May 9, 2013
Baker City, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
MARK BENNETT	Baker County	mbennett@bakercounty.org	~~0~~ 52
Holly Kerns	Baker County Planning	hkerns@bakercounty.org	0
Jason Yencopal	Baker County	jyencopal@bakercounty.org	0
Grant Young	NRCD	grant.s.young@state.or.us	50

Kickoff and Hazard Identification: Grant County

Meeting: **Natural Hazards Mitigation Plan Update: Kickoff Meeting**

Date: **May 8th, 2013**

Time: 2:00 – 4:00 PM

Location: Grant Regional Airport (72000 Airport Road, John Day)

Room: Upstairs Conference Room

AGENDA

I. Introductions and Background (30 minutes)

- Welcome & Introductions
- Review Meeting Goals and Objectives
- Process Overview
  - Why Are We Here?
  - Who is Involved?
  - RARE/OPDR Involvement

II. Natural Hazards Mitigation Planning Overview (30 minutes)

- What is Natural Hazards Mitigation Planning?
  - Challenges and Opportunities
- Funding Overview
  - Available Grants: PDM, HMGP, FMA
- City Addendum(s)
- Next Steps

III. Public Participation (25 minutes)

- Steering Committee Overview
- Public Involvement Discussion
- Public Involvement Examples
- Stakeholder Exercise

IV. Review Regional NHMP Process (15 minutes)

- Regional NHMP Opportunities
- Regional NHMP Implications

V. Community Profile Update (15 minutes)

- Current Community Planning Documents
- Community Profile Discussion

Questions? (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

Oregon Partnership for Disaster Resilience
Community Service Center • 1209 University of Oregon
Eugene • Oregon • 97403-1209
Phone: 541.346.7326 • Fax: 541.346.2040

Meeting Sign-In

Grant County NHMP Update: Meeting #1: Kickoff May 8, 2013
John Day, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Peggy Gray	City of John Day	graypa@grantcounty-or.gov	
Angela Hannibal	JOHN DAY DISPATCH	a.hannibal@hotmail.com	
Les Miller P.E.	USACE, Portland Dist. Emerg. Mgmt	d.les.miller@usace.army.mil	
Scott W. Myers	Grant County	myerssw@grantcount-or.gov	
Patrick Fentz	Grant County Regional Airport	airport@grantesd.k12.or.us	

Kickoff and Hazard Identification: Union County

Meeting:	**Natural Hazards Mitigation Plan Update: Kickoff Meeting**
Date:	**May 9th, 2013**
Time:	2:00 – 4:00 PM
Location:	Commissioners Annex (1106 K Avenue, La Grande)
Room:	Conference Room

AGENDA

I. Introductions and Background (30 minutes)

- Welcome & Introductions
- Review Meeting Goals and Objectives
- Process Overview
  - Why Are We Here?
  - Who is Involved?
  - RARE/OPDR Involvement

II. Natural Hazards Mitigation Planning Overview (30 minutes)

- What is Natural Hazards Mitigation Planning?
  - Challenges and Opportunities
- Funding Overview
  - Available Grants: PDM, HMGP, FMA
- City Addendum(s)
- Next Steps

III. Public Participation (25 minutes)

- Steering Committee Overview
- Public Involvement Discussion
- Public Involvement Examples
- Stakeholder Exercise

IV. Review Regional NHMP Process (15 minutes)

- Regional NHMP Opportunities
- Regional NHMP Implications

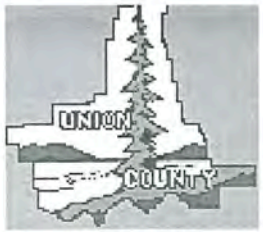
V. Community Profile Update (15 minutes)

- Current Community Planning Documents
- Community Profile Discussion

Questions? (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

Oregon Partnership for Disaster Resilience
Community Service Center • 1209 University of Oregon
Eugene • Oregon • 97403-1209
Phone: 541.346.7326 • Fax: 541.346.2040



Meeting Sign-In

Union County NHMP Update: Meeting #1: Kickoff May 9, 2013
La Grande, Oregon

PARTNERSHIP FOR DISASTER RESILIENCE
CSC.UOREGON.EDU/OPDR

Name	Representing	Email	Roundtrip mileage (if applicable)
Andi Walsh	CLTD, Public Health Emergency Preparedness	awalsh@cldine.org	0
JB Brock	Union County Emergency Services	jbrock@union-county.org	0
Annette Powers	Union County Emergency Services	apowers@unioncounty.org	0
Dennis Hackney	O.D.O.T.	Dennis.A.Hackney@odot.state.or.us	0
Bill Benson	E.O.U.	wbenson@eou.edu	0
Scott Hartell	Union County Planning	shartell@union-county.org	0
Doug Wright	Union Co. Public Works	dwright@union-county.org	

Name	Representing	Email	Roundtrip mileage (if applicable)
Robert P. Shanks	Grande Ronde Hospital	rps01@grh.org	N/A
Bruce Weimer	City of La Grande Fire Dept.	bweimer@cityoflagrande.org	———
Candice Coenfjord	Grande Ronde Hospital	clc01@grh.org	N/A

Kickoff and Hazard Identification: Wallowa County

Meeting:	**Natural Hazards Mitigation Plan Update: Kickoff Meeting**
Date:	**May 10th, 2013**
Time:	9:00 – 11:00 AM
Location:	County Courthouse (101 S. River St., Enterprise)
Room:	Thornton Conference Room

AGENDA

I. Introductions and Background (30 minutes)

- Welcome & Introductions
- Review Meeting Goals and Objectives
- Process Overview
  - Why Are We Here?
  - Who is Involved?
  - RARE/OPDR Involvement

II. Natural Hazards Mitigation Planning Overview (30 minutes)

- What is Natural Hazards Mitigation Planning?
  - Challenges and Opportunities
- Funding Overview
  - Available Grants: PDM, HMGP, FMA
- City Addendum(s)
- Next Steps

III. Public Participation (25 minutes)

- Steering Committee Overview
- Public Involvement Discussion
- Public Involvement Examples
- Stakeholder Exercise

IV. Review Regional NHMP Process (15 minutes)

- Regional NHMP Opportunities
- Regional NHMP Implications

V. Community Profile Update (15 minutes)

- Current Community Planning Documents
- Community Profile Discussion

Questions? (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

Oregon Partnership for Disaster Resilience
Community Service Center • 1209 University of Oregon
Eugene • Oregon • 97403-1209
Phone: 541.346.7326 • Fax: 541.346.2040

Meeting Sign-In

Wallowa County NHMP Update: Meeting #1: Kickoff May 10, 2013
Enterprise, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Russ McMartin	Wallowa County Public Works	WCroad@co.wallowa.or.us	
Mike Hayward	Wallowa County	mhayward@co.wallowa.or.us	
Rol Karvosk	Wallowa Co. Em	Weeks@co.wallowa.or.us	
Harold Black	WC Planning	planchr@co.wallowa.or.us	

Risk Assessment: Baker County

Meeting: **Natural Hazards Mitigation Plan Update: Risk Assessment Meeting**

Date: **June 26th, 2013**

Time: 1:00 PM - 4:00 pm

Location: Baker County Courthouse (1995 3rd Street, Baker City)

Room: TBD

AGENDA

I. Introductions and Background (20 minutes)

- Welcome & Introductions
- Recap of Previous Meeting
- Risk Assessment Overview
  - What is a Risk Assessment?
  - Why do a Risk Assessment?

II. Vulnerability Assessment (40 minutes)

- Update Community Assets
  - Review Previously Identified Community Assets (2008 NHMP)
  - Community Assets Exercises

IV. Hazard Identification (30 minutes)

- Define Hazard Incidents
- Review Previously Identified Hazards (2008 NHMP)
- Update Hazards Section – Extent, Duration, Location of Hazards

V. OEM Risk Analysis (40 minutes)

- Score Hazards Based on OEM Criteria

VI. Relative Risk Assessment (40 minutes)

- Score Hazards Based on OPDR Criteria

VII. Questions and Next Steps (10 minutes)

- Determine Next Meeting Date, Time, and Location

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

Oregon Partnership for Disaster Resilience
Community Service Center • 1209 University of Oregon
Eugene • Oregon • 97403-1209
Phone: 541.346.7326 • Fax: 541.346.2040

Meeting Sign-In

Baker County NHMP Update: Meeting #2: Risk Assessment

June 26, 2013 Baker City, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Gary Timm	Baker Co Emergency Mgt.	gtimm@bakercity.com gtimm@bakercounty.org	
Holly Kerns	Baker Co Emerg. Mgt.	hkerns@bakercounty.org	
Willy Crippen	Forest Service Wallowa Whitman NF	wcrippen@fs.fed.us	
Jason McClaughry	Oregon Dept. of Geology + Mineral Industries (DOGAMI)	jason.mcclaughry@dogami.state.or.us	
VAL Bogdanowitz	CCE Walla Walla District	VAL.P.Bogdanowitz@USACE.ARMY.MIL	
Jeff Stidham	USACE, Walla Walla	JEFFERY.L.STIDHAM@USACE.ARMY.MIL	
Jason Yencopal	Baker Co. Emergency Management	jyencopal@bakercounty.org	

Name	Representing	Email	Roundtrip mileage (if applicable)
Rick Lusk	OR Water Resources Dept	Rick.M.LUSK@wrd.state.or.us	

Risk Assessment: Grant County

Meeting:	**Natural Hazards Mitigation Plan Update: Risk Assessment Meeting**
Date:	**June 25th, 2013**
Time:	1:00 PM - 4:00 pm
Location:	Grant Regional Airport (72000 Airport Road, John Day)
Room:	Upstairs Conference Room

AGENDA

I. Introductions and Background (20 minutes)

- Welcome & Introductions
- Recap of Previous Meeting
- Risk Assessment Overview
  - What is a Risk Assessment?
  - Why do a Risk Assessment?

II. Vulnerability Assessment (40 minutes)

- Update Community Assets
  - Review Previously Identified Community Assets (2008 NHMP)
  - Community Assets Exercises

IV. Hazard Identification (30 minutes)

- Define Hazard Incidents
- Review Previously Identified Hazards (2008 NHMP)
- Update Hazards Section – Extent, Duration, Location of Hazards

V. OEM Risk Analysis (40 minutes)

- Score Hazards Based on OEM Criteria

VI. Relative Risk Assessment (40 minutes)

- Score Hazards Based on OPDR Criteria

VII. Questions and Next Steps (10 minutes)

- Determine Next Meeting Date, Time, and Location

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Grant County NHMP Update: Meeting #1: Risk Assessment June 25, 2013
John Day, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Ron Smith	John Day FIRE	ronsmiths-201@yahoo.com	
Peggy Gray	City of John Day	graypa@grantcounty-or.gov.	
Valerie Luttrell	John Day 911	VLUTTRELL@Centurytel.net	
Dean Hicks	Prairie City Fire	db-hicks@hotmail.com	
David Holland	John Day Public Works	Hollandd@grantcounty-OR.gov	
Susan Horn	Mt. Vernon Grant County Rd Dept	hornsusan@ortelco.net	
Shannon Springer	Grant Co Planning Canyon City	gcplan@grantcounty-or.gov	

Name	Representing	Email	Roundtrip mileage (if applicable)
Scott W. Myers	County Court	myersswe grantcounty-or.gov	
Patrick Bentz	Grant County Regional Airport	airport@grantcnty.ORG.US	

Risk Assessment: Union County

Meeting:	**Natural Hazards Mitigation Plan Update: Risk Assessment Meeting**
Date:	**July 11th, 2013**
Time:	9:00 AM – 12:00 PM
Location:	Commissioners Annex (1106 K Avenue, La Grande)
Room:	Conference Room

AGENDA

I. Introductions and Background (20 minutes)
- Welcome & Introductions
- Recap of Previous Meeting
- Risk Assessment Overview
  - What is a Risk Assessment?
  - Why do a Risk Assessment?

II. Vulnerability Assessment (40 minutes)
- Update Community Assets
  - Review Previously Identified Community Assets (2008 NHMP)
  - Community Assets Exercises

IV. Hazard Identification (30 minutes)
- Define Hazard Incidents
- Review Previously Identified Hazards (2008 NHMP)
- Update Hazards Section – Extent, Duration, Location of Hazards

V. OEM Risk Analysis (40 minutes)
- Score Hazards Based on OEM Criteria

VI. Relative Risk Assessment (40 minutes)
- Score Hazards Based on OPDR Criteria

VII. Questions and Next Steps (10 minutes)
- Determine Next Meeting Date, Time, and Location

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Union County NHMP Update: Meeting #2: Risk Assessment July 11, 2013
La Grande, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
DAN STARK	UNION COUNTY ECONOMIC DEVELOPMENT CORPORATION	ucedc2@eoni.com	4
CRAIG WARD	UNION CO. SHERIFF'S OFFICE	cward@union-county.org	
Charlie Mitchell	City of La Grande	cmitchell@cityoflagrande.org	
DENNIS HACKNEY	O.D.O.T.	DENNIS.A.HACKNEY@ODOT.STATE.OR.US	
Annette Powers	UC Emergency Mgmt	apowers@union-county.org	
Larry Wooldridge	LaGrande Rural Fire	lgrfpd@eoni.com	
Doug Wright	Public Works	dwright@union-county.org	

Risk Assessment: Wallowa County

Meeting:	**Natural Hazards Mitigation Plan Update: Risk Assessment Meeting**
Date:	**July 10th, 2013**
Time:	9:00 AM – 12:00 PM
Location:	Wallowa County Courthouse (101 S. River St., Enterprise)
Room:	Thornton Conference Room

AGENDA

I. Introductions and Background (20 minutes)

- Welcome & Introductions
- Recap of Previous Meeting
- Risk Assessment Overview
  - What is a Risk Assessment?
  - Why do a Risk Assessment?

II. Vulnerability Assessment (40 minutes)

- Update Community Assets
  - Review Previously Identified Community Assets (2008 NHMP)
  - Community Assets Exercises

IV. Hazard Identification (30 minutes)

- Define Hazard Incidents
- Review Previously Identified Hazards (2008 NHMP)
- Update Hazards Section – Extent, Duration, Location of Hazards

V. OEM Risk Analysis (40 minutes)

- Score Hazards Based on OEM Criteria

VI. Relative Risk Assessment (40 minutes)

- Score Hazards Based on OPDR Criteria

VII. Questions and Next Steps (10 minutes)

- Determine Next Meeting Date, Time, and Location

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Phone: 541.346.7326 • Fax: 541.346.2040

Meeting Sign-In

Wallowa County NHMP Update: Meeting #2: Risk Assessment July 10, 2013
Enterprise, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
HAROLD BLAKER	WC PLANNING	plandir@co.wallowa.or.us	
Mike Hayward	WC BOC	mhayward@co.wallowa.or.us	
PAUL KARWOSKI	EM	wcdes@co.wallowa.or.us	

Mitigation Strategy: Baker County

Meeting: **Natural Hazards Mitigation Plan Update: Mitigation Strategy Meeting**

Date: **September 13th**

Time: 1:00 PM – 4:00 PM

Location: Baker County Courthouse (1995 3rd Street, Baker City)

Room: Upstairs Meeting Room

AGENDA

I. Meeting Background (15 minutes)
- Welcome & Introductions
- Recap of Previous Meeting
  - Other Counties' Statuses
  - Risk Assessment Rankings

II. Mitigation Strategy Overview (10 minutes)

III. 2008 Mitigation Strategy Review (70 minutes)
- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items

IV. Break (5 minutes)

V. Updated Mitigation Strategy (45 minutes)
- Newly Proposed Action Items

VI. Implementation & Maintenance (30 minutes)
- Plan Integration
- Project Review Schedule

VII. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Baker County NHMP Update: Meeting #3: Mitigation Strategy

September 13th, 2013 Baker City, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Page Frederickson	City of Halfway	thecitybypage@hotmail.com	108.2
JEFF STIDHAM	CORPS OF ENGRS, WALLA WALLA	JEFFERY.L.STIDHAM@USACE.ARMY.MIL	
VAL Bogdanowitz	USACE, WALLA WALLA	VAL.P.Bogdanowitz@USACE.Army.mil	
Gary Timm	Baker County Emergency Management	gtimm@bakercounty.org	N/A
Jason Yencopal	Baker County Emergency Management	jyencopal@bakercounty.org	NA

Mitigation Strategy: Grant County

Meeting:	**Natural Hazards Mitigation Plan Update: Mitigation Strategy Meeting**
Date:	**September 12th**
Time:	1:00 PM – 4:00 PM
Location:	Grant Regional Airport (7200 Airport Road, John Day)
Room:	Upstairs Conference Room

AGENDA

I. Meeting Background (15 minutes)
- Welcome & Introductions
- Recap of Previous Meeting
  - Other Counties' Statuses
  - Risk Assessment Rankings

II. Mitigation Strategy Overview (10 minutes)

III. 2008 Mitigation Strategy Review (70 minutes)
- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items

IV. Break (5 minutes)

V. Updated Mitigation Strategy (45 minutes)
- Newly Proposed Action Items

VI. Implementation & Maintenance (30 minutes)
- Plan Integration
- Project Review Schedule

VII. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Grant County NHMP Update: Meeting #3: Mitigation Strategy
September 12, 2013
John Day, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Corry Rider	Town of Canyon City	TOCC1862@Centurylink.net	
Eric Julsrud	Oregon Water Resources Dept.	Eric.W.Julsrud@Wrd.state.or.us	
Patrick Bentz	Grant Co Regional Airport	airport@grantco.k12.or.us	
Penny Gray	John Day		
David Holland	John Day		
Irene Jerome	CWPP/Firewise - GrantCo	ijeromejnrc@gmail.com	
Ron Smith	John Day Fire		

Name	Representing	Email	Roundtrip mileage (if applicable)
Rob Pentzer	Dept of Forestry	robspentzer@odf.state.or.us	
Scott Myers	Grant County Court	myerssw@grantcounty-gov.or	
Dean Hicks	Prairie City Fire	db-hicks@hotmail.com	
Richard Gray	John Day / Prairie City	rmgray201@hotmail.com	

Mitigation Strategy: Union County

Meeting:	**Natural Hazards Mitigation Plan Update: Mitigation Strategy Meeting**
Date:	**September 10th**
Time:	1:00 PM – 4:00 PM
Location:	Commissioners Annex (1106 K Avenue, La Grande)
Room:	Conference Room

AGENDA

I. Meeting Background (15 minutes)
- Welcome & Introductions
- Recap of Previous Meeting
  - Other Counties' Statuses
  - Risk Assessment Rankings

II. Mitigation Strategy Overview (10 minutes)

III. 2008 Mitigation Strategy Review (70 minutes)
- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items

IV. Break (5 minutes)

V. Updated Mitigation Strategy (45 minutes)
- Newly Proposed Action Items

VI. Implementation & Maintenance (30 minutes)
- Plan Integration
- Project Review Schedule

VII. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Phone: 541.346.7326 • Fax: 541.346.2040

Meeting Sign-In

Union County NHMP Update: Meeting #3: Mitigation Strategy
September 10, 2013
La Grande, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Don Voetberg	City of Union, OR City council	autopsy@eoni.com	
Bruce Weimer	City of LaGrande FD	bweimer@cityoflagrande.org.	
DENNIS SIGRIST	OMD-OEM SHMO	[illegible] state.or.us dennis.j.sigrist@	
Christine O'Day	OMD-OEM Grants Accountant	Christine.oday@state.or.us	
April Brock	Grande Ronde Hospital	[illegible]@amr-ozegrh.org	
Annette Powers	UC Em. Svc.	apowers@union-county.org	
Dennis Hacker	ODOT		

Name	Representing	Email	Roundtrip mileage (if applicable)
Doug Wright	UC PubWorks		
Dan Stark	UCEDC		

Mitigation Strategy: Wallowa County

Meeting:	**Natural Hazards Mitigation Plan Update: Mitigation Strategy Meeting**
Date:	**September 11th**
Time:	9:00 AM – 12:00 PM
Location:	Wallowa County Courthouse (101 S. River St., Enterprise)
Room:	Thornton Conference Room

AGENDA

I. Meeting Background (15 minutes)
- Welcome & Introductions
- Recap of Previous Meeting
  - Other Counties' Statuses
  - Risk Assessment Rankings

II. Mitigation Strategy Overview (10 minutes)

III. 2008 Mitigation Strategy Review (70 minutes)
- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items

IV. Break (5 minutes)

V. Updated Mitigation Strategy (45 minutes)
- Newly Proposed Action Items

VI. Implementation & Maintenance (30 minutes)
- Plan Integration
- Project Review Schedule

VII. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Wallowa County NHMP Update: Meeting #3: Mitigation Strategy September 11, 2013
Enterprise, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Nathan Goodrich	US Forest Service	ngoodrich@fs.fed.us	10 miles
HAROLD BLACK	COUNTY PLANNING	planner@co.wallowa.or.us	NONE
Dennis Sands	City of Joseph	dennissands@gmail	—
Mike Shaw	Oregon Dept. of Forestry	mshaw@odf.state.or.us	
Matt Howard	Oregon Dept Forestry	MHoward@ODF.State.or.us	
Mike Hayward	Wallowa County	mhayward@co.wallowa.or.us	
Michele Young	City of Enterprise	cityent@eoni.com	∅

Name	Representing	Email	Roundtrip mileage (if applicable)
STEVE ROGERS	WALLOWA CO. SHERIFF	SROGERS@CO.WALLOWA.OR.US	
NILS CHRISTOFFERSEN	WALLOWA RESOURCE	nils@wallowaresource.org	

Jursidictional Addendum: Baker City

Meeting: **Natural Hazards Mitigation Plan Update: Baker City Addendum Meeting**

Date: **September 13th**

Time: 9:00 AM – 11:00 AM

Location: City Hall

AGENDA

I. Meeting Purpose (10 minutes)

II. Risk Assessment (40 minutes)

- Hazards Inventory: Review and update recent hazard events
- Community Assets: Review and update vulnerable community assets
- OEM Hazards Analysis

III. Mitigation Strategy (40 minutes)

- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items
- Newly Proposed Action Items

IV. Implementation & Maintenance (25 minutes)

- Discuss how to incorporate mitigation strategies into existing plans and programs

V. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Phone: 541.346.7326 • Fax: 541.346.2040

Meeting Sign-In

Baker City NHMP Update: Meeting #1: City Addendum

September 13th, 2013 Baker City, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
MICHAEL TREGAN	BCPD	MTREGAN@BAKERCITY.COM	N/A
Michelle Owen	BC Public Works	mowen@bakercity.com	N/A
Cliff Hall	BCFD	Chall@BakerCity.com	N/A
Jason Yencopal	Baker County Emergency Management	jyencopal@bakercounty.org	—
Gary Timm	Baker County Emergency Management	gtimm@baker-county.org	—
Holly Kerns	Baker County/Baker City Planning	HKerns@bakercounty.org	—

Jursidictional Addendum: City of Enterprise

Meeting: **Natural Hazards Mitigation Plan Update: Enterprise Addendum Meeting**

Date: **September 11th**

Time: 1:00 PM – 3:30 PM

Location: City Hall

AGENDA

I. Meeting Purpose (10 minutes)

II. Risk Assessment (40 minutes)

- Hazards Inventory: Review and update recent hazard events
- Community Assets: Review and update vulnerable community assets
- OEM Hazards Analysis

III. Mitigation Strategy (40 minutes)

- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items
- Newly Proposed Action Items

IV. Implementation & Maintenance (25 minutes)

- Discuss how to incorporate mitigation strategies into existing plans and programs

V. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Wallowa County Enterprise NHMP Update: Addendum Meeting
September 11, 2013
Enterprise, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Michele Young	City of Enterprise	cityent@eoni.com	0
Paul Karvoski	City of Enterprise	wcdes@co.wallowa.or.us	

Jursidictional Addendum: City of Halfway

Willy Sercombe met with Page Frederickson and the City's mayor, Sheila Farwell on June 27th, 2013. During this meeting the Risk Assessment: Update of hazards inventory, community assets and vulnerabilities and review and update the OEM hazards analysis was discussed.

Page Frederickson also attended the Baker County Mitigation Strategy work session held in Baker City on September 13, 2013. During this work session specific attention was paid to mitigation needs and implementation and maintenance strategies appropriate for the City of Halfway.

In addition to the meetings in June and September, Willy Sercombe (RARE) conducted interviews with Page Fredericson and the City of Halfway's Mayor, Sheila Farwell, in order to complete the update.

Jursidictional Addendum: City of John Day

Meeting: **Natural Hazards Mitigation Plan Update: John Day Addendum Meeting**

Date: **September 12th**

Time: 9:00 AM – 11:00 AM

Location: City Hall

AGENDA

I. Meeting Purpose (10 minutes)

II. Risk Assessment (40 minutes)

- Hazards Inventory: Review and update recent hazard events
- Community Assets: Review and update vulnerable community assets
- OEM Hazards Analysis

III. Mitigation Strategy (40 minutes)

- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items
- Newly Proposed Action Items

IV. Implementation & Maintenance (25 minutes)

- Discuss how to incorporate mitigation strategies into existing plans and programs

V. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Grant County NHMP Update: Meeting 1: John Day Addendum
September 12, 2013
John Day, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
Peggy Gray	John Day	graypa@grantcounty-or.gov	
Richard Tirico	John Day Police	RatiRico@centurytel.net	
David Holland	John Day PW		
Roy Smith	John Day Fire	Franklinrealty@centurytel.net	

Jursidictional Addendum: City of La Grande

Meeting: **Natural Hazards Mitigation Plan Update: La Grande Addendum Meeting**

Date: **September 9th**

Time: 9:00 AM – 11:00 AM

Location: City Hall 2nd Floor

Room: Conference Room

AGENDA

I. Meeting Purpose (10 minutes)

II. Risk Assessment (40 minutes)

- Hazards Inventory: Review and update recent hazard events
- Community Assets: Review and update vulnerable community assets
- OEM Hazards Analysis

III. Mitigation Strategy (40 minutes)

- Update 2008 Mission and Goals
- Review 2008 Action Items
  - Identify completed, deleted, or deferred action items
- Newly Proposed Action Items

IV. Implementation & Maintenance (25 minutes)

- Discuss how to incorporate mitigation strategies into existing plans and programs

V. Next Steps (5 minutes)

To access information and resources on the Northeast Oregon Regional NHMP update process visit: http://csc.uoregon.edu/opdr/current/easternoregon/northeast

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Meeting Sign-In

Union County La Grande NHMP Update: Addendum Meeting
September 9, 2013
La Grande, Oregon

Name	Representing	Email	Roundtrip mileage (if applicable)
DAN STARK	UCEDC	ucedc2@eoni.com	0
Bruce Weimer	LGFD	bweimer@cityoflagrande.org	0
MICHAEL BOGUIST	LG PLANNING	mboguist@cityoflagrande.org	0
Charlie Mitchell	City of LG	cmitchell@cityoflagrande.org	0

2006-2007 NHMP
PLAN DEVELOPMENT AND
PUBLIC PARTICIPATION PROCESS

2006/2007 NHMP Development

This NHMP was developed in 2006/2007 and updated in 2013

The development of this NHMP occurred during the process of four meetings held for each county as shown below:

Baker County

The Baker County steering committee met on the following dates:

- **Kickoff Meeting:**November 29th, 2006
- **Risk Assessment:**February 22nd, 2007
- **Action Item Identification:** May 16th, 2007
- **Plan Implementation and Maintenance:** July 10th, 2007

Representatives from the following organizations served as steering committee members for the Baker County natural hazard mitigation planning process.

Convener, Mark Bennet	Baker County Emergency Management
Jerry Boyd	Baker County Dispatch
Ken Helgerson	Baker County Roads Department
Laura Livingston	Baker County Planning Department
Noel Livingston	United States Forest Service
Cory Parsons	Oregon State University Extension Service
Warren Thompson	Baker County Sheriff
Gary Timm	Baker county Emergency Management/ Fire Authority

Grant County

The Grant County steering committee met on the following dates:

- **Kickoff Meeting:** November 30th, 2006
- **Risk Assessment:**March 15th, 2007
- **Action Item Identification:** May 16th, 2007
- **Plan Implementation and Maintenance:** Individual meeting dates

Representatives from the following organizations served as steering committee members for the Grant County natural hazards mitigation planning process.

Convener, John Boynton	Grant County Emergency Management

Convener, Jim McNellis	Grant County Sheriff's Department
Peggy Gray	City of John Day
T.R. Hilton	Director of Emergency Medical Services
Stan Horrell	Mayor, Prairie City
Gary Judd	Grant County Regional Airport
Valerie Luttrell	City of John Day Telecommunications Services
Judi McNellis	City of Mt. Vernon
Mark Webb	Grant County Judge

Union County

The Union County steering committee met on the following dates:

- **Kickoff Meeting:** November 29th, 2006
- **Risk Assessment:**February 20th, 2007
- **Action Item Identification:** May 17th, 2007
- **Plan Implementation and Maintenance:** July 12th, 2007

Representatives from the following organizations served as steering committee members for the Union County natural hazards mitigation planning process.

Convener, JB Brock	Union County Emergency Manager
Convener, Dara Salmon	Union County Emergency Services / Union County Planning
Michael P. Barry	Oregon Department of Transportation
Ray Hamann	La Grande Rural Fire Protection District
Hanley Jenkins, II	Union County Planning Department
Rob Yuodelis	Eastern Oregon University Environmental Health and Safety Director

Wallowa County

The Baker County steering committee met on the following dates:

- **Kickoff Meeting:** November 28th, 2006
- **Risk Assessment:**March 19th, 2007
- **Action Item Identification:** May 17th, 2007
- **Plan Implementation and Maintenance:** June 28th, 2007

Representatives from the following organizations served as steering committee members for the Wallowa County natural hazards mitigation planning process.

Convener, Mike Hayward	Wallowa County Commissioner
Lance Bailey	Wallowa County Planning Department
Paul Karvoski	Wallowa County Emergency Management
Russ McMartin	Wallowa County Public Works

Working Groups – Addendum

- **Jurisdictional Addenda Work Sessions:**
  - July 30th, 2007 (City of Baker City)
  - August 2nd, 2007 (City of Halfway)
  - May 29th, 2007 (City of John Day)
  - July 11th, 2007 (City of La Grande)

City of Baker City

Representatives from the following organizations served as steering committee members for the Baker City natural hazards mitigation planning process.

Mark Bennett	Baker County Emergency Management
Evan MacKenzie	Baker City Planning Department
Michelle Owen	Baker City Public Works
Jennifer Watkins	Baker City Administrator

City of Halfway

Representatives from the following organizations served as steering committee members for the City of Halfwaynatural hazards mitigation planning process.

Mark Bennett	Baker County Emergency Management
Page Frederickson	City of Halfway Public Works
Gordon Kaesemeyer	Mayor
James Young	Powder River Watershed Council
Trina Duncan	City of Halfway Administrator

City of John Day

Representatives from the following organizations served as steering committee members for the City of John Daynatural hazards mitigation planning process.

Peggy Gray	City Manager

City of La Grande

Representatives from the following organizations served as steering committee members for the City of La Grandenatural hazards mitigation planning process.

Michael Boquist	City of La Grande Planning Department
John Courtney	Liz Hill
Eldon Slippy	City of La Grande Manager / Finance Department
Mark Touhey	City of La Grande Parks Department
Bruce Weimer	City of La Grande Fire Department

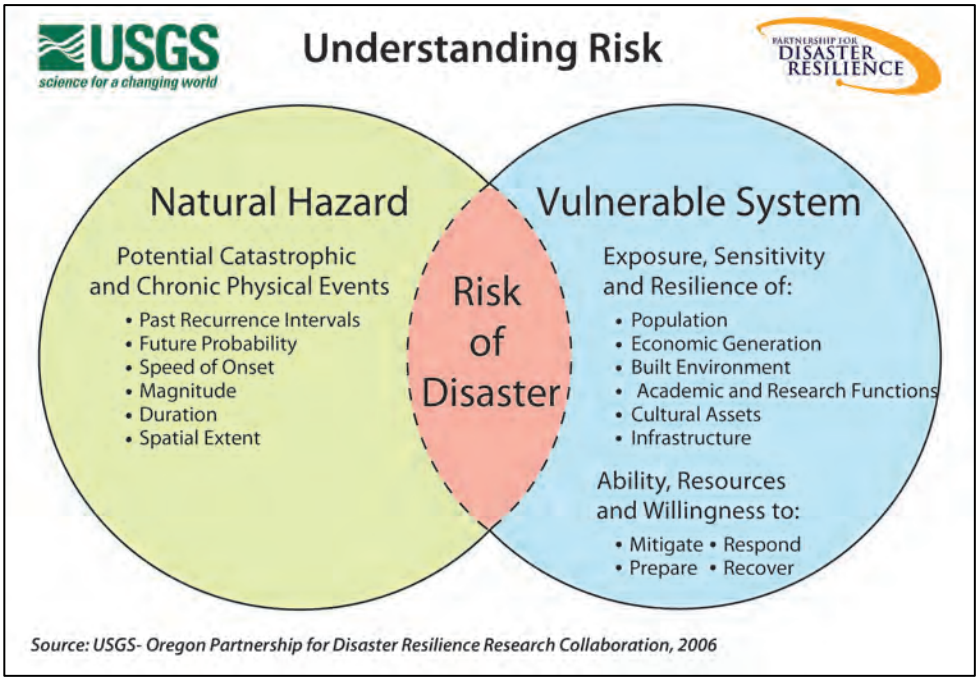
APPENDIX C: COMMUNITY PROFILE

Community resilience can be defined as the community's ability to manage risk and adapt to natural hazard impacts. In order to help define and understand the region's sensitivity and resilience to natural hazards, the following capacities must be examined:

- **Natural Environment**
- **Socio-Demographic**
- **Regional Economic**
- **Built (or Infrastructure)**
- **Community Connectivity**
- **Political**

The Community Profile describes the sensitivity and resilience to natural hazards of the Northeast Oregon region, including Baker County, Grant County, Union County, and Wallowa County, as they relate to each capacity. It provides a snapshot in time when the plan was developed and will assist in preparation for a more resilient region. Data is presented at the regional level first, followed by county and city level. More specific information for the counties and cities can be found in the jurisdictional addenda in Volume III of the plan. The information in this section, along with the hazard assessments located in the Hazard Annex, should be used as the local level rationale for the risk reduction actions identified in Section 3 – Mitigation Strategy. The identification of actions that reduce the region's sensitivity and increase its resiliency assist in reducing overall risk of disaster, the area of overlap in Figure C-1 below.

Figure C-1 Understanding Risk



Source: Oregon Partnership for Disaster Resilience

Regional Natural Environment Capacity

Natural environment capacity is recognized as the geography, climate, and land cover of the area such as, urban, water and forested lands that maintain clean water, air and a stable climate.[1] Natural resources such as wetlands and forested hill slopes play significant roles in protecting communities and the environment from weather-related hazards, such as flooding and landslides. However, natural systems are often impacted or depleted by human activities adversely affecting community resilience.

Geography

The Northeast Region encompasses approximately 12,808 square miles.[2]The region is bordered by the Snake River to east and the Columbia River to the north. Columbia River Basalt lava flows formed the high plateaus of the region; the two major mountain ranges are the Blue and Wallowa Ranges. Major rivers include the John Day, Grande Ronde, the Powder, and the Snake.[3]

Blue Mountains

The Blue Mountains extend from the northeast corner of the state into the John Day Valley. It extends east to the Snake River Canyon, northwest to the Columbia Plateau and south to the High Lava Plains and Owyhee Plateau.[4] The range forms sub-ranges including the Elkhorn Mountains in western Baker and northeastern Grant counties; and the Strawberry Mountains in central Grant County.[5] The Blue Mountains drain into the Grande Ronde, Imnaha, Wallowa, and John Day Rivers.[6]

Wallowa Mountains

The Wallowa Mountains are located between the Blue Mountains to the west and the Snake River and Idaho to the east. A large portion of the range belongs to the Wallowa-Whitman National Forest. The mountains can receive over 100 inches of precipitation, primarily in the form of snow, as opposed to the valley which generally receives less than 20 inches.[7]

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[1]Mayunga, J. 2007. Understanding and Applying the Concept of Community Disaster Resilience: A capital-based approach. Summer Academy for Social Vulnerability and Resilience Building.

[2] Oregon Blue Book, County Government, http://bluebook.state.or.us/local/counties/counties.htm; *Baker 3,089 sq. mi., Grant 4,528 sq. mi., Union 2,038 sq. mi., 3,153 sq. mi;* Accessed May 2013

[3] Loy, W.G., ed. 2001. *Atlas of Oregon*, 2nd Edition. Eugene: University of Oregon Press.

[4] Idaho Power Boardman to Hemingway Transmission Line Project; Exhibit H

[5] Oregon State University "Blue Mountain Ecological Province" http://oregonstate.edu/dept/range/sites/default/files/EcologicalProvincesOfOregon/blue_mountain.htm Accessed May 2013

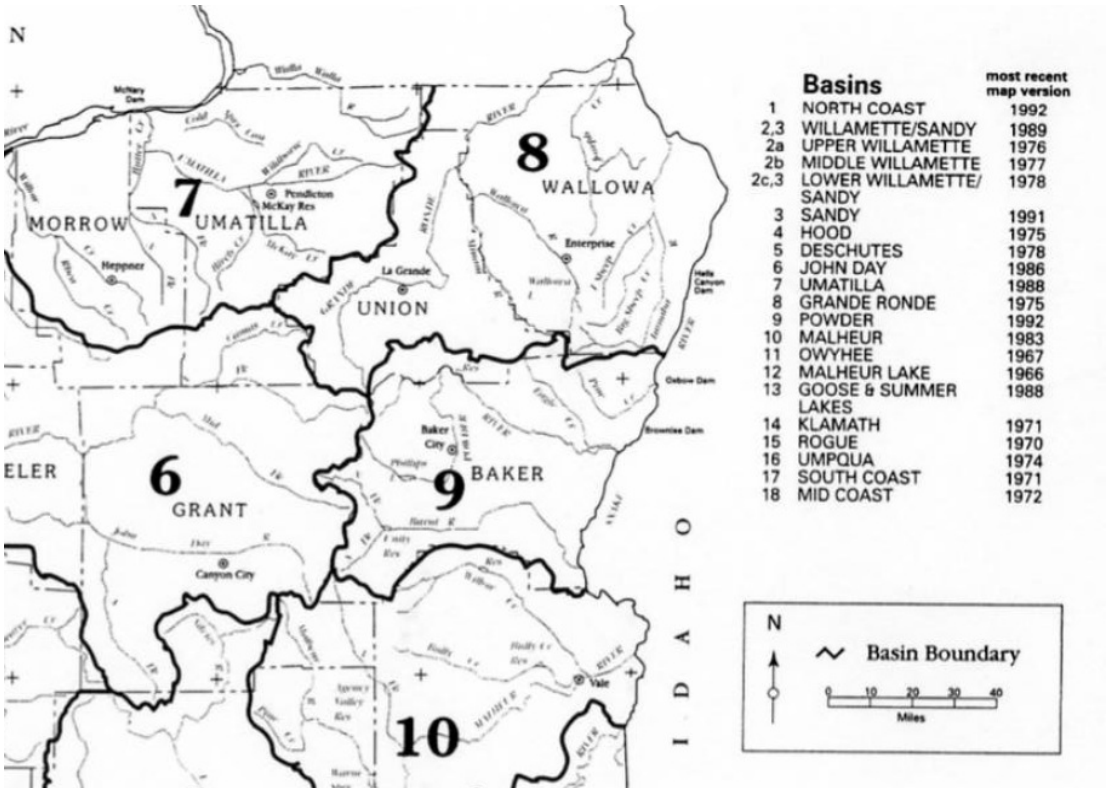
[6] Idaho Power Boardman to Hemingway Transmission Line Project; Exhibit H

[7] Oregon Climate Services "Climate of Wallowa County" http://www.ocs.oregonstate.edu/county_climate/Wallowa_files/Wallowa.html Accessed May 2013

Northeast Oregon Watershed Basins

The Water Resources Commission determines the policies and procedures for the use and control of the state's water resources.[8] The watershed basins are controlled and administered partially by basin programs which establish water management policies and objectives for the use and appropriation of the surface and ground water within each of the respective basins.[9] The Water Resources Commission has adopted programs for the Grande Ronde Basin, the Powder Basin, and the John Day Basin, which can be seen below in Figure C-2.

Figure C-2 Northeast Oregon Watershed Basins



Source: Oregon Water Resources Department "Basin Programs" http://www.oregon.gov/owrd/law/docs/law/690-500_map.pd

Grande Ronde River

The Grande Ronde River is a tributary of the Snake River. It flows through southwestern Union County through the Grande Ronde Valley. The Grande Ronde Basin makes up most of Union and Wallowa Counties

[8] Water Resources Department "Basin Programs" http://arcweb.sos.state.or.us/pages/rules/oars_600/oar_690/690_500.html Accessed February 2014

[9] Ibid

John Day River

The John Day River is a tributary of the Columbia River and drains from the Blue Mountains before entering the Columbia River Gorge. The John Day River is the longest free flowing river in the United States. The John Day River system represents the watershed for most of Grant County, primarily the northern half, drained by the four forks of the John Day River.[10]

Powder River

The Powder River is tributary of the Snake River and is more than 150 miles in length. It lies almost entirely in Baker County but also extends to a portion of Union County. The watershed drains 1,750 square miles of northeastern Oregon.

Silvies River

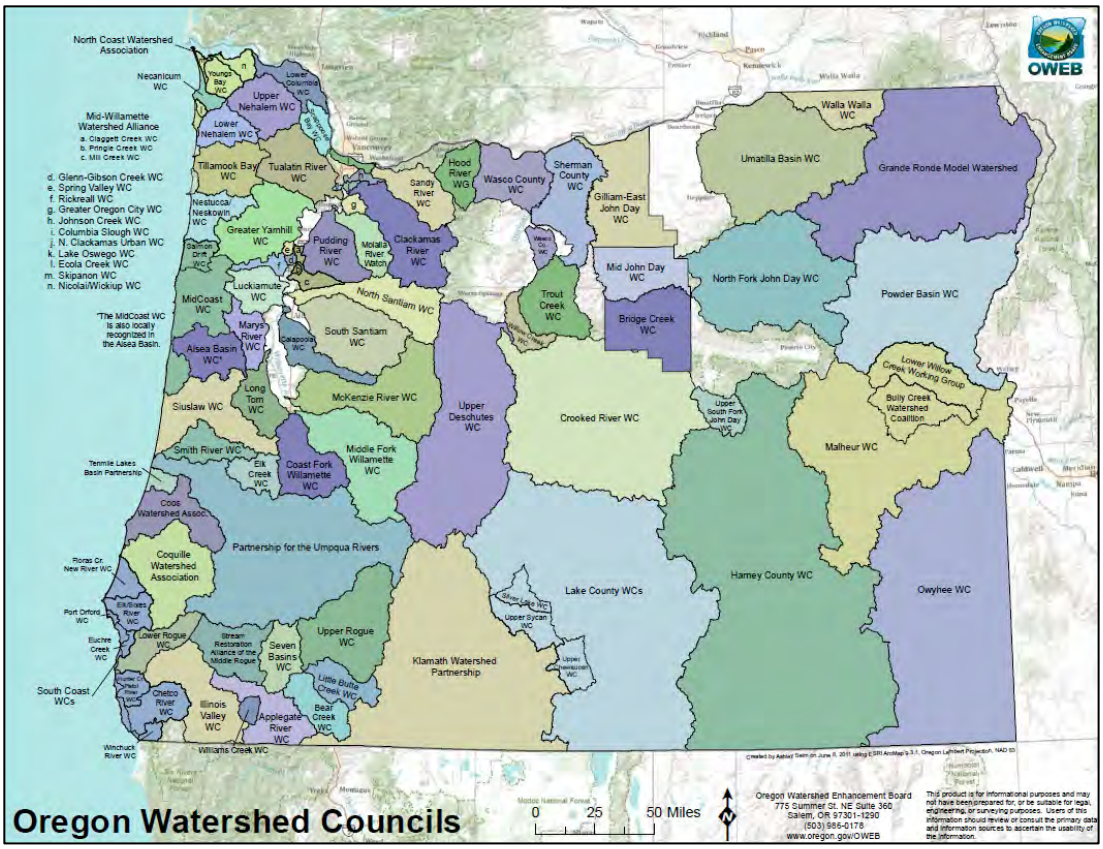
The Silvies River extends through the southern portion of Grant County into Harney County and drains approximately 1,275 square miles of the northern Harney Basin. The headwaters are near the flank of the Aldrich Mountains and the river runs roughly south where it empties into Malheur Lake, near Burns, Oregon.

Northeast Oregon Watershed Councils

Three Watershed Councils represent the four Northeast Oregon Counties: Grande Ronde Model Watershed, North Fork John Day Watershed and Powder Basin Watershed. The three rivers determine the watershed subbasins are the John Day River, the Powder River, and the Grande Ronde River.

[10] Grant County CWPP 2013 "2.2 Existing Conditions"

Figure C-2 Oregon Watershed Councils



Source: Oregon Watershed Enhancement Board "Watershed Councils in Oregon" http://www.oregon.gov/OWEB/pages/watershed_council_contacts.aspx

Climate

The majority of the Northeast Region is within Oregon Climate Division 8,[11] shown in figure C-2 below. The region is generally dry and there are large seasonal variations in temperature ranging from high temperatures of 80 to 90 degrees F from June to September to average highs of low teens in the winter months. In most winters, there are frequent and severe winter storms characterized by temperature, wind velocity, ground saturation, and snow pack. Winter storms can slow or halt traffic, damage power lines, and kill livestock.

[11] Climate divisions are created by the National Oceanic Oregon and Atmospheric Administration to separate regions that have similar climates. The Oregon Climate Services through Oregon State University provides a profile for the Climate Division 8, which can be seen at the following web page: http://www.ocs.orst.edu/county_climate/Baker_files/Baker.html

Figure C-3 Map of Climatic Divisions



Source: National Oceanic and Atmospheric Administration, National Weather Service "Climate Divisions within Counties"

Rainfall Precipitation

See Table C-1 below for precipitation (inches) for different NOAA Stations across the region. The average annual precipitation is mostly uniform at the different NOAA stations throughout the region; the highest and lowest levels are within 15 inches of one another. Average annual precipitation ranges from nearly 11 inches at Baker FAA AP NOAA Station in Baker County to approximately 24 inches at the Elgin NOAA Station in Union County. Annual precipitation for the four counties is almost always below 20 inches. Areas of higher elevation generally have larger annual rainfall and areas of lower elevation have smaller annual rainfall.[12]Higher precipitation tends to spike in spring and again in the late fall. Monthly distribution compared to the rest of Oregon is mostly uniform throughout the year, and well distributed across the months.

Snowfall Precipitation

Snowfall similarly varies by elevation, ranging from approximately seven (7) inches in Dayville (Grant County) to nearly 88 inches in Austin 3 S (Grant County).Aggregately; annual snowfall is highest in Wallowa County at over 46 inches and lowest in Union County at nearly 32 inches. See Table C-2 for average monthly snow (inches).

[12] Source: The Oregon Climate Service, NOAA Climate Stations.
http://www.ocs.orst.edu/county_climate/Baker_files/Baker.html#table1

Table C-1 Average Rainfall Precipitation (inches)

Month	Baker				Grant					Union			Wallowa		
	Baker FAA AP	Halfway	Richland	Unity	Austin 3 S	Dayville 8 NW	John Day	Long Creek	Monument 2	Elgin	La Grande	Union Exp Stn	Enterprise	Enterprise 20 NNE	Wallowa
January	0.91	3.31	1.50	1.24	2.72	0.83	1.14	1.66	1.42	3.16	1.83	1.15	1.17	1.70	1.84
February	0.63	2.46	0.96	0.74	2.00	0.73	0.79	1.29	1.15	2.60	1.32	0.97	1.07	1.47	1.44
March	0.83	2.01	1.06	0.81	2.01	1.26	1.28	1.68	1.51	2.14	1.50	1.20	1.51	1.66	1.30
April	0.86	1.58	1.03	0.78	1.45	1.20	1.38	1.71	1.37	1.96	1.58	1.52	1.72	1.94	1.39
May	1.35	1.67	1.34	1.13	1.66	1.60	1.74	1.91	1.55	1.95	1.90	2.02	2.15	2.25	1.76
June	1.24	1.28	1.07	1.16	1.49	1.18	1.27	1.35	1.20	1.58	1.53	1.47	1.97	1.95	1.44
July	0.69	0.64	0.70	0.58	0.90	0.66	0.64	0.82	0.56	0.80	0.70	0.71	1.08	1.30	0.94
August	0.90	0.60	0.80	0.80	0.96	0.63	0.85	0.90	0.77	0.72	0.86	0.84	1.21	1.15	0.89
September	0.70	0.80	0.50	0.50	1.00	0.40	0.78	0.81	0.60	1.04	0.84	0.84	0.89	1.13	1.09
October	0.60	1.20	0.70	0.60	1.12	0.67	0.87	1.21	0.92	1.68	1.26	0.97	0.84	1.19	1.33
November	1.00	3.00	1.50	1.20	2.79	1.18	1.41	1.80	1.58	3.27	2.22	1.53	1.56	2.16	2.07
December	0.95	3.60	1.39	1.20	3.00	0.98	1.38	1.64	1.39	3.39	1.94	1.19	0.93	1.90	1.91
Annual	***10.60***	*22.25*	*12.47*	*10.76*	*21.10*	*11.32*	*13.53*	*16.78*	*14.02*	***24.29***	*17.48*	*14.41*	*15.76*	*19.80*	*17.40*

Sources: The Oregon Climate Service, NOAA Climate Stations.

Table C-2 Average Snowfall Precipitation (inches)

Month	Baker				Grant					Union			Wallowa		
	Baker FAA AP	Halfway	Richland	Unity	Austin 3 S	Dayville 8 NW	John Day	Long Creek	Monument 2	Elgin	La Grande	Union Exp Stn	Enterprise	Enterprise 20 NNE	Wallowa
January	6.30	24.10	7.10	7.90	22.70	1.90	5.10	8.10	5.20	16.50	7.80	7.10	9.70	9.70	12.80
February	3.20	10.80	2.70	4.80	14.80	1.70	3.30	6.20	2.90	7.90	2.90	3.10	8.30	8.30	7.00
March	2.80	4.60	0.50	2.60	10.00	0.30	2.00	4.90	1.20	3.00	1.50	1.50	7.20	7.20	3.40
April	1.30	0.50	0.10	0.80	4.90	0.00	0.80	3.00	0.10	0.90	0.40	0.60	4.50	4.50	1.00
May	0.50	0.00	0.00	0.10	0.50	0.00	0.00	0.40	0.00	0.00	0.00	0.10	1.00	1.00	0.10
June	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
July	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
August	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
September	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.00
October	0.40	0.80	0.10	0.30	1.10	0.00	0.80	0.80	0.10	0.10	0.20	0.10	1.40	1.40	0.30
November	3.30	11.00	2.40	4.00	15.20	0.60	4.00	4.00	2.00	6.50	2.60	2.80	8.70	8.70	6.70
December	7.10	21.00	5.00	9.60	22.90	3.00	7.50	7.50	4.90	15.70	6.10	5.30	8.30	8.30	10.20
Annual	*25.00*	*72.40*	*16.80*	*32.50*	***87.60***	***6.60***	*37.90*	*37.90*	*17.60*	*51.80*	*23.10*	*20.20*	*48.80*	*48.80*	*41.00*

Sources: The Oregon Climate Service, NOAA Climate Stations.

Climate Change Variability

Temperatures in the Pacific Northwest region increased in the 20th Century by about 1.5 degrees Fahrenheit. Climate projection models indicate that temperatures could increasingly rise by an average of 0.2 degrees to 1.0 degrees Fahrenheit per decade. Average temperature change is projected to be 3.2 degrees Fahrenheit by 2040 and 5.3 degrees Fahrenheit by 2080. Temperature increases will occur throughout all seasons, with the greatest different in summer months.[13]

Increasing temperatures affects hydrology in the region. Spring snowpack has substantially decreased throughout the Western part of the United States, particularly in areas with milder winter temperatures, such as the Cascade Mountains. In other areas of the West, such as east of the Cascades Mountains, snowfall is affected less by the increasing temperature because the temperatures are already cold and more by precipitation patterns.[14]

Temperature

Temperatures in the Northeast Region are highly similar and are generally within a few degrees difference among them. All four counties belong to the same Oregon Climate Service designated climate zone and experience similar temperature variability for each month.[15] The region usually experiences freezing winters -- Seneca located in the Blue Mountains at 4,690 feet elevation (Grant County) holds the record for the coldest temperature in Oregon at -54°F;[16] and blistering summers which can approach as high as 119°F.[17]

13 Climate Impacts Group, "Climate Change," http://cses.washington.edu/cig/pnwc/cc.shtml#anchor6, accessed February 2013.

14 Mote, Philip W., et. al., "Variability and trends in Mountain Snowpack in Western North America," http://cses.washington.edu/db/pdf/moteetalvarandtrends436/pdf, accessed February 2013.

15 Oregon Climate Services "The Climate of Oregon Climate Zone 8 Northeast Area," 1983 http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/5911/SR%20no.%20920_OCR.pdf?sequence=1 Accessed May 2013

16 Oregon Climate Services "State Records," http://www.ocs.orst.edu/records, This record occurred February 9, 1933 Accessed May 2013

17 National Oceanic Atmospheric Administration National Climatic Data "Climate at a Glance;" http://www.ncdc.noaa.gov/cag/time-series/us this was the temperature for Pendleton in 1898; in 1934 it was the hottest year for the region in its history and other Northeast communities approached similar extreme temperatures

Table C-3 Mean Monthly and Annual Average Temperatures (deg F), 1971-2000

Month	Union	Baker	Grant	Wallowa
January	30.2	25.7	31.2	27.0
February	34.6	31.9	35.8	32.3
March	40.4	39.1	40.9	39.6
April	46.4	45.3	46.1	46.0
May	54.0	52.7	53.4	52.9
June	61.6	59.8	60.7	59.8
July	68.9	66.5	67.6	65.7
August	68.4	66.2	67.2	65.2
September	59.6	57.0	58.8	57.0
October	49.0	47.0	49.2	46.7
November	37.7	35.0	38.4	35.6
December	31.2	26.0	32.0	27.7
Annual	*48.5*	*46.0*	*48.4*	*46.3*

Sources: The Oregon Climate Service, NOAA Climate Stations

Synthesis

The physical geography, weather, and climate of an area represent various interrelated systems that affect overall risk and exposure to natural hazards. Climate change variability also has the potential to increase the effects of hazards in the area. These factors combined with periods of population growth and development intensification can lead to increasing risk of hazards, threatening loss of life, property and long-term economic disruption if land management is inadequate.

Regional Socio-Demographic Capacity

Socio-demographic Capacity characterizes the community population in terms of language, race and ethnicity, age, income, educational attainment, and health. These attributes can significantly influence the community's ability to cope, adapt to and recover from natural disasters. Additionally, the status of other socio-demographic Capacity indicators in the region such as graduation rate, quality of schools, median household income can have long term impacts on the economy and stability of the community ultimately affecting future resilience. Population vulnerabilities can be reduced or eliminated with proper outreach and community mitigation planning.

Population

Nearly half of the people in the Northeast Region reside in the cities of Baker City, John Day, La Grande, and Enterprise[18]with smaller population segments, generally less than 1,000, scattered throughout surrounding rural communities.[19]Most Oregon counties added residents from 2000 to 2010, but several Northeast Oregon counties lost population over the decade.[20]As shown in Table C-4, between 2000 and 2010, the Northeast Region's population was stagnant, experiencing a 0.2% decrease as a whole. Baker, Grant, and Wallowa counties all decreased in population over the ten year period, a combined population decrease of over 1,300 people. Union County increased by 5% and was the only county to experience growth; however, its rate of growth was less than half of the state as a whole. At the city level, La Grande grew the most (+755) and Mount Vernon decreased the most (-352) over 10 years.[21]

The Office of Economic Analysis projects by 2040 that the Northeast Region's population will increase less than one percent over a 30-year period.[22]

[18]Profile of General Population and Housing Characteristics: 2010," http://factfinder2.census.gov;47.21% or 26,594 of the 56,335 people; accessed January 2013.

[19]US Census Bureau, 2010 Census. P1 2010 Total Population Summary File 1.

[20] Ibid; Oregon increased by 409,675 people from 3,421,399 to 3,831,074 or an average of 11,380 per county.

[21] Ibid; Mount Vernon lost nearly 60% of its population

[22]Office of Economic Analysis, Department of Administrative Services. Long Term County Forecast. State and County Population Forecasts by Age and Sex, 2000-2040. April 2004. (and) U.S. Census Bureau, 2010 Census. P1 2010 Total Population Summary File 1

Table C-4 Population Growth 2000-2010

Jurisdiction	2000 Population	2010 Population	2000-2010 Population Change	Percent Change	Average Annual Growth Rate
Oregon	3,421,399	3,831,074	409,675	12.0%	1.1%
Baker County	16,741	16,134	-607	-3.6%	-0.4%
Grant County	7,935	7,445	-490	-6.2%	-0.6%
Union County	24,530	25,748	1,218	5.0%	0.5%
Wallowa County	7,226	7,008	-218	-3.0%	-0.3%
Regional Total	56,432	56,335	-97	-0.2%	0.0%

Source: U.S. Census Bureau, Census 2000 Summary File 1, "DP-1 Profile of General Demographic Characteristics" http://http://factfinder2.census.gov, accessed April 2013. U.S. Census Bureau, Census 2010 Summary File 1, "DP-1 Profile of General Population and Housing Characteristics" http://http://factfinder2.census.gov, accessed April 2013.

Urban and rural growth patterns can impact how agencies, cities and counties prepare for emergencies, because changes in development can increase risk associated with hazards. Table C-5 shows urbanization trends in the region. The Northeast Region is becoming marginally more urban, but to a lesser extent than the state of Oregon. Grant County is the only county in the region that has experienced a decline in its incorporated population from 2000 to 2010 with a more than 14% decline in its incorporated communities.[23]

Table C-5 Urban and Rural Populations 2000-2010

Jurisdiction	Percent Incorporated		Percent Change
	2000	2010	
Oregon	66.6%	69.8%	3.2%
Baker	69.2%	70.7%	1.5%
Grant	62.1%	57.9%	-4.2%
Union	66.3%	66.3%	0.0%
Wallowa	56.5%	57.7%	1.2%
Regional Average	65.3%	65.4%	0.1%

Source: *U.S. Census Bureau, Table DP-1 "Profile of General Demographic Characteristics: 2000;" ^ U.S. Census Bureau, Table DP-1 "Profile of General Population and Housing Characteristics: 2010," http://factfinder2.census.gov, accessed May 2013.

Population size itself is not an indicator of vulnerability. More important is the location, composition, and vulnerability of the population within the community. Research by social scientists demonstrates that human capital indices such as language, race, age, income, education and health can affect the integrity of a community. Therefore, these human capitals can impact community resilience to natural hazards.

[23] U.S. Census Bureau, Table DP-1 "Profile of General Demographic Characteristics: 2000;" ^ U.S. Census Bureau, Table DP-1 "Profile of General Population and Housing Characteristics: 2010," http://factfinder2.census.gov Grant County's incorporated population decreased from 4,929 to 4,310

Language

Special consideration should be given to populations who do not speak English as their primary language. Language barriers can be a challenge when disseminating hazard planning and mitigation resources to the general public, and it is less likely they will be prepared if special attention is not given to language and culturally appropriate outreach techniques.[24]

Table C-6 breaks down the percentage of people not proficient in English by primary language. Overall, 1.7% of the total population in the Northeast Region is not proficient in English and speaks another primary language at home. Union County has the largest population of non-proficient English speakers.

Table C-6 Language Proficiency

County	Number of People *not* Proficient in English	Percent of People *not* Proficient in English
Oregon	227,032	7.5%
Baker County	210	1.4%
Grant County	51	0.7%
Union County	611	2.5%
Wallowa County	48	0.7%
Regional Total	920	1.7%

Source: U.S. Census Bureau, 2007-2011 American Community Survey. DP02 "Selected Social Characteristics in the United States," Accessed May 2013.

Race

The impact in terms of loss and the ability to recover may also vary among minority population groups following a disaster. Studies have shown that racial and ethnic minorities maybe more vulnerable to natural disaster events. This is not reflective of individual characteristics; instead, historic patterns of inequality along racial or ethnic divides have often resulted in minority communities that are more likely to have inferior building stock, degraded infrastructure, or less access to public services. Table C-7 describes the Northeast Region's population by race and ethnicity.

The region is fairly racially homogenous, ranging from 93% white (Union County) to 96% (Wallowa County). Union County's share of Native Hawaiian and Other Pacific Islander population (1%) is higher than the state average (.3%). Ethnically it is even more homogenous with no more than four percent Hispanic or Latino ethnicity in any county.

[24]State of Oregon Natural Hazards Mitigation Plan, Region 7Northeast Oregon Regional Profile.

Table C-7 Race and Hispanic or Latino Origin

Race	Oregon	Baker County	Grant County	Union County	Wallowa County
Total Population	3,831,074	16,134	7,445	25,748	7,008
One Race	96.2%	97.6%	97.7%	97.7%	98.0%
White	83.6%	94.6%	95.0%	93.1%	96.0%
Black or African American	1.8%	0.4%	0.2%	0.5%	0.4%
American Indian and Alaska Native	1.4%	1.1%	1.2%	1.1%	0.6%
Asian	3.7%	0.5%	0.3%	0.8%	0.3%
Native Hawaiian and Other Pacific Islander	0.3%	0.1%	0.1%	0.9%	0.1%
Some Other Race	5.3%	1.0%	0.9%	1.3%	0.5%
Two or More Races	3.8%	2.4%	2.3%	0.0%	2.0%
Hispanic or Latino (of any race)	11.7%	3.3%	2.8%	3.9%	2.2%
Not Hispanic or Latino	88.3%	96.7%	97.2%	96.1%	97.8%

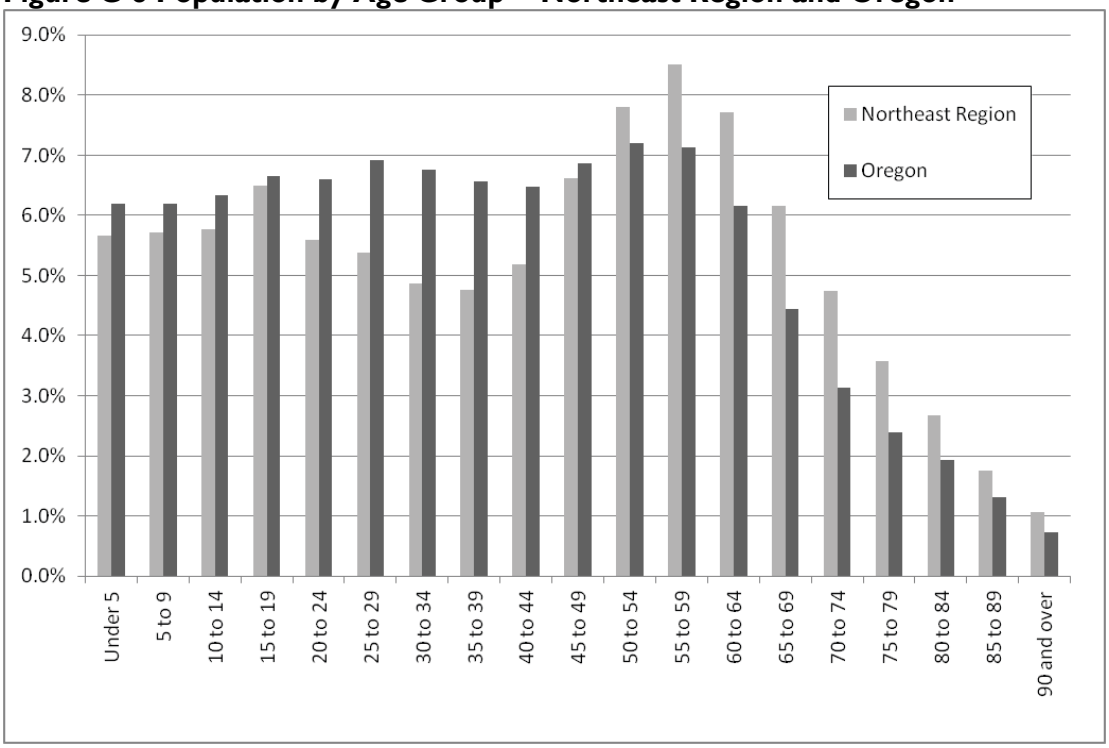
Source: US Census Bureau, 2007-2011 American Community Survey 5-Year Estimates, DP05 "ACS Demographic and Housing Estimates," accessed March 2013.

While the minority population in the Region is not large, it will be important to identify specific ways to support all portions of the community through hazard preparedness and response. Culturally appropriate, and effective, outreach can include both methods and messaging targeted to this diverse audience. For example, connecting to historically disenfranchised populations through already trusted sources or providing preparedness handouts and presentations in the languages spoken by the population will go a long way to increasing overall community resilience.

Age

Age may be the most significant indicator that influences socio demographic capacity in the Northeast Region. As depicted in the following table, population age characteristics of the region vary from Oregon as a whole. The region has a greater percent of its population in the age cohorts above age 50 than the state. The population of Northeast Oregon greater than 50 is 44%, which is larger than the state of Oregon's (34%) and the United States' (32%) for the same age groups. Conversely, the age cohorts from 20 to 44 account for a quarter of the region's population, while those cohorts represent over a third of the population of Oregon and the United States.

Figure C-8 Population by Age Group -- Northeast Region and Oregon



Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2012

The following table displays the population by age groups and the age dependency ratio. As of the 2010 Census, nearly 20% of the region's population is over the age of 64, a number that is projected to rise to 21.6% by 2040. The region has a higher percent of its population over the age of 64 compared to Oregon. The Northeast Region's age dependency ratio[25] is 58.9%, which is significantly higher than that of the State of Oregon (48.5%). The dependency ratio indicates a higher percentage of dependent aged people to that of working age; this trend is projected to continue with rates in 2040 of 65.4% in the Region and 61.0% in the State. The counties of Baker, Grant, and Wallowa have higher age dependency ratios than Union County.

[25]The dependency ratio is derived by dividing the combined under 15 and 65-and-over populations by the 15-to-64 population and multiplying by 100.

Table C-8 Population by Age Groups and Age Dependency Ratio (2010 and 2040)

2010		< 15 Years		> 64 Years		
Jurisdiction	Total	Number	Percent	Number	Percent	Age Dependency Ratio
Oregon	3,831,074	717,323	18.7%	533,533	13.9%	48.5%
Baker County	16,134	2,610	16.2%	3,542	22.0%	61.6%
Grant County	7,445	1,148	15.4%	1,760	23.6%	64.1%
Union County	25,748	4,789	18.6%	4,308	16.7%	54.6%
Wallowa County	7,008	1,109	15.8%	1,626	23.2%	64.0%
Regional Total	56,335	9,656	17.1%	11,236	19.9%	58.9%
2040						
Oregon	5,425,408	958,949	17.7%	1,097,519	20.2%	61.0%
Baker County	17,460	2,428	13.9%	4,652	26.6%	68.2%
Grant County	7,678	1,061	13.8%	1,996	26.0%	66.2%
Union County	31,793	6,747	21.2%	5,474	17.2%	62.4%
Wallowa County	8,783	1,581	18.0%	2,050	23.3%	70.5%
Regional Total	65,714	11,817	18.0%	14,172	21.6%	65.4%

Source: U.S. Census Bureau, Table QT-P1 "Age Groups and Sex: 2010,"http://factfinder2.census.gov, accessed April 2012; Office of Economic Analysis, Department of Administrative Services, Long Term County Forecast, "State and County Population Forecasts by Age and Sex, 2000-2040," accessed April 2013.

The age profile of an area has a direct impact both on what actions are prioritized for mitigation and how response to hazard incidents is carried out. School age children rarely make decisions about emergency management. Therefore, a larger youth population in an area will increase the importance of outreach to schools and parents regarding fire safety, earthquake response, and evacuation plans. Furthermore, children are more vulnerable to the heat and cold, have few transportation options and require assistance to access medical facilities.[26] Older populations may also have special needs prior to, during and after a natural disaster. Older populations may require assistance in evacuation due to limited mobility or health issues. Additionally, older populations may require special medical equipment or medications, and can lack the social and economic resources needed for post-disaster recovery.[27]

Other important considerations for high-risk populations are the number of people over the age of 64 living alone and single parent households with children under 18. There are 3,030householdswith individuals over 64 years of age living alone in the Northeast Region (approximately 12.6% of all households) and 1,822 single parent households (approximately 7.6% of all households), these populations may require additional support during a disaster and could inflict strain on post-disaster operations if improperly managed. Baker and Grant counties have the largest percent of households over 64 years of age living alone at 14.9% and 14.6% respectively. Union County has the largest percent of single parent households.

[26]State of Oregon Natural Hazards Mitigation Plan, Region 7Northeast Oregon Regional Profile.

[27]Wood, Nathan. Variations in City Exposure and Sensitivity to Tsunami Hazards in Oregon. U.S. Geological Survey, Reston, VA, 2007.

Table C-9 High Risk Households

Jurisdiction	Households	> 64 Living Alone	Single Male with Children < 18	Single Female with Children < 18
Oregon	1,518,938	9.7%	2.5%	6.1%
Baker County	7,040	14.9%	2.4%	5.0%
Grant County	3,352	14.6%	1.9%	4.8%
Union County	10,501	10.5%	2.1%	6.4%
Wallowa County	3,133	12.5%	1.7%	4.2%
Regional Total	24,026	12.6%	2.1%	5.5%

Source: US Census Bureau, 2007-2011 American Community Survey 5-Year Estimates, DP02 "Selected Social Characteristics in the United States," accessed May 2013.

Income

Household income and poverty status are indicators of socio demographic capacity and the stability of the local economy. Household income can be used to compare economic areas as a whole, but does not reflect how the income is divided among the area residents.[28]

The median household income across the region ranges from $34,367 (Grant County) to 40,989 (Baker County) these incomes are lower than the State of Oregon median income of $49,850. Table C-10 below compares the median income levels in 2000 to 2011. While every county's median income increased relative to the nominal 2000 median income (not adjusted for inflation), the real (inflation adjusted) income in the region decreased with the exception of Baker County. Grant County suffered the greatest decline in median income at approximately 19.2%.Baker County had the highest median income in 2011 at around $40,989, and the only increase between 2000 and 2011 (approximately 3.3%).

Table C-10 Median Household Income

Jurisdiction	2000 (Nominal $)	2000 (Real $)*	2011	Percent Change
Oregon	$40,916	$53,447	$49,850	-6.7%
Baker County	$30,367	$39,667	$40,989	3.3%
Grant County	$32,560	$42,532	$34,367	-19.2%
Union County	$33,738	$44,071	$40,974	-7.0%
Wallowa County	$32,129	$41,969	$39,556	-5.7%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table DP03 "Selected Economic Characteristics"; U.S. Census Bureau, Table DP3 "Profile of Selected Economic Characteristics: 2000,"http://censtats.census.gov/cgi-bin/pct/pctProfile.pl, Accessed March 2013.*Note: 2000 figures are adjusted for inflation based on the CPI Calculator provided by the Bureau of Labor Statistics, http://www.bls.gov/data/inflation_calculator.htm Accessed May 2013.

Table C-11 identifies the percentage of individuals, families, and families with children under 18 that are below the poverty level in 2011. Baker County has the highest overall poverty in

[28]State of Oregon Natural Hazards Mitigation Plan, Region 7 Northeast Oregon Regional Profile.

all four categories despite having the highest median income; this can be an indication of income disparity. Grant and Wallowa Counties have the lowest levels of poverty at 14% and 14% respectively.

Table C-11 Individuals and Families below Poverty Level

Jurisdiction	All People	People < 18	Families	Families with Children < 18
Oregon	14.0%	18.0%	10.0%	16.0%
Baker County	20.0%	27.0%	13.0%	23.0%
Grant County	14.0%	19.0%	11.0%	16.0%
Union County	16.0%	23.0%	11.0%	20.0%
Wallowa County	13.0%	17.0%	10.0%	15.0%

Source: Oregon Housing and Community Services, 2011 Report on Poverty, http://www.oregon.gov/ohcs/isd/ra/docs/2011_oregon_poverty_report.pdf

Income is a resiliency indicator, as higher incomes are often associated with increased self-reliance, and ability to prepare oneself if an emergency does occur. The higher the poverty rate, the increased assistance the community will likely need in the event of a disaster, in the form of sheltering, medical assistance and transportation. Notably, higher income populations often have less mobility following significant hazard events because their assets may be rooted in the local community. Conversely, lower income members of the population may find it easier to relocate.

Education

Educational attainment of community residents is also identified as an influencing factor in socio demographic capacity. Educational attainment often reflects higher income and therefore higher self-reliance. Widespread educational attainment is also beneficial for the regional economy and employment sectors as there are potential employees for professional, service and manual labor workforces. An oversaturation of either highly educated residents or low educational attainment can have negative effects on the resiliency of the community.

Table C-12 Educational Attainment

Jurisdiction	Oregon	Baker County	Grant County	Union County	Wallowa County	Regional Total
Total Population > 18 Years	2,937,534	12,826	5,913	19,826	5,712	44,277
No Highschool Degree	11.8%	13.5%	12.6%	10.6%	8.0%	11.4%
High School Graduate and beyond	88.2%	86.5%	87.4%	89.4%	92.0%	88.7%
College Graduate and beyond	34.0%	26.9%	25.7%	27.7%	29.6%	27.5%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B15001 "Sex by Age by Educational Attainment for the population 18 years and over, "http://factfinder2.census.gov, accessed March2013.

According to the U.S. Census, nearly 88.7% of the Northeast Region's population over 18 years of age has graduated from high school or received a high school equivalency, with approximately 27.5% receiving a college degree. Wallowa County has the highest high school graduation rate at 92%; Baker County has the lowest, at 86.5%. Wallowa County also has the highest percentage of people with a college degree at nearly 30%, though 4.4% below the state average. The Northeast Region shows proficiency in percentage of high school graduates though lags behind the State in college graduates.

Health

Individual and community health play an integral role in community resiliency, as indicators such as health insurance, people with disabilities, dependencies, homelessness and crime rate paint an overall picture of a community's well being. These factors translate to a community's ability to prepare, respond and cope with the impacts of a disaster.

The Resilience Capacity Index recognizes those who lack health insurance or are impaired with sensory, mental or physical disabilities, have higher vulnerability to hazards and will likely require additional community support and resources. Respective counties may be obligated to provide services to the dependent aged population if their families do not have insurance, or cannot afford to care for them following a natural disaster.

The following two tables identify health insurance coverage and disability status across the Northeast Region. Table C-13 indicates that 80% of the Northeast Region has health insurance, lower than that of the State and Nation.[29] Grant County has the lowest percentage of health insured population at approximately 78% of the population, though still within two percent of the regional average.

[29] Source: U.S. Census, Small Area Health Insurance Estimate http://www.census.gov/did/www/sahie/ Accessed May 2013; National average is 82.3% insured, 17.7% uninsured.

Table C-13: Health Insurance Coverage for Population Under 65

Jurisdiction	Population < 65	With Health Insurance	Without Health Insurance
Oregon	3,241,366	80.3%	19.7%
Baker County	12,275	79.8%	20.2%
Grant County	5,688	78.4%	21.6%
Union County	21,007	81.1%	18.9%
Wallowa County	5,384	77.7%	22.3%
Regional Total	44,354	80.0%	20.0%

Source: U.S. Census, Small Area Health Insurance Estimate 2010, http://www.census.gov/did/www/sahie/ Accessed May 2013

Table C-14 describes disability status of the population. As of 2000, over 20.9% of the region (10,968 people) identifies with one or more disabilities; this rate is above the State and National rates.

Table C-14: Disability Status

Jurisdiction	Population 5 years and over	With a Disability	Percent
Oregon	3,158,684	593,301	18.8%
Baker County	15,558	3,748	24.1%
Grant County	7,408	1,336	18.0%
Union County	22,790	4,557	20.0%
Wallowa County	6,840	1,327	19.4%
Regional Total	52,596	10,968	20.9%

Source: Source: U.S. Census Bureau, Census 2000 Summary File 3, QT-P21: "Disability Status by Sex", http://factfinder2.census.gov, accessed March 2013. Note: the U.S. Census Bureau uses a broader definition of the term “disability,” than what is currently used in the American Community Survey, this may result in an overestimation. To read more visit: http://www.census.gov/people/disability/

On a similar note, a community with high percentages of drug dependency and violent crimes may experience increased issues with the disruption of normal social systems. It is likely that the continuity of addiction and mental health services will be interrupted by a disaster and in combination with a high stress environment, an increase in crime incidents may result. Table C-15 and Table C-16 illustrate drug dependencies and crime rate in the Northeast Region.

Table C-15 Estimated Substance Abuse and Dependencies

Jurisdiction	Population 5 years and over	With a Disability	Percent
Oregon	3,158,684	593,301	18.8%
Baker County	15,558	3,748	24.1%
Grant County	7,408	1,336	18.0%
Union County	22,790	4,557	20.0%
Wallowa County	6,840	1,327	19.4%
Regional Total	52,596	10,968	20.9%

Source: Oregon Health Authority, Addictions Services "Oregon's Epidemiological Data on Alcohol, Drug, mental Health and Gambling 2000 to 2010." Data represents figures from 2006-2008. http://cms.oregon.gov/dhs/addiction/pages/ad/main.aspx. U.S. Census Bureau, 2010 Census Summary File 1, DP-1 "Profile of General Population and Housing Characteristics," accessed March 2013.

Table C-16 describes the crime rate status of the county. As of 2008, the region has a violent crime rate that is below the Oregon median value. Grant, Union, and Wallowa have a lower overall crime rate than the rest of the state; Baker has a higher value, 18% more than the state and more than 35% more than the regional value.

Table C-16 Crime Rate

Jurisdiction	Violent Crimes	Violent Crime Rate
National Benchmark	*NA*	*100*
Oregon	*NA*	275
Baker County	88	184
Grant County	30	144
Union County	101	136
Wallowa County	16	79

Source: County Health Rankings and Roadmaps, "Violent Crime Rates." Data represents figures from 2006-2008. http://www.countyhealthrankings.org/app/oregon/2011/measures/factors/43/data. Accessed March 2013.

Synthesis

For planning purposes, it is essential that the Northeast Region consider both immediate and long-term socio-demographic implications of hazard resilience. Immediate concerns regard the growing elderly population. These populations would serve to benefit from mitigation outreach, with special attention to and technology sensitive materials. The current status of other socio-demographic capacity indicators such as populations without health insurance, high poverty levels, and median household income can have long-term impacts on the economy and stability of the community ultimately affecting future resilience.

Regional Economic Capacity

Regional economic capacity refers to the financial resources present and revenue generated in the community to achieve a higher quality of life. Income inequality, housing affordability, economic diversification, employment and industry are measures of economic capacity. However, economic resilience to natural disasters is far more complex than merely restoring employment or income in the local community. Building a resilient economy requires an understanding of how the component parts of employment sectors, workforce, resources and infrastructure are interconnected in the existing economic picture. Once any inherent strengths or systematic vulnerabilities become apparent, both the public and private sectors can take action to increase the resilience of the local economy.

Regional Affordability

The evaluation of regional affordability supplements the identification of socio-demographic capacity indicators, e.g. median income, and is a critical analysis tool to understanding the economic status of a community. This information can capture the likelihood of individuals' ability to prepare for hazards, through retrofitting homes or purchasing insurance. Likewise, the ability of homeowners, or renters, to implement mitigation actions may vary significantly with high-income inequality or housing cost burdens. Therefore, regional affordability is a mechanism for generalizing the abilities of community residents to get back on their feet without Federal, State or local assistance.

Income Inequality

Income inequality is a measure of the distribution of economic resources, as measured by income, across a population. It is a statistic defining the degree to which all persons have a similar income. Table C-17 illustrates the regional level of income inequality. The Gini index is a measure of income inequality. The index varies from zero to one. A value of one indicates perfect inequality (only one household has any income). A value of zero indicates perfect equality (all households have the same income).[30]

The Northeast Region's income distribution is similar to the State as a whole. Grant County has the lowest Gini coefficient (.403) and therefore the highest inequality, though it is still very near the state average.

[30]University of California Berkeley. Building Resilient Regions, Resilience Capacity Index. http://brr.berkeley.edu/rci/.

Table C-17 Regional Income Inequality

Jurisdiction	Income Inequality Coefficient
Oregon	0.449
Baker County	0.448
Grant County	0.403
Union County	0.453
Wallowa County	0.428

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B19083 "Gini Index of Income Inequality," http://factfinder2.census.gov, accessed April 2013.

Housing Affordability

Housing affordability is a measure of economic security gauged by the percentage of a metropolitan area's households paying less than 35% of their income on housing.[31] Households spending more than 35% are considered housing cost burdened. Table C-18 displays the percentage of homeowners and renters reflecting housing cost burden across the region.

Compared to the State, the Northeast Region has lower percentages of homeowners and renters paying more than 35% of their income on housing. Among homeowners, with or without a mortgage, Wallowa County has the greatest rate of households with housing cost burdens. Amongst renters, Union County has the highest rates of housing cost burden. In general, the population that spends more of their income on housing has proportionally fewer resources and less flexibility for alternative investments in times of crisis.[32]

Table C-18 Households Spending > 35% of Income on Housing

Jurisdiction	Owners		Renters
	With Mortgage	Without Mortgage	
Oregon	31.3%	11.8%	44.4%
Baker County	25.2%	11.3%	39.2%
Grant County	29.1%	8.6%	23.8%
Union County	22.8%	11.7%	41.3%
Wallowa County	31.0%	14.8%	36.2%
Regional Total	25.4%	11.5%	37.9%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B25070 "Gross Rent as a Percentage of Household Income in the Past 12 Months" and Table B25091 "Mortgage Status by Selected Monthly Owner Costs as a Percentage of Household Income in the Past 12 Months," accessed April 2013.

[31]University of California Berkeley. Building Resilient Regions, Resilience Capacity Index. http://brr.berkeley.edu/rci/.

[32]Ibid.

This disparity imposes challenges for a community recovering from a disaster as housing costs may exceed the ability of local residents to repair or move to a new location. These populations may live paycheck to paycheck and are extremely dependent on their employer, in the event their employer is also impacted it will further the detriment experienced by these individuals and families.

Economic Diversity

Economic diversity is a general indicator of an area's fitness for weathering difficult financial times. Business activity in the Northeast Oregon region is fairly homogeneous and consists mostly of small businesses. The Northeast Region Profile within the State Natural Hazards Mitigation Plan summarizes the current state of the area's economic environment:

> *"Although the Northeast Region has a high percentage of small businesses, as a whole, the Northeast Region has a more homogeneous economy than other Oregon regions. Many of the small businesses fall into the same categories of industry sectors. This low economic diversity means that certain industries are dominating the economic structure of the community, and are therefore extremely important to the Northeast Region.*
>
> *An economy that is heavily dependent upon a few key industries may have a more difficult time recovering after a natural disaster than one with a more diverse economic base. While a community with a diverse economic base may suffer from an industry sector being damaged during a natural disaster, they have a broader base of operating industry sectors to continue to rely upon. However, a community that relies upon specific key industry sectors may have a harder time recovering their economic base if one of those key industry sectors is damaged. Recognizing that economic diversification is a long-term issue, more immediate strategies to reduce vulnerability should focus on risk management for the dominant industries."*[33]

Economic diversity is a general indicator of an area's fitness for weathering difficult financial times. One method for measuring economic diversity is through use of the Hachman Index, a formula that compares the composition of county and regional economies with those of states or the nation as a whole. According to the Hachman Index, the county with the most diverse economic activity compared to the state as a whole receives a ranking of 1, while the county with the least diverse economic activity compared to the state as a whole receives a ranking of 36. Table C-19 shows the Hachman Index Scores for the counties in the region. Grant and Wallowa counties are ranked lower (have less economic diversity) on the Hachman Index while Baker and Union are ranked higher (have more economic diversity).

[33] 2012 State of Oregon, Natural Hazards Mitigation Plan, Prepared by: Oregon Partnership for Disaster Resilience

Table C-19 County Economic Diversity Scores

County	Hachman Index Score - 2009	State Rank
Baker County	0.482	13
Grant County	0.093	33
Union County	0.502	10
Wallowa County	0.169	28

Source: Oregon Employment Department, "Local Area Employment Statistics. "http://www.qualityinfo.org/olmisj/labforce. Accessed August 2012.

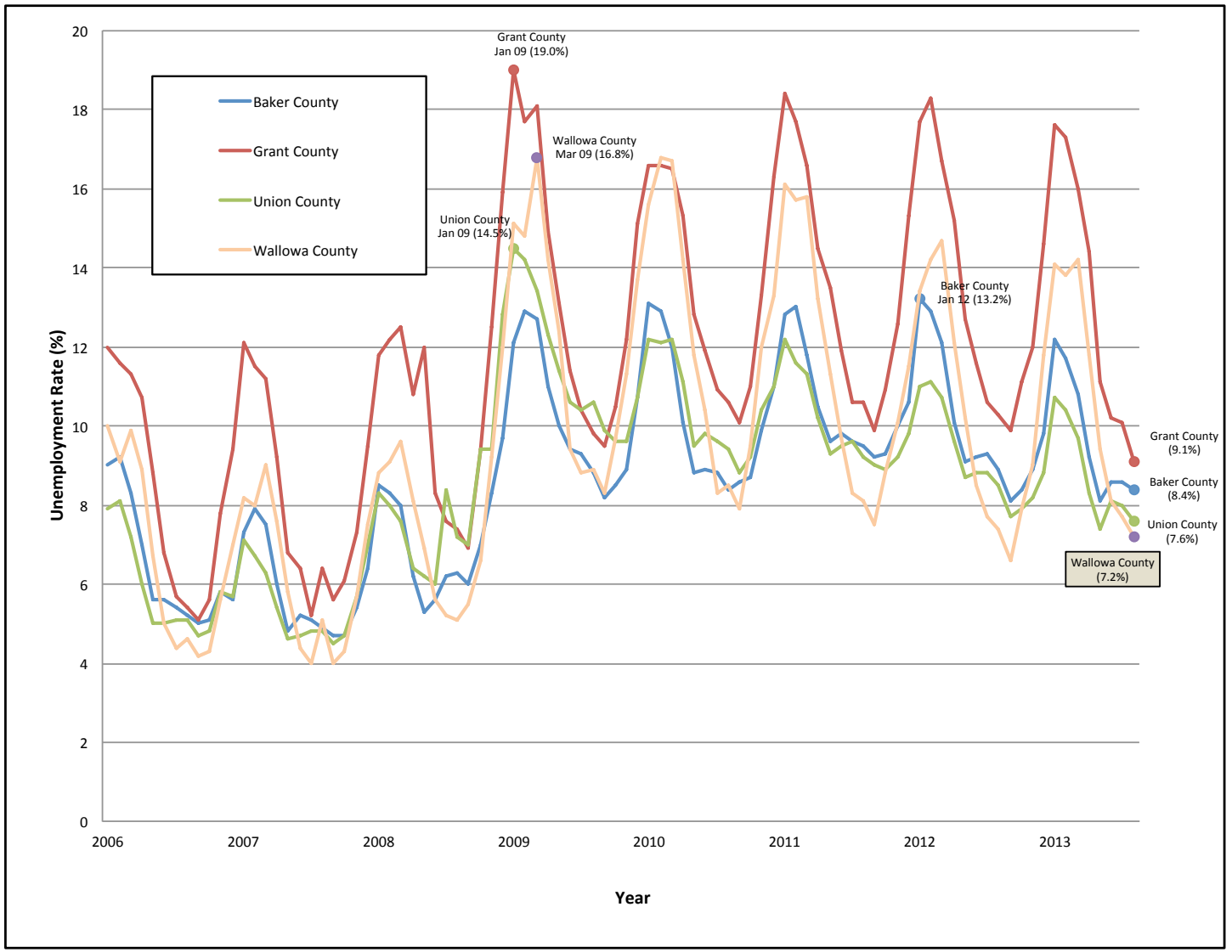
Employment and Wages

Figure C-5 displays the unemployment rate per county from 2006-2013. The figure shows that unemployment increased throughout the region between 2008 and 2009. However, the figure also shows that unemployment has declined in recent years. Although unemployment figures have decreased, the number of people employed has remained constant, indicating that the decrease in unemployment may be a result of people leaving the workforce or area.[34]

The rate of unemployment in the Northeast Region of Oregon remains higher than the State's unemployment rate and Grant County has the highest unemployment rates within the region. Additionally, the data demonstrate a cyclical employment pattern in the Northeast Oregon region, with a seasonal peak in the summer and trough in the winter. These peaks typically respond to the slowing of the primary tourist season, as well as most agricultural operations. Wallowa and more specifically Grant County exhibit these peaks and troughs most dramatically, sometimes doubling their unemployment rate between summer and winter. Union County on the other hand is more stable seasonally. Grant County may be most vulnerable should their seasonal employment (i.e. agriculture and tourism) suffer from a natural hazard event.

[34] Oregon Employment Department, "Local Area Employment Statistics." http://www.qualityinfo.org/olmisj/labforce. Accessed May 2013. Northeast Oregon aggregately added 42 jobs between 2011-2012; this means the unemployment statistic is not a completely accurate indicator of a healthy economy

Figure C-5 Unemployment 2006-2013



Source: Oregon Employment Department, "Local Area Employment Statistics." http://www.qualityinfo.org/olmisj/labforce. Accessed September2013.

Table C-21 displays the payroll and employee figures for the Northeast Region. As of 2012, there were 19,110 individuals employed in the region, with an average wage of $32,194. Wallowa County increased employment during this time period, the other three counties all lost employment.

Table C-21 Regional Employment and Average Pay

Jurisdiction	2012 Firms	2012 Employees	2012 Average Pay	Percent Change in Employment 2007-2012
Oregon	132,849	1,641,494	$44,273	-5.3%
Baker County	641	5,046	$31,242	-8.0%
Grant County	328	2,307	$33,597	-11.3%
Union County	898	9,410	$32,976	-6.8%
Wallowa County	417	2,347	$29,728	5.4%
Regional Total	2,284	19,110	$32,194	-7.7%

Source: Oregon Employment Department, "2012 Covered Employment and Wages Summary Report;" "2007 Covered Employment and Wages Summary Report" http://www.qualityinfo.org/olmisj/CEW. Accessed May 2013.

Between 2005 and 2014, the largest job growth in the Northeast Region is expected to occur in Educational and Health Services (which includes health care and social assistance), Professional and Business Services, and Leisure and Hospitality sector.[35]

In 2011, there were 1,868 employment establishments in the region of which about 93% had fewer than 20 employees, over 5 percentage points higher than the state average.[36]The county with the highest percentage of smaller businesses was Wallowa County at nearly 98% of its businesses.[37] The prevalence of small businesses in the Northeast Region is an indication of sensitivity to natural hazards because small businesses are more susceptible to financial uncertainty. If a business is financially unstable before a natural disaster occurs, financial losses (resulting from both damage caused and the recovery process) may have a bigger impact than they would for larger and more financially stable businesses.[38]

Industry

Major Regional Industries

Key industries are those that represent major employers and are significant revenue generators. Different industries face distinct vulnerabilities to natural hazards, as illustrated

[35] Oregon Employment Department, Workforce Analysis, 2005

[36]U.S. Census Bureau, 2011 County Business Patterns (NAICS). http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl, accessed March 2013. Out of the 1868 establishments, 1185 had 1-4 employees, 364 had 5-9, and 194 had 10-19

[37] Ibid; 338 out of 346 establishments had fewer than 20 employees

[38]State of Oregon Natural Hazards Mitigation Plan, Region 7Northeast Oregon Regional Profile.

by the industry specific discussions below. Identifying key industries in the region enables communities to target mitigation activities towards those industries' specific sensitivities. It is important to recognize that the impact that a natural hazard event has on one industry can reverberate throughout the regional economy.[39]

Employment by (Non-Farm) Industry

Economic resilience to natural disasters is particularly important for the major employment industries in the region. If these industries are negatively impacted by a natural hazard, such that employment is affected, the impact will be felt throughout the regional economy.[40] Thus, understanding and addressing the sensitivities of these industries is a strategic way to increase the resiliency of the entire regional economy.[41]

Table C-22 identifies employment by private (non-farm) industry. Identifying sectors that are represented by a large number of businesses can guide the development of targeted mitigation strategies for those sectors. Over 50% of all businesses in the Northeast Region fall into five industry sectors. 15% (2,514) are engaged in Retail, 14% (2,604) are engaged in Education and Health Services, 4% (790) are engaged in construction, 10% (1,865) are engaged in manufacturing, and 9% (1,807) are engaged in leisure and hospitality.[42] The table shows the high percentage of government employees in Grant County (42%) compared to the relatively lower percentage in Baker County (22.4%), which has nearly half the percentage of employment. Union County has the highest percentage of Education & Health Services employment (15.7%) in the region attributable to Eastern Oregon University and the regional Grande Ronde Hospital.

[39] Ibid.

[40] Ibid.

[41] Ibid.

[42] Oregon Employment Department, "2010 Covered Employment and Wages Summary Report," (multiple counties), http://www.qualityinfo.org/olmisj/CEP, January 2, 2012.

Table C-22 Total Employment by Industry (2012)

Jurisdiction	Baker	Grant	Union	Wallowa	Region
Total	*5,046*	*2,307*	*9,410*	*2,347*	*19,110*
Total Private	77.6%	58.0%	76.7%	71.7%	74.1%
Natural Resources and Mining	3.3%	8.7%	4.4%	6.7%	4.9%
Construction	3.8%	2.6%	4.4%	5.2%	4.1%
Manufacturing	9.6%	5.6%	11.8%	6.1%	9.8%
Trade, Transportation & Utilities	20.0%	13.5%	19.2%	16.6%	18.4%
Wholesale	1.6%	1.3%	2.6%	0.0%	1.8%
Retail	13.8%	10.1%	14.3%	10.1%	13.2%
Information	1.5%	1.7%	1.3%	0.7%	1.3%
Finance Activities	3.0%	2.9%	2.9%	7.9%	3.6%
Professional & Business Services	6.0%	6.2%	4.7%	4.0%	5.2%
Education & Health Services	14.5%	6.5%	15.7%	10.6%	13.6%
Leisure & Hospitality	11.3%	7.5%	8.9%	9.5%	9.5%
Other Services	4.6%	2.6%	3.5%	4.1%	3.8%
Government	22.4%	42.0%	23.3%	28.3%	25.9%
Federal	4.4%	10.7%	2.5%	4.0%	4.2%
State	5.0%	6.1%	10.4%	4.3%	7.7%
Local	12.9%	25.2%	10.4%	19.9%	14.0%

Source: Oregon Employment Department "2001 and 2011 Covered Employment and Wages Summary Reports." http://www.qualityinfo.org/olmisj/labforce. Accessed April 2013.

High (Non-Farm) Revenue Sectors

The Northeast Region's top revenue generating industries are a mix of basic and non-basic sectors. In 2007, the three sectors in the Northeast Region with the highest revenue were Retail Trade, Manufacturing, and Health Care and Social Assistance.[43] Table C-23 breaks down the percent of revenue in top sectors of the region.

[43] Among sectors with available data

Table C-23 Percent of Revenue in Top Sectors in Northeast Region

Industry	Baker	Grant	Union	Wallowa
Retail Trade	43%	88%	39%	61%
Wholesale Trade	5%	n/a	n/a	n/a
Accommodations and Food Services	7%	8%	4%	5%
Health Care/Social Assistance	n/a	n/a	11%	18%
Professional, Scientific, and Technology	n/a	n/a	2%	5%
Other (except Public Admin)	3%	4%	2%	6%
Real Estate and Rental Leasing	2%	n/a	1%	61%
Arts/Entertainment	n/a	n/a	< 1%	n/a
Administrative/ Waste Services	1%	n/a	2%	n/a
Manufacturing	38%	n/a	39%	n/a

Source: U.S. Census Bureau, 2007 Economic Census, Table EC0700A1 "All sectors: Geographic Area Series: Economy-Wide Key Statistics: 2007,"http://factfinder2.census.gov/, accessed March 2013.

The retail trade sector in the Northeast Region is primarily composed of small businesses (93%)[44] that tend to be more sensitive to hazard induced costs due to prior financial instability. Retail trade is also largely dependent on wholesale trade and the transportation network for the delivery of goods for sale. Disruption of the transportation system could have severe consequences for retail businesses. Retail trade typically relies on local residents and tourists and their discretionary spending ability. Residents' discretionary spending diminishes after a natural disaster when they must pay to repair their homes and properties. In this situation, residents will likely concentrate their spending on essential items that would benefit some types of retail (e.g. grocery) but hurt others (e.g. gift shops).The potential income from tourists also diminishes after a natural disaster as people are deterred from visiting the impacted area. In summary, depending on the type and scale, a disaster could affect specific segments of retail trade, or all segments.[45]

The manufacturing sector is highly dependent upon the transportation network in order to access supplies and send finished products to outside markets. Manufactures in this region are sensitive to hazard induced disruptions to the Union Pacific railroad or I-84. As base industries they are not, however, dependent on local markets for sales, which contribute to the economic resilience of this sector. The health care and social assistance sector ranges from physicians and chiropractors to family planning and kidney dialysis centers to emergency food and housing organizations and child day care services. This sector is growing in the Northeast, partly as a result of the large retirement age population. The

[44]U.S. Census Bureau, 2011 County Business Patterns (NAICS). http://censtats.census.gov/cgi-bin/cbpnaic/cbpsect.pl, accessed March 2013. Out of the 1868 establishments, 1185 had 1-4 employees, 364 had 5-9, and 194 had 10-19

[45]State of Oregon Natural Hazards Mitigation Plan, Region 7Northeast Oregon Regional Profile

demand for health care and social assistance following a severe natural disaster may increase in the short term as extra health care and housing services may be necessary. Services that are privately subsidized and sensitive to interruptions of funding may suffer following a disaster. However, the long-term economic viability of this sector should not be adversely affected by a natural disaster. The ability of their facilities' to withstand the physical impacts of a disaster and the personnel's ability to cope with a potential influx of people requiring attention after a disaster may be concerns for this sector.[46]

Agriculture

Agriculture is a vital part of the Northeast Oregon Region. Table C-21 shows the agricultural trends from 2007-2012. While other parts of the economy shrank, agriculture has remained the same or increased in three of the four counties. An important disclaimer regarding agricultural employment estimates:

> *"The Oregon Employment Department's (OED's) estimates of agricultural employment are nowhere near as precise as our nonfarm job tallies. Nonfarm employment statistics are ultimately based on a near-exact count of workers from employers' unemployment insurance (UI) tax records. Those same UI tax records represent just a fraction of Oregon's agriculture industry, since only this state's larger farms and ranches are subject to UI law. Therefore, much more guesswork goes into compiling OED's farm employment estimates, particularly when attempting to capture job counts for smaller operators."*[47]

Table C-24 Total Agricultural Employment (Workforce; 2007-2012)

	2007	2008	2009	2010	2011	2012
Baker	600	560	560	560	570	580
Grant	310	290	290	290	320	330
Union	630	620	600	620	640	680
Wallowa	360	350	350	360	360	360
Regional Total	1900	1820	1800	1830	1890	1950

Source: Oregon Employment Department, "2007-2012 Agricultural Employment"
http://www.qualityinfo.org/olmisj/PubReader?itemid=00003093 Accessed May 2013

Tourism Industry

Travel spending and related economic impacts occur within Oregon's urban areas; however, the rural impacts are arguably more impressive. Dean Runyan Associates study on travel impacts claims that: "in general, more rural counties have a bigger share of travel-generated employment."[48]

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[46] Ibid

[47] Source: Oregon Employment Department, "2007-2012 Agricultural Employment"
http://www.qualityinfo.org/olmisj/PubReader?itemid=00003093 Accessed May 2013

[48] Dean Runyan Associates "Oregon Travel Impacts 1991-2012p"
http://www.deanrunyan.com/doc_library/ORImp.pdf Accessed May 2013

According to the Northeast Oregon Economic Development District's Comprehensive Economic Development Strategy (2013) tourism continue to be one of the primary diversifications of the region's economy.[49]One of the insights confirmed in the Steering Committees' Risk Assessment Meetings is the increase in bicycle tourism which generates 15 million dollars a year for Eastern Oregon.[50]

Future Employment in Industry

Sectors that are anticipated to be major employers in the future also warrant special attention in the hazard mitigation planning process. Between 2010 and 2020, the largest employment growth is anticipated within construction (+21%), professional and business services (+19%), manufacturing (+18%), and educational and health services (+17%).[51]Considering that some projected industries (shown in Tables C-22 and C-23) are among those that generate high revenue and/or income (e.g. manufacturing), the concerns mentioned above should be incorporated into future hazard mitigation planning. Currently the only mitigation action that addresses increasing resilience for businesses to natural hazards is MH #3, more information on this action item can be found in Appendix A.

Synthesis

The current and anticipated financial conditions of a community are strong determinants of community resilience, as a strong and diverse economic base increases the ability of individuals, families and the community to absorb disaster impacts for a quick recovery. Considering the high regional unemployment, high housing cost burden, and an economy heavily dependent on a single or few key industries, the Northeast Region may experience a more difficult time in recovering after a disaster than one with a more diverse economic base.[52] It is important to consider what might happen to the regional economy if the largest revenue generators and employers are impacted by a disaster. It is imperative that the region recognizes that economic diversification is a long-term issue; more immediate strategies to reduce vulnerability should focus on risk management for the dominant industries.[53]

[49] Northeast Oregon Economic Development District Comprehensive Economic Development Strategy 2013-2018; "Comprehensive Economic Development Strategy"

[50] Ibid

[51]Oregon Employment Department, "Employment Projections by Industry and Occupations: 2010-2020 Oregon and Regional Summary,"http://qualityinfo.org/pubs/projections/projections.pdf, excludes *Grant County accessed June 2013.

[52]State of Oregon Natural Hazards Mitigation Plan, Region 7 Northeast Oregon

[53]Ibid.

Regional Built Capacity

Built capacity refers to the built environment and infrastructure that supports the community. The various forms, quantity, and quality of built capital mentioned above contribute significantly to community resilience. Physical infrastructures, including utility and transportation lifelines, are critical during a disaster and are essential for proper functioning and response. The lack or poor condition of infrastructure can negatively affect a community's ability to cope, respond and recover from a natural disaster. Following a disaster, communities may experience isolation from surrounding cities and counties due to infrastructure failure. These conditions force communities to rely on local and immediately available resources.

Housing Building Stock

In addition to location, the characteristics of the housing stock affect the level of risk posed by natural hazards. Table C-25 identifies the types of housing most common throughout the county. Of particular interest are mobile homes and other non-permanent housing structures, which account for about 16% of the housing in the Northeast Region, nearly double the state average (8.4%). Mobile structures are particularly vulnerable to certain natural hazards, such as windstorms, and special attention should be given to securing the structures, because they are more prone to wind damage than wood-frame construction.[54]More than a quarter of the homes in Grant County are mobile homes, almost triple the state average.

Table C-25 Regional Housing Profile

Jurisdiction	Total Housing Units	Single-Family	Multi-Family	Mobile Home	Boat, RV, Van, etc.
Oregon	1,666,014	63.8%	27.5%	8.4%	Less than 1%
Baker County	8,812	73.0%	12.7%	14.3%	Less than 1%
Grant County	4,335	66.7%	8.0%	24.8%	Less than 1%
Union County	11,438	65.6%	20.1%	14.2%	Less than 1%
Wallowa County	4,100	75.0%	9.7%	15.3%	Less than 1%
Regional Total	28,685	69.4%	14.5%	16.0%	Less than 1%

Source: U.S. Census Bureau, Census 2007-2011 American Community Survey 5-Year Estimates, DP04 "Selected Housing Characteristics," http://factfinder2.census.gov, accessed May 2013.

Age of housing is another characteristic that influences a structure's vulnerability to hazards. Generally, the older the home is, the greater the risk of damage. Structures built after the late 1960's in the Northwest utilized earthquake resistant designs and construction. Communities began implementing flood elevation ordinances in the 1970's, with the first FEMA flood insurance study completing in June 1978,[55] and in 1990 Oregon again upgraded seismic standards to include earthquake loading in the building design.[56]

[54]Oregon State Natural Hazards Mitigation Plan

[55]FEMA, Flood Insurance Study: Jackson County, Oregon and incorporated Areas, May 2011.

[56]Wang Yumei and Bill Burns. "Case History on the Oregon GO Bond Task Force: Promoting Earthquake Safety in Public Schools and Emergency Facilities." National Earthquake Conference. January 2006.

Table C-26 Age of Housing Units

Date Constructed	Total Housing Units	Pre-1980	1980-1989	1990 and later
Oregon	1,666,014	56.9%	11.0%	32.1%
Baker County	8,812	71.8%	9.1%	19.0%
Grant County	4,335	73.5%	12.2%	14.4%
Union County	11,438	72.6%	11.0%	16.4%
Wallowa County	4,100	67.4%	10.0%	22.6%
Regional Total	28,685	71.8%	10.5%	17.8%

Source: U.S. Census Bureau, 2007-2011 American Community Survey, Table B25034 "Year Structure Built," http://factfinder2.census.gov/, accessed March 2013.

Knowing the age of the structure is helpful in targeting outreach regarding retrofitting and insurance for owners of older structures.[57] Based on U.S. Census data, almost 72% of the Regional housing was built prior to 1980 and the implementation of local flood elevation requirements. There is a need to identify if these homes are located in a floodplain, and target outreach to the property owners to encourage appropriate flood mitigation. Roughly 18% of the housing units in the Northeast Region were built after 1990 when more stringent building codes were put in place; the remaining 82% of housing stock may have questionable seismic stability. Grant County has the greatest percent of housing built prior to 1980 at 73.5% of its housing stock. In addition to single-family households, it is also important to consider the structural integrity of multi-unit residences, as these structures will have an amplified impact on the population.

Critical, Dependent and Essential Facilities

Critical facilities are those facilities that are essential to government response and recovery activities (e.g., hospitals, police, fire and rescue stations, school districts and higher education institutions). The interruption or destruction of any of these facilities would have a debilitating effect on incident management.

Critical facilities in the Northeast Region are identified in Table C-27. Lifelines and other physical infrastructure, such as transmission lines, power generation facilities, levees and dams are critical, but they are documented in the utility lifelines subsection for the purposes of this profile. This information provides the basis for informed decisions about the infrastructure and facilities already in place that can be used to reduce regional vulnerability to natural hazards.

[57]State of Oregon Natural Hazards Mitigation Plan, Region 7Northeast Oregon Regional Profile.

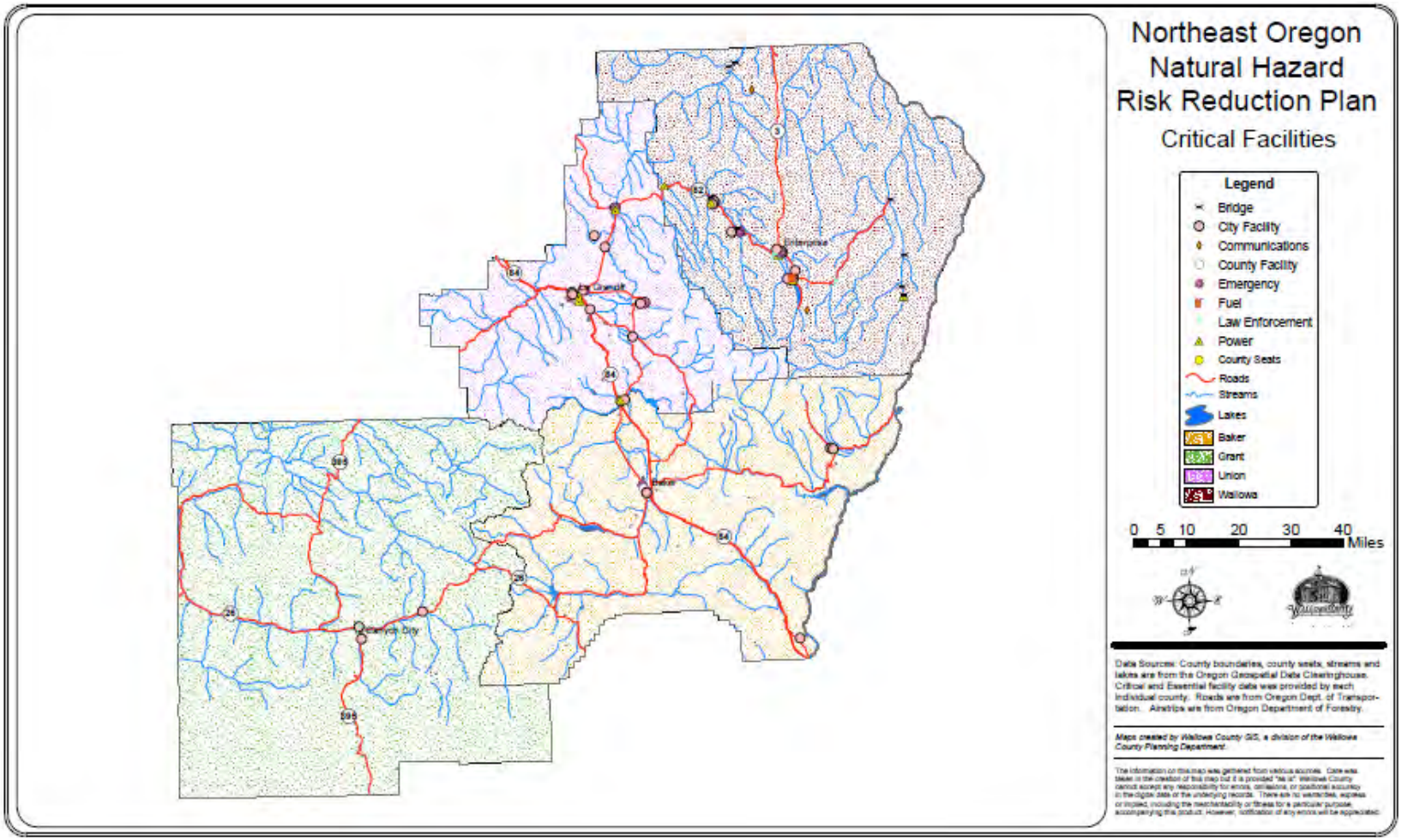
Table C-27 Regional Critical Facilities

County	Hospitals		Police Stations	Fire and Rescue	Schools
	# Hospitals	# Beds			
Baker	1	25	2	11	8 School Districts
Grant	1	16	3	8	6 School Districts
Union	1	25	4	8	8 School Districts, 1 University
Wallowa	1	25	4	3	6 School Districts

Source: Oregon Department of Human Services, "Oregon Hospitals: 2008-09-

Figure C-6 shows the map of critical facilities in the region. This includes city facilities, communication, county facilities, emergency facilities, fuel, law enforcement, locations of power, and critical roads.

Figure C-6 Critical Facilities in Northeast Oregon



Source: Wallowa County GIS, County Planning Department

Dependent Facilities

In addition to the critical facilities mentioned above in Table C-27, there are other facilities that are vital to the continued delivery of health services and may significantly impact the public's ability to recover from emergencies. Assisted living centers, nursing homes, residential mental health facilities, and psychiatric hospitals are important to identify within the community because of the dependent nature of the residents; and also these facilities can serve as secondary medical facilities as they are equipped with nurses, medical supplies and beds.

Correctional Facilities

Correctional facilities are incorporated into physical infrastructure as they play an important role in everyday society by maintaining a safe separation from the public. There is one correctional facility located in Baker County. The Powder River Correctional Facility in Baker City has an inmate capacity of 286.[58]

There are also three county jails in the region including the Baker County Jail in Baker City, the Grant County Jail in Canyon City, and the Union County Jail in La Grande.

Physical Infrastructure

Physical infrastructure such as dams, levees, roads, bridges, railways and airports support Malheur County communities and economies. Due to the fundamental role that physical infrastructure plays both in pre and post-disaster, they deserve special attention in the context of creating resilient communities.

Dams

Dam failures can occur rapidly and with little warning.[59] Fortunately most failures result in minor damage and pose little to no risk to life or safety.[60] However, the potential for severe damage still exists. The Oregon Water and Resources Department has inventoried all dams located in Oregon. There are five high hazard dams in Baker County including the Oxbow Hydro Dam, last inspected in October 2008; Brownlee Dam, last inspected in October 2008; Mason Dam, last inspected in March 2009; Thief Valley Reservoir, last inspected in August 2006; and Unity Reservoir, last inspected in March 2009. There is one high hazard dam in Grant County, the Canyon Creek Meadows Dam, last inspected in April 2009. There are three high hazard dams in Union County, including the Wolf Creek Reservoir, last inspected in July 2012; the Morgan Lake Dam, last inspected in June 2012; and the Pilcher Creek Reservoir, last inspected in July 2012. There are two high hazard dams in Wallowa County, including the Hells Canyon Dam, last inspected in October, 2008; and the Wallowa Lake Dam, last inspected in October 2012.

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[58] Department of Corrections, "Powder River Correctional Facility" http://www.oregon.gov/DOC/GECO/docs/pdf/ib_63_prcifacts.pdf Accessed June 2013

[59] Federal Emergency Management Agency. Dam Failure. www.fema.gov/hazard/damfailure/index.shtm. Accessed November 18, 2011.

[60] Ibid.

Table C-28 Regional County Dam Inventory

Jurisdiction	Dam Threat Level		
	Low	Significant	High
Baker County	57	8	5
Grant County	27	0	1
Union County	26	2	3
Wallowa County	7	0	2

Source: Oregon water Resources Department, "Dam Inventory Query," http://apps.wrd.state.or.us/apps/misc/dam_inventory/, accessed March 2013.

Utility Lifelines

Utility lifelines are the resources that the public relies on daily, (i.e., electricity, fuel and community lines). If these lines fail or are disrupted, the essential functions of the community can be severely impaired. Utility lifelines are closely related to physical infrastructure (i.e. dams, and power plants) as they transmit power generated from these facilities. Electricity lines in the Northeast Region are often vulnerable to severe weather patterns, such as winter and windstorms.

The Northeast Region is an important throughway for oil and gas pipelines and electricity transmission lines, connecting Oregon to Idaho and Washington. The infrastructure associated with power generation and transmission plays a critical role in supporting the regional economy. The primary electric companies in the region include two investor owned companies (Idaho Power – parts of Baker County and Pacific Power – most of Wallowa County), and three cooperatively owned companies: Oregon Trail Electric Cooperative (OTEC; parts of Baker, Grant and Union County including the cities of Baker City, John Day and La Grande), Central Electric Cooperative (parts of Grant County) and Columbia Power Cooperative (parts of Grant County).

Rail Ways

Railroads are major providers of regional and national cargo and trade flows. Railroads that run through the Northeast Region provide vital transportation links from the Pacific to the rest of the country. The Union Pacific Railroad (UP) is the major railroad in the region.

Union Pacific owns the tracks that run northwest-southwest along the Columbia River, west of the Northeast Region, running southwest through the region to Idaho. Several smaller tracks connect to the UP line in the Northeast Region: the Blue Mountain Railroad, Idaho Northern and Pacific, and Sumpter Valley Railroad lines.[61]

Sixteen million tons of goods produced in Oregon are shipped out of state by railroad per year. The goods include lumber and wood products, pulp and paper, and miscellaneous mixed shipments.[62] Over 23 million tons of products originating in other states are annually

[61] Union Pacific Railroad website. http://www.uprr.com

[62] Oregon Rail Plan: An Element of the Oregon Transportation Plan. 2001. http://www.oregon.gov/ODOT/RAIL/docs/railplan01.pdf

shipped into Oregon by rail including wood, farm products, coal, and waste materials.[63] More than 22 million tons of products are shipped through Oregon annually by rail. More than 6 million tons of these products include grains and soybeans transported from the Northern Midwest to Washington.[64]

Rails are sensitive to icing from winter storms that can occur in the Region. For industries in the region that utilize rail transport, these disruptions in service can result in economic losses. The potential for rail accidents caused by natural hazards can also have serious implications for the local communities if hazardous materials are involved.

Airports

The Northeast Region has six small airports: Grant County Regional, Baker City, Enterprise, Joseph, Monument, and La Grande. The La Grande airport is the only airport in the region to transport more than 50 tons of freight annually. The La Grande Airport transported 100 tons of freight in and out of the airport in 2000. In comparison, the Eugene-Mahlon Sweet Field handled 2,000 tons and Portland

International transported 165,000 tons of freight in 2000.[65]

Flights face the potential for closure from a number of natural hazards that are common in the Northeast Region, including windstorms and winter storms. Airports have strict guidelines regarding when conditions are safe for flight.

Roads and Bridges

There are two major highways that run through the Northeast Region. I-84 is a major transportation corridor that connects Portland with eastern Oregon and beyond. State Highway 82 connects the very northeastern part of the State with I-84

Many commercial entities make use of the highways in the Northeast Region Trucks transported over 10 million tons of freight along I-84 in 2002 and the average daily truck volume was more than 3,000.[66]

Highways are also heavily utilized by local traffic. According to the 2009 American Community Survey, 72% of workers in the Northeast Region commute by driving alone. The average commute for workers in the Northeast Region is just over seventeen minutes each way.[67] Additionally, in 2009, 25% of employees living in counties in the Northeast Region

[63] Ibid

[64] Ibid

[65] Oregon Department of Transportation, Department of Aviation, 2011 http://www.faa.gov/airports/airport_safety/airportdata_5010/

[66] Oregon Transportation Plan Update, Freight Issues: http://www.oregon.gov/ODOT/TD/TP/docs/otpMobility/FreightIssues.pdf

[67] City-Data. www.city-data.com/counties.

worked outside of their home county.[68] A severe winter storm has the potential to disrupt the daily driving routine of thousands of people.

There has been a slight decrease of automobiles on the roads:

- Average daily traffic volume on OR 82 recorded one mile northwest of Elgin decreased by 4% between 2001 and 2010 in Union County.
- Average daily traffic counts also decreased by 8% between 2001 and 2010 on OR 86, 3.5 miles west of Richland in Baker County.[69]
- Judging from these trends, traffic levels will continue to decrease if population continues to decrease.[70]

A large increase of automobiles can place stress on roads, bridges and infrastructure within the cities, and also in rural areas where there are fewer transit roads. Natural hazards can disrupt automobile traffic and shut down local transit systems across the area or region and make evacuations difficult.

The existing condition of bridges in the region is also a factor that affects risk from natural hazards. Bridge failure can have immediate and long-term implications in the response and recovery of a community. Incapacitated bridges can disrupt traffic and exacerbate economic losses due to the inability to transport products and services in and out of the area.[71]Figure C-7 through C-9 represents the condition of the State National Bridge inventory (NBI), and highlights the number of distressed bridges in the region. The region encompasses all of Baker, Grant, Union, and Wallowa Counties as well as Umatilla, Morrow, Malheur, and eastern Harney County

The NBI identifies 45 distressed bridges, 23.5% of all the State bridges in the region exhibit some form of structural or other deficiency. The classification of a distressed bridge does not imply the bridge is unsafe; however in the event of seismic activity these bridges are of higher vulnerability to failure.

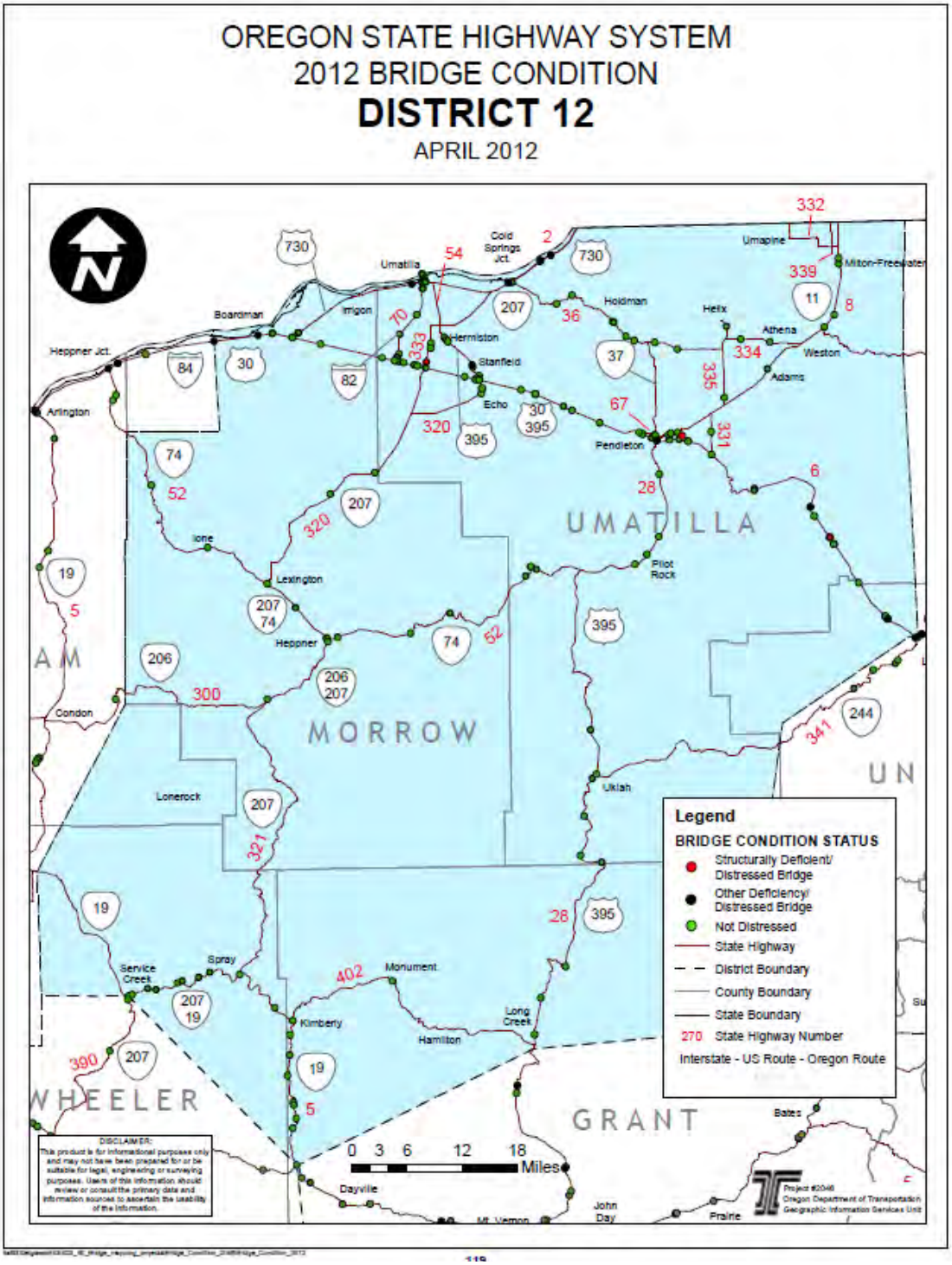
[68] US Census Bureau LEDmap, 2009

[69]Oregon Department of Transportation website. "Permanent Automatic Traffic Recorder Stations."http://www.oregon.gov/ODOT/TD/TDATA/tsm/atrtremds.shtml#2005.

[70] Ibid

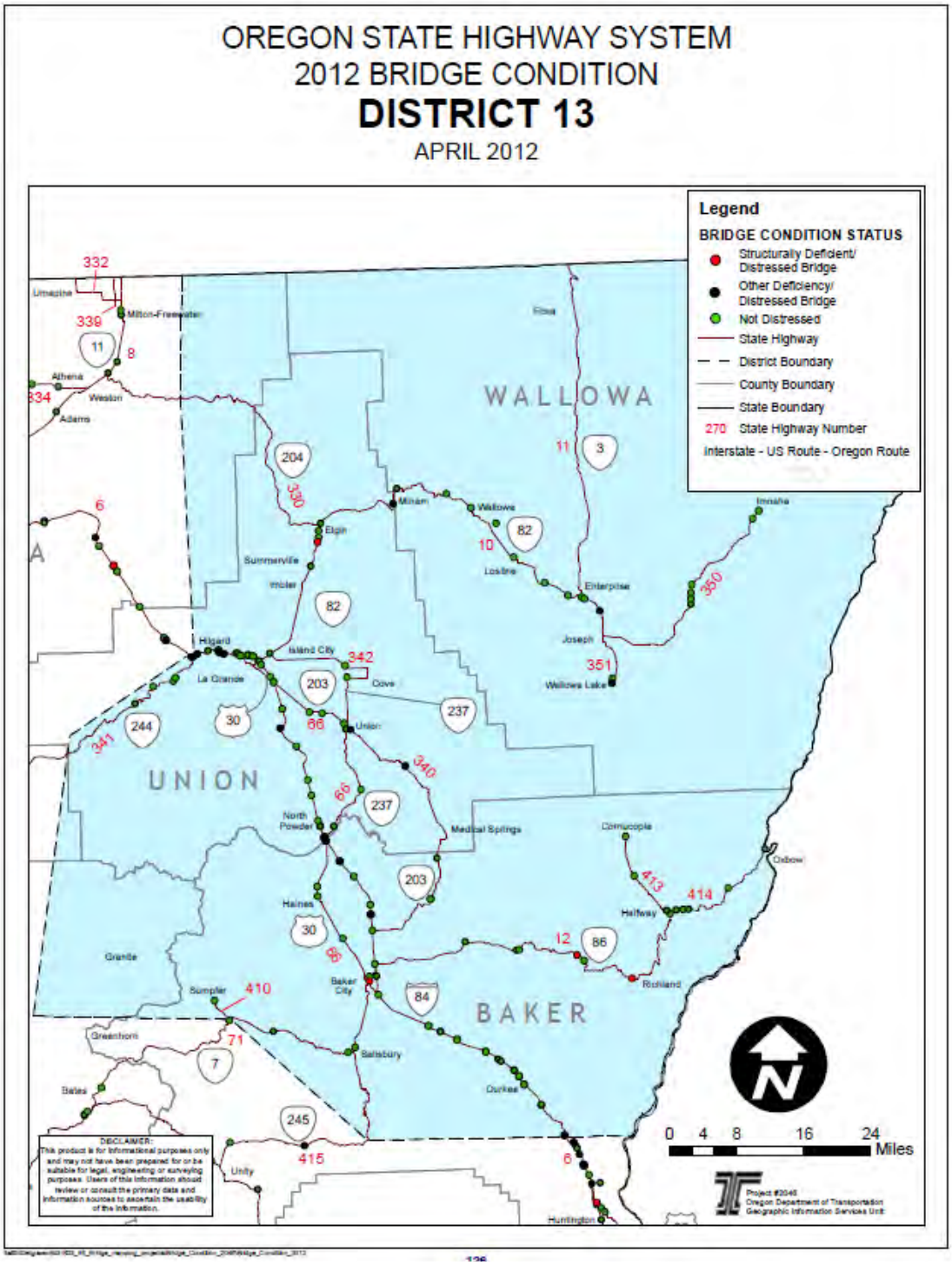
[71]Ibid.

Figure C-7 Bridge Condition: Region 12



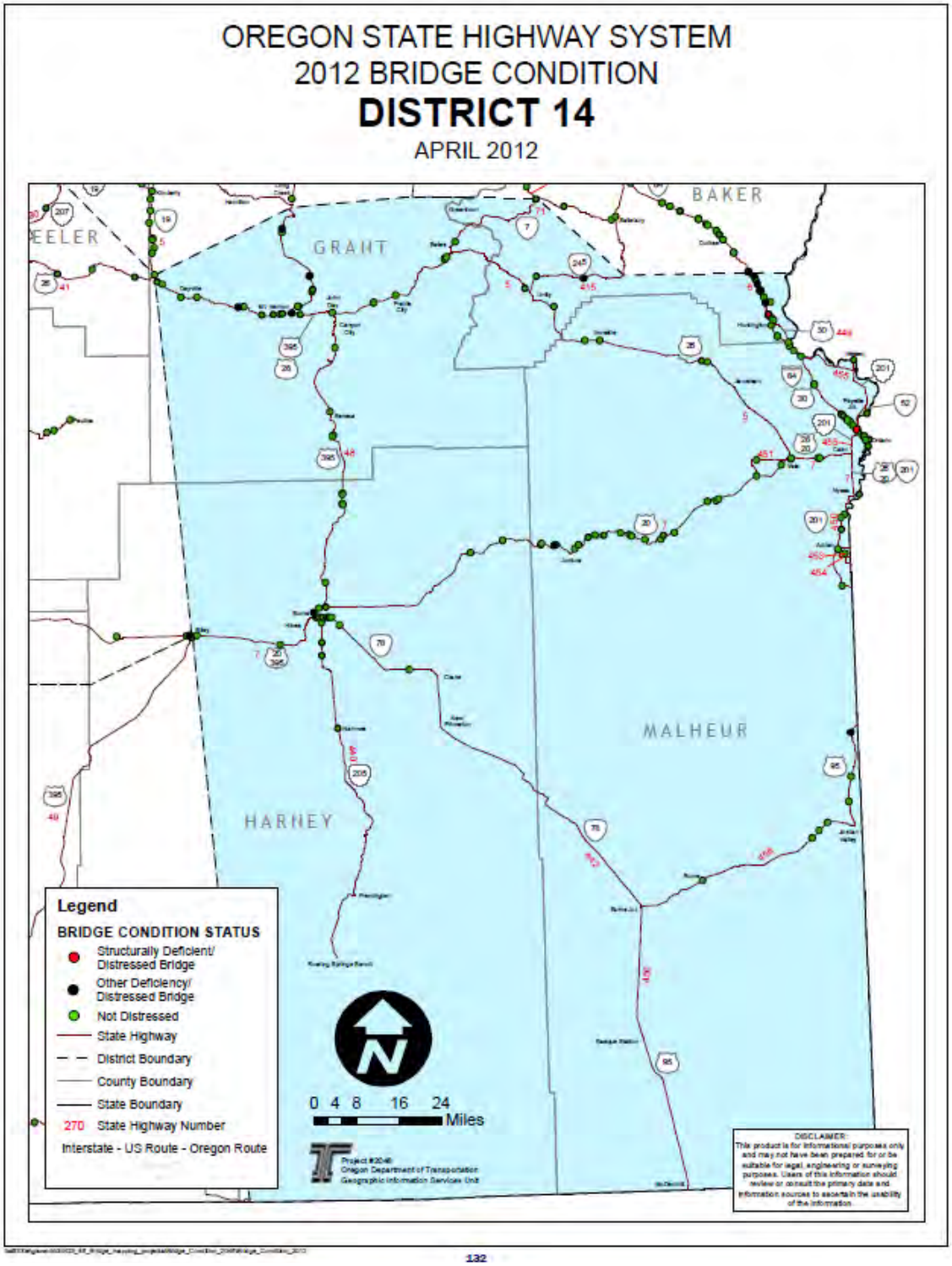
Source: Oregon Department of Transportation, "2012 Bridge Condition Report," http://cms.oregon.gov/odot/hwy/bridge/pages/index.aspx, accessed February 2013.

Figure C-8 Bridge Condition: Region 13



Source: Oregon Department of Transportation, "2012 Bridge Condition Report," http://cms.oregon.gov/odot/hwy/bridge/pages/index.aspx, accessed February 2013.

Figure C-9 Bridge Condition: Region 14



Source: Oregon Department of Transportation, "2012 Bridge Condition Report," http://cms.oregon.gov/odot/hwy/bridge/pages/index.aspx, accessed February 2013.

Synthesis

Given the unique dependent, rural nature of Northeast Oregon, maintaining the quality of built capacity throughout the area is critical. While these elements are traditionally recognized as part of response and recovery from a natural disaster, it is essential to start building relationships and establishing contractual agreements with entities that may be critical in supporting community resilience.

Regional Political Capacity

Political capacity is recognized as the government and planning structures established within the community. In terms of hazard resilience, it is essential for political capital to encompass diverse government and non-government entities in collaboration; as disaster losses stem from a predictable result of interactions between the physical environment, social and demographic characteristics and the built environment.[72] Resilient political capital seeks to involve various stakeholders in hazard planning and works towards integrating the Natural Hazard Mitigation Plan with other community plans, so that all planning approaches are consistent.

The *regional* political capacity determines the ability to share resources and avoid duplication of efforts. This capacity is what the regional plan is hoping to leverage. The following lists are existing governmental or political organizations that include more than one of the jurisdictions in Northeast Oregon.

Councils of Government

There is currently (2013) no Council of Government in Northeast Oregon.

Army Corps of Engineers

The Army Corps of Engineers' Portland District contains Grant County; The Army Corps of Engineer's Walla Walla, Washington District contains Baker, Union, and Wallowa Counties.

Department of Land Conservation and Development: Regional Rep.

The Department of Land Conservation and Development has a regional representative the coordinates across the four northeast counties as well as Malheur, Harney, Umatilla, and Morrow Counties.

Regional Solutions Teams

Regional Solutions is a collaborative organization that participates in community and economic development across the region.[73] The Eastern Oregon regional team includes the four northeast counties as well Gilliam, Harney, Malheur, Morrow, Umatilla, and Wheeler Counties.

Oregon Department of Transportation: Region

Similar to the Army Corps of Engineers Districts, the Oregon Department of Transportation District's region is exclusive of Grant County. Instead the Northeast Area Commission on Transportation covers Morrow, Baker, Union, Umatilla, and Wallowa Counties. Instead

[72] Mileti, D. 1999. Disaster by Design: a Reassessment of Natural Hazards in the United States. Washington D.C.: Joseph Henry Press.

[73] Oregon Regional Solutions "About Regional Solutions" http://www.oregon.gov/Gov/ERT/pages/index.aspx

Grant County belongs to the Southeast Area Commission on Transportation along with Harney and Malheur Counties and the Burns Paiute Tribe.

Existing Plan & Policies

Communities often have existing plans and policies that guide and influence land use, land development, and population growth. Such existing plans and policies can include comprehensive plans, zoning ordinances, and technical reports or studies. Plans and policies already in existence have support from local residents, businesses and policy makers. Many land-use, comprehensive, and strategic plans get updated regularly, and can adapt easily to changing conditions and needs.[74] No such comprehensive land use plan exists for the region. Currently the only regional plan that affects the four jurisdictions is the Natural Hazards Mitigation Plan. The Northeast Oregon Economic Development District's Comprehensive Development Strategy (2013) does provide a regional approach but does not include Grant County.

See Volume III, Jurisdictional Addenda, for a list of existing plans for the participating counties and cities.

Community Organizations and Programs

Social systems can be defined as community organizations and programs that provide social and community-based services, such as health care or housing assistance, to the public. In planning for natural hazard mitigation, it is important to know what social systems exist within the community because of their existing connections to the public. Often, actions identified by the plan involve communicating with the public or specific subgroups within the population (e.g. elderly, children, low income). The County can use existing social systems as resources for implementing such communication-related activities because these service providers already work directly with the public on a number of issues, one of which could be natural hazard preparedness and mitigation.

The following organizations are active within the community and may be potential partners for implementing mitigation actions:

[74]Burby, Raymond J., ed. 1998. Cooperating with Nature: Confronting Natural Hazards with Land-Use Planning for Sustainable Communities.

Table C-29 Existing Community Programs

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Air Life of Oregon 60191 Pierce Rd. La Grande, OR 97850 Phone: 541-663-8657 Fax: 541-963-0199	Every second counts in a medical emergency. No one knows that better than the flight crew at Air Life of Oregon, an emergency air ambulance service that covers 100,000 square miles in Oregon. With bases in Bend and La	Union County		✓	✓	✓		✓	✓	• Information dissemination
Alpine House 204 N Park Street Joseph, OR 97846 Tel: 541-432-7402	Assisted Living Residence	Wallowa County				✓				• Information dissemination
Alternative Services, Inc. (ASI) 600 S. Canyon Blvd John Day, OR 97845 Phone: 541-575-2251 Fax:541-575-2460	"Offers residential and vocational services in Grant County in two 24-hour residential facilities. The vocational program offers lawn care, word-working and raising beef cows and hogs."	Grant County			✓			✓		• Information dissemination
American Legion Auxiliary 160 Ogilvie Dr. John Day, OR Phone: 541-575-1802	A community service organization associated with United States veterans.	Grant County			✓	✓		✓	✓	• Information dissemination
American Legion Auxiliary Prairie City Unit #106 PO Box 48 Prairie City, OR Phone: 541-820-4384	A community service organization associated with United States veterans.	Grant County			✓	✓		✓	✓	• Information dissemination
American Legion Post #77 PO Box 125 John Day, OR Phone: 541-575-2838	A community service organization associated with United States veterans.	Grant County			✓	✓		✓	✓	• Information dissemination
American Red Cross Eastern Oregon Chapter PO BOX 1024 Baker City, OR 97814 Phone: 541-523-2231 Fax: 541-523-4303	Collect and provide blood and plasma to the community. Assist in emergency preparedness and response.	Baker County	✓	✓	✓	✓		✓	✓	• Education and outreach • Information dissemination • Plan/project implementation
American Red Cross Eastern Oregon Chapter 1806 Cove Ave La Grande, OR 97850 Phone: 541-962-0952	Blood gathering and donation services and first aid education	Union County		✓	✓	✓		✓	✓	• Information dissemination • Education and outreach • Plan/project implementation
Baker Clinic 3175 Pocahontas Road Baker City, OR 97814 Phone: 541-523-4415 Fax: 541-523-2399		Baker County		✓	✓	✓		✓	✓	• Information dissemination
Baker County Chamber of Commerce 490 Campbell Street Baker City, OR 97814 Phone: 541-523-5855	Provide economic development assistance to local businesses.	Baker County	✓						✓	• Education and outreach • Information dissemination
Baker County Children and Families 1995 Third Street Baker City OR 97814 Phone: 523-8231 Fax: 523-8236	Works with children and families to promote a positive atmosphere in which children are raised.	Baker County		✓				✓	✓	• Education and outreach • Information dissemination
Baker County Extension Office 2610 Grove Street Baker City, Oregon 97814 Phone: (541) 523-6418	Provides research-based knowledge and education that focus on strengthening communities and economies, sustaining natural resources, and promoting healthy families and individuals.	Baker County	✓							• Education and outreach • Information dissemination

Source: 2007 NHMP, updated 2013.

Table C-29 Existing Community Programs (continued)

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Blue Mountain Hospital 170 Ford Road John Day, Oregon 97845 Phone: 541-575-1311 Fax: 541-575-1255	Blue Mountain Hospital is a community-supported general hospital.. Provides the following services and more: • Inpatient • Outpatient • Ambulance • Rural Clinics • Visiting Specialists • Home Health • Respite Care	Grant County		✓	✓	✓		✓	✓	• Information dissemination
Blue Mountain Nursing Home 112 E 5th Street, Prairie City, Oregon 97869 Phone: 541-820-3341 Fax: 541-820-3628	"We are Medicaid certified only, and are affiliated with the Blue Mountain Hospital District. We provide long-term care, day care, and respite care."	Grant County				✓				• Information dissemination
Boy Scouts of America 2301 Adams Avenue La Grande, OR 97850 Phone: 541-963-2858 Fax: 541-963-2858	To provide numerous volunteer services to community members in addition to preparing boys and young men for active participation in community life.	Union County		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Building Healthy Families 107 N River St D Enterprise, OR 97828 - 1142	Family assistance/family counseling	Wallowa County						✓		• Information dissemination
Certified Personnel Service Agency 975 Campbell St Baker City, OR 97814 - 2270	Helps provide work to individuals who would not otherwise have work	Baker County						✓	✓	• Information dissemination
Child Care Resource and Referral P.O. Box 278 118 Washington St. Canyon City, OR 97820 Phone: 541-575-0210	Resource assistance for people who work in child care	Grant County		✓						• Information dissemination
Child Care Resource & Referral 1916 Island Ave. La Grande, OR 97850 Phone: 541-963-7942 Fax: 541-963-8458	The Oregon Child Care Resource and Referral Network (OCCRRN) is a statewide network of 17 community based child care resource and referral agencies that work to improve the quality, accessibility, and affordability of child care for all Oregon families.	Union County		✓						• Information dissemination
Community Connection 104 Elm Street La Grande, OR 97850 Phone: 541-963-3186 Fax: 541-963-3187	An advocate for and assist senior citizens, low income persons and persons with disabilities in attaining basic human needs and becoming more self sufficient. This will be accomplished by providing direct client services, stimulating more efficient use of existing resources, broadening the available resource base and providing decent, safe, sanitary and affordable housing for low and moderate income persons. Provides shuttle transportation around La Grande.	Union County			✓	✓			✓	• Information dissemination
Community Connection-Baker County Senior Center 2810 Cedar Street Baker City , OR 97814 Phone: 541-523-6591 Fax: 541-523-6592	A home service to assist in care of the elderly, transportation services	Baker County				✓		✓	✓	• Information dissemination
Community Connections of Wallowa County 702 NW First St. Enterprise, OR 97828	Supporting and assisting senior citizens, children, low income persons, and persons with disabilities in attaining basic human needs and becoming more self-sufficient.	Wallowa County		✓	✓	✓			✓	• Information dissemination

Source: 2007 NHMP, updated 2013.

Table C-29 Existing Community Programs (continued)

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Cove Community Association	Community volunteer association; assists in maintaining and updating the community's Emergency Response Plan.	Cove		✓				✓	✓	• Information dissemination
Eagle Cap Resource Conservation and Development Council sdlkfsj Enterprise, OR 97828 Tel:	Assists persons and organizations in Baker, Union and Wallowa counties via community based partnerships and networks for the benefit of present and future generations.	Wallowa County	✓							• Education and outreach • Information dissemination
Eastern Oregon Head Start 180 N 10th Av Elgin, OR 97827 Phone: 541-437-5757	Head Start Program	Union County		✓				✓	✓	• Information dissemination
Eastern Oregon Head Start One University Blvd. La Grande, OR 97850 Phone: 541-962-3506	Oregon Head Start PreKindergarten	Baker and Union Counties	✓							• Education and outreach • Information dissemination
Eastern Oregon Medical Associates 3325 Pocahontas Road Baker City, OR 97814 Phone: 541-523-1001 Fax: 541-523-1152		Baker County		✓	✓	✓		✓	✓	• Information dissemination
Elgin Chamber of Commerce 104 N. 8th St. Elgin, OR 97827 Phone: 541-437-3456	Provide economic development assistance to local businesses.	Elgin	✓							• Education and outreach • Information dissemination • Plan/project implementation
Elks Lodge 211 W North St Enterprise, OR 97828 - 1038 Tel: 541-426-1829	The Benevolent and Protective Order of Elks of the United States of America will serve the people and communities through benevolent programs, demonstrating that *Elks Care and Elks Share*.	Wallowa County		✓	✓	✓		✓	✓	• Information dissemination
Elk's Lodge 1896 2nd St Baker City, OR 97814 – 3403 Phone: 541-523-3338 Fax: 541-523-3331	Quoted from the mission statement: the Benevolent and Protective Order of Elks of the United States of America will serve the people and communities through benevolent programs, demonstrating that Elks Care and Elks Share.	Baker County		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Elks Lodge BPOE #1824 PO Box 747 John Day, OR Phone: 541-575-9937	Quoted from the mission statement: the Benevolent and Protective Order of Elks of the United States of America will serve the people and communities through benevolent programs, demonstrating that Elks Care and Elks Share.	Grant County		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Elks Lodge No 433 1124 Washington Av La Grande, OR 97850 – 2534 Phone: 541-963-2023	The Benevolent and Protective Order of Elks of the United States of America will serve the people and communities through benevolent programs, demonstrating that *Elks Care and Elks Share*.	Union County		✓	✓	✓		✓	✓	• Information dissemination
Families First 401 S Canyon Blvd John Day, OR 97845 – 1048 Phone: 541-575-4335	Individual and family counseling. Assistance for young mothers. Foster care for children in need. Support for foster parents, and assistance to people who want to adopt. Supportive group homes for children. Transitional housing for homeless young mothers. Assists families struggling with family problems. Their community programs encompass employee assistance counseling, after school support and independent living skills.	Grant County		✓				✓	✓	• Education and outreach • Information dissemination
Ferguson Care Center 104 Holmes Wallowa, OR 97857 Tel: 541-886-2008	Assisted Living Residence	Wallowa County				✓				• Information dissemination
For Man Kind	Social and Welfare Services	Wallowa County		✓	✓	✓		✓	✓	• Information dissemination

Source: 2007 NHMP, updated 2013.

Table C-29 Existing Community Programs (continued)

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Fourth Street Medical Clinic PO Box 869 Elgin, OR 97827 Phone: 541-437-6321 Fax:541-437-8585	Medical Clinic	Union County		✓	✓	✓		✓	✓	• Information dissemination
Girl Scouts of the USA, Silver Sage, Eastern Oregon Office PO Box 1368 Ontario, OR Phone: 541-889-6210	To provide numerous volunteer services to community members in addition to preparing girls and young women for active participation in community	Grant County		✓	✓	✓				• Education and outreach • Information dissemination
Glenn C. Lee Scouting Service Center 2301 Adams La Grande, OR 97850 Phone: 866-963-2858 Fax: 541-963-2858	To provide numerous volunteer services to community members in addition to preparing boys and young men for active participation in community life.	Southeast Washington and Northeast Oregon		✓	✓	✓				• Education and outreach • Information dissemination
Grande Ronde Child Center 902 D Ave La Grande, OR 97850 Phone: 541-963-8666	Benefits and cares for emotionally disturbed children	Union County		✓						• Information dissemination
Grande Ronde Hospital, Inc. PO Box 3290 La Grande, OR 97850 Phone: 1-541-963-8421	Grande Ronde Hospital is a private, not for profit, Critical Access Hospital (CAH). It is comprised of 25 beds, a Family Birthing Center, Home Care Services covering Home Health and Hospice, and a broad range of diagnostic, surgical and therapeutic outpatient services.	Union County		✓	✓	✓		✓	✓	• Information dissemination
Grande Ronde Retirement Residence 1809 Gekeler Ln. La Grande, OR 97850 Phone: 541-963-4700 Fax: 541-963-6519 Email: granderonde@frontiermgmt.com	Frontier Management, LLC manages quality retirement, assisted living, and Alzheimer's Care communities	Union County				✓				• Information dissemination
Grant and Harney County Casa 835 S. Canyon Blvd. John Day, OR 97845 Phone: 541-575-5574 Fax: 541-575-1068	Social Services, Social and Welfare Services	Grant and Harney Counties		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Grant County Chamber of Commerce 281 W. Main Street John Day, Or 97845 Phone: 541-575-0547	Provide economic development assistance to local businesses.	Grant County	✓							• Education and outreach • Information dissemination • Plan/project implementation
Grant County Extension Office Courthouse 201 S Humbolt Suite 190 Canyon City OR 97820-6186 Phone: 541-575-1911 Fax: 541-575-2248	Provides research-based knowledge and education that focus on strengthening communities and economies, sustaining natural resources, and promoting healthy families and individuals.	Grant County	✓							• Education and outreach • Information dissemination • Plan/project implementation
Grant County Senior Citizens Assoc. 142 N.E. Dayton John Day, OR Phone: 541-575-1825	A senior citizens association	Grant County				✓				• Information dissemination
Greater Prairie City Community Association Prairie City, OR 97869 Phone: 541-820-3666	A community association	Grant County		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Growing Tree Infant Ctr 404 NW Canton St John Day, OR 97845 – 1165 Phone: 541-575-2371	A childcare facility for infants.	Grant County		✓						• Information dissemination
Guardian Home Care PO BOX 716 Baker City, OR 97814 Phone: 208-461-1600	Hospice Care for people suffering from advanced illnesses and their families	Baker County		✓	✓	✓		✓	✓	• Information dissemination

Source: 2007 NHMP, updated 2013.

Table C-29 Existing Community Programs (continued)

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Habitat for Humanity PO Box 111 La Grande, OR 97850 Phone: 541-663-9515	Habitat for Humanity International is a nonprofit, ecumenical Christian housing ministry. Through volunteer labor and donations of money and materials, Habitat builds and rehabilitates simple, decent houses with the help of the homeowner (partner) families. Habitat houses are sold to partner families at no profit, financed with affordable, no-interest loans.	Union County						✓		• Plan/project implementation
Head Start Baker Program 1925 16th Street Baker City, OR 97814 Phone: 541-523-2696	It provides comprehensive education, health, nutrition, and parent involvement services to low-income children and their families.	Baker County		✓				✓	✓	• Education and outreach • Information dissemination
Headstart Union Program 541 S Main Union, OR 97883 Phone: 541-562-6057	Headstart Program	Union County		✓						• Information dissemination
Heart 'N' Home Hospice & Palliative Care, LLC 1435 Campbell Street Baker City, OR 97814 Phone: 541-524-7688 & 1-888-522-7688 Fax: 541-524-7682	Hospice Care for people suffering from advanced illnesses and their families	Baker County		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Hells Canyon Chamber of Commerce 160 S Main St. Halfway, OR 97834 Phone: 541-742-4222	Provide economic development assistance to local businesses.	Baker County	✓							• Education and outreach • Information dissemination • Plan/project implementation
Hospice of Redmond-Sisters 732 SW 3rd Redmond, OR 97756 Phone: 541-548-7483 Email: hospice@bendcable.com	Hospice Care for people suffering from advanced illnesses and their families	Grant County				✓		✓		• Information dissemination
Jodi's Adult Foster Care 460 E Fulton St Union, OR 97883 – 9102 Phone: 541-562-5419	Nursing home	Union County			✓	✓				• Information dissemination
John Day Kiwanis Club 210 NW Canton John Day, OR Phone: 541-575-1827	A local community service organization.	Grant County		✓				✓		• Education and outreach • Information dissemination
Joseph Chamber of Commerce 102 E 1st Joseph, OR 97846 Tel: 541-432-1015	Provide economic development assistance to local businesses.	Joseph	✓							• Education and outreach • Information dissemination • Plan/project implementation
La Grande Downtown Development Association PO Box 3321 La Grande, OR 97840	A mosaic of businesses seeking to develop a viable downtown that attracts business.	Union County	✓							• Education and outreach • Information dissemination • Plan/project implementation
La GrandeONLINE.com, ONLINE Community Resources, Inc. 1211 Washington Ave. La Grande, OR 97850 Phone: 541-963-3700 Fax: 541-963-8593	Community information source	Union County	✓	✓	✓	✓		✓	✓	• Information dissemination
MeadowBrook Place 4000 Cedar Street Baker City, OR 97814 Phone: 541-523-6333 Fax: 541-523-9166	Assisted Living	Baker County				✓		✓		• Information dissemination
New Day Enterprises PO Box 3296 La Grande, OR 97850 Phone: 541-963-2348 Fax: 541-962-7230	New Day Enterprises is a private, non-profit community mental health facility. We serve adults with developmental disabilities. We employ 90 staff and have 58 clients for whom we provide a place to live, work and interact within our community	Union County			✓					• Information dissemination
New Directions Northwest PO BOX 1005 Baker City, OR 97814 Phone: 541-523-7400 Fax: 541-523-4927	Addiction Recovery	Baker County		✓				✓	✓	• Information dissemination

Source: 2007 NHMP, updated 2013.

Table C-29 Existing Community Programs (continued)

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Northeast Oregon Housing Authority 2608 May Lane P.O. Box 3357 La Grande, Oregon 97850 Telephone (541) 963-5360 Toll Free 1-800-452-8638 (Oregon Only) Fax (541) 963-3682 Email: neoha@uwtc.net	Mission: "To Provide quality and Affordable Housing to the low income persons of Northeast Oregon"	Union, Baker, Grant, and Wallowa Counties						✓	✓	• Information dissemination
Oregon Education Association 2400 Ash St Baker City, OR 97814 - 2919	The purpose of the Oregon Education Association is to assure quality public education for every student in Oregon by providing a strong, positive voice for school employees.	Baker County		✓						• Education and outreach • Information dissemination
Oregon Rural Action 105 Fir #327 La Grande, OR 97850 Phone: 541-975-2411	Oregon Rural Action is a long term, multi-ethnic organization whose mission is to support and encourage community organizing around locally-identified issues, with a shared vision of creating a healthy, democratic, and just society. ORA's members and community groups work to promote social justice, agricultural and economic sustainability, and stewardship of the region's land, air and water.	Union County						✓		• Education and outreach • Information dissemination • Plan/project implementation
Pathway Hospice 2192 Court AVE Baker City, OR 97814 Phone: 541-523-9430 Fax: 541-523-9454 Email: pthwyhospcbkr@eoni.com	Hospice Care for people suffering from advanced illnesses and their families	Baker County		✓	✓	✓		✓	✓	• Information dissemination
People Mover 229 NE Dayton St John Day, OR 97845 – 1204 Phone: (541) 575-2370	Public transportation service	Grant County		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Pioneer Guest Home Facility 101 E Main Enterprise, OR 97828 Tel: 541-426-4222	Adult Residential Treatment	Wallowa County				✓				• Information dissemination
Senior Citizens Community Center 142 NE Dayton ST John Day, OR 97845 Phone: 541-575-1825	A senior citizens community center	Grant County				✓				• Information dissemination
Settler's Park 2895 17th STREET Baker City , OR 97814 Phone: 541-523-0200 Fax: 541-523-0268	Alzheimer's Care and assisted living	Baker County				✓		✓		• Information dissemination
Shie Elem Golden Heritage 200 SW Brent Dr. John Day, OR 97845 Phone: 541-575-0957	Medical care and nursing home facilities	Grant County				✓				• Information dissemination
St. Elizabeth Health Services 3325 Pocahontas RD Baker City, OR 97814 Phone: 541-523-6461 Fax: 541-523-8151	Emergency Care	Baker County		✓	✓	✓		✓	✓	• Information dissemination
Strawberry Wilderness Family Clinic Phone: (541) 575-0404	Provides healthcare service for community members	Grant County		✓	✓	✓		✓	✓	• Education and outreach • Information dissemination
Training & Employment Consortium 1916 Island Avenue or PO Box 2979 La Grande, OR 97850 Phone: 541-963-7942 Fax: 541-963-8458	To contribute to the economic vitality of the regions by being a valuable resource for education, vocational training. Offers employment and child care. Training partner for Workforce Oregon. Programs available include: Adult, Dislocated Worker, and Youth: Workforce Investment Act (WIA), Job Opportunity & Basic Skills (JOBS), Independent Living, Senior Community Service Employment Program (Title V), Youth Conservation Corp, Child Care Resources & Referral, Provides services for businesses.	Union County	✓	✓	✓	✓	✓	✓	✓	• Information dissemination

Source: 2007 NHMP, updated 2013.

Table C-29 Existing Community Programs (continued)

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Umatilla-Morrow Head Start, Inc. 110 NE 4th Hermiston, OR 97838 Phone: 541-564-6878	Early Head Start, Oregon Head Start PreKindergarten	Grant, Gilliam, Morrow, Sherman, Umatilla, Wallowa, and Wasco Counties		✓						• Education and outreach • Information dissemination
Union County Chamber of Commerce 102 Elm St. LaGrande, Oregon 97850 Phone: 541-963-8588 Fax: 541-963-3936 email: info@unioncountychamber.org	Provide economic development assistance to local businesses.	Union County	✓							• Education and outreach • Information dissemination • Plan/project implementation
Union County Extension Service Oregon State University Agricultural Service Center 10507 N. McAlister Road, Room 9 La Grande, OR 97850 Phone: 541-963-1010 Fax: 541-963-1036	Provides research-based knowledge and education that focus on strengthening communities and economies, sustaining natural resources, and promoting healthy families and individuals.	Union County	✓							• Education and outreach • Information dissemination • Plan/project implementation
Union Family Health Center PO Box 986 Union, OR 97883	Medical Clinic	Union County		✓	✓	✓		✓	✓	• Information dissemination
Valley View Retirement and Assisted Living Residence 112 Valley View Dr, John Day, Oregon 97845 Phone: 541-575-3533 Email: hospice@bendcable.com	Independent, yet assisted living where residents are able to enjoy daily activities with assistance if needed	Grant County				✓				• Information dissemination
Wallowa County Business Facilitation PO Box 997 Joseph, OR 97846 Tel: 541-426-5858	Provides free and confidential business management coaching to anyone who is serious about a business idea in Wallowa County, OR . This is accomplished through a network of volunteer board members, resource people and a Business Facilitator contractor.	Wallowa County	✓							• Information dissemination
Wallowa County Chamber of Commerce P.O. Box 427 115 Tejaka Lane Enterprise, Oregon 97828 Phone: 541-426-4622/800-585-4121 Fax: 541-426-2032 vicki@wallowacounty.org (executive director, Vicki Searles)	Provide economic development assistance to local businesses.	Wallowa County	✓							• Education and outreach • Information dissemination • Plan/project implementation
Wallowa County Extension Office 668 NW 1st Enterprise OR 97828 Tel: 541-426-3143 Fax: 541-426-0243	Provides research-based knowledge and education that focus on strengthening communities and economies, sustaining natural resources, and promoting healthy families and individuals.	Wallowa County	✓							• Education and outreach • Information dissemination • Plan/project implementation
Wallowa County Hay Growers Association 85381 Bicentennial Lane Joseph, OR 97846 Tel: 541-432-3735	Business Association	Wallowa County	✓							• Information dissemination
Wallowa Family & Youth Ctr 83346 Joseph Hwy Joseph, OR 97846 - 8150	Resource for children and families	Wallowa County		✓				✓		• Information dissemination
Wallowa Land Trust Box A Joseph, OR 97846 Tel: 541-426-8053	To work cooperatively with local landowners to protect the rural nature of the Wallowa Country.	Wallowa County	✓					✓		• Education and outreach • Information dissemination • Plan/project implementation
Wallowa Memorial Hospital Home Health/Hospice Wallowa County Health Care District 404 NE 1st Street Enterprise, OR 97828 Tel: 541-426-9060	Hospice Care for people suffering from advanced illnesses and their families	Wallowa County		✓	✓	✓		✓	✓	• Information dissemination

Source: 2007 NHMP, updated 2013.

Table C-29 Existing Community Programs (continued)

Name and Contact Information	Description	Service Area	Populations Served							Involvement with Natural Hazard Mitigation
			Businesses	Children	Disabled	Elders	English Second Language	Families	Low Income	
Wallowa Mountain Medical Clinic 100 N. East Street/ PO Box 1038 Joseph, OR 97846 Tel: 541-432-7777	Medical clinic	Wallowa County		✓	✓	✓			✓	• Information dissemination
Wallowa Resources 200 W North St Enterprise, OR 97828 Tel: 541-426-8053	Wallowa Resources works through partnerships with a diverse group of people to design and realize a new, healthier, rural community.Wallowa Resources is an active member of the Wallowa County Natural Resources Advisory Committee and Chairs the Wallowa County Community Wildfire Protection Plan sub-committee. Wallowa Resources is also an active partner with both USFS and ODF on forest health projects, including forest condition assessments, fuel reduction and defensible space activities.		✓					✓		• Education and outreach • Information dissemination • Plan/project implementation
Wallowa Valley Center for Wellness 201 SW 1st St Enterprise, OR 97828 Tel: 541-426-4524	Confidential counseling services; provides a comprehensive program of community mental health services, alcohol and drug services and services to persons who have developmental disabilitites or behavioral difficulties	Wallowa County		✓	✓	✓				• Information dissemination
Wildflower Lodge 508 16th St. La Grande, OR 97850 Phone: 541-663-1200	Assisted Living facility	Union County				✓				• Information dissemination
Winding Waters Clinic 203 E Main Wallowa, OR 97885 Tel: 541-886-2431	Medical clinic	Wallowa County		✓	✓	✓			✓	• Information dissemination

Source: 2007 NHMP, updated 2013.

Synthesis

As addressed above, many governmental entities are responsible for work relevant to hazards planning; however, from this perspective it is challenging to decipher whether these structures work collaboratively in practice towards improving hazard mitigation. On a similar note, in short of reviewing each of the relevant policy documents it is questionable whether the documents effectively integrate hazard initiatives into implementation policy. Further analysis is needed to evaluate the effectiveness of political capital in terms of community resilience.

Appendix D: Economic Analysis of Natural Hazard Mitigation Projects

This appendix was developed by the Oregon Partnership for Disaster Resilience at the University of Oregon's Community Service Center. It has been reviewed and accepted by the Federal Emergency Management Agency as a means of documenting how the prioritization of actions shall include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs.

The appendix outlines three approaches for conducting economic analyses of natural hazard mitigation projects. It describes the importance of implementing mitigation activities, different approaches to economic analysis of mitigation strategies, and methods to calculate costs and benefits associated with mitigation strategies. Information in this section is derived in part from: The Interagency Hazards Mitigation Team, *State Hazard Mitigation Plan*, (Oregon Military Department – Office of Emergency Management, 2000), and Federal Emergency Management Agency Publication 331, *Report on Costs and Benefits of Natural Hazard Mitigation*. This section is not intended to provide a comprehensive description of benefit/cost analysis, nor is it intended to evaluate local projects. It is intended to (1) raise benefit/cost analysis as an important issue, and (2) provide some background on how economic analysis can be used to evaluate mitigation projects.

Why Evaluate Mitigation Strategies?

Mitigation activities reduce the cost of disasters by minimizing property damage, injuries, and the potential for loss of life, and by reducing emergency response costs, which would otherwise be incurred. Evaluating possible natural hazard mitigation activities provides decision-makers with an understanding of the potential benefits and costs of an activity, as well as a basis upon which to compare alternative projects.

Evaluating mitigation projects is a complex and difficult undertaking, which is influenced by many variables. First, natural disasters affect all segments of the communities they strike, including individuals, businesses, and public services such as fire, police, utilities, and schools. Second, while some of the direct and indirect costs of disaster damages are measurable, some of the costs are non-financial and difficult to quantify in dollars. Third, many of the impacts of such events produce "ripple-effects" throughout the community, greatly increasing the disaster's social and economic consequences.

While not easily accomplished, there is value, from a public policy perspective, in assessing the positive and negative impacts from mitigation activities, and obtaining an instructive benefit/cost comparison. Otherwise, the decision to pursue or not pursue various mitigation options would not be based on an objective understanding of the net benefit or loss associated with these actions.

What are some Economic Analysis Approaches for Evaluating Mitigation Strategies?

The approaches used to identify the costs and benefits associated with natural hazard mitigation strategies, measures, or projects fall into three general categories: benefit/cost analysis, cost-effectiveness analysis and the STAPLE/E approach. The distinction between the three methods is outlined below:

Benefit/Cost Analysis

Benefit/cost analysis is a key mechanism used by the state Oregon Military Department – Office of Emergency Management (OEM), the Federal Emergency Management Agency, and other state and federal agencies in evaluating hazard mitigation projects, and is required by the Robert T. Stafford Disaster Relief and Emergency Assistance Act, Public Law 93-288, as amended.

Benefit/cost analysis is used in natural hazards mitigation to show if the benefits to life and property protected through mitigation efforts exceed the cost of the mitigation activity. Conducting benefit/cost analysis for a mitigation activity can assist communities in determining whether a project is worth undertaking now, in order to avoid disaster-related damages later. Benefit/cost analysis is based on calculating the frequency and severity of a hazard, avoiding future damages, and risk. In benefit/cost analysis, all costs and benefits are evaluated in terms of dollars, and a net benefit/cost ratio is computed to determine whether a project should be implemented. A project must have a benefit/cost ratio greater than 1 (i.e., the net benefits will exceed the net costs) to be eligible for FEMA funding.

Cost-Effectiveness Analysis

Cost-effectiveness analysis evaluates how best to spend a given amount of money to achieve a specific goal. This type of analysis, however, does not necessarily measure costs and benefits in terms of dollars. Determining the economic feasibility of mitigating natural hazards can also be organized according to the perspective of those with an economic interest in the outcome. Hence, economic analysis approaches are covered for both public and private sectors as follows.

Investing in Public Sector Mitigation Activities

Evaluating mitigation strategies in the public sector is complicated because it involves estimating all of the economic benefits and costs regardless of who realizes them, and potentially to a large number of people and economic entities. Some benefits cannot be evaluated monetarily, but still affect the public in profound ways. Economists have developed methods to evaluate the economic feasibility of public decisions which involve a diverse set of beneficiaries and non-market benefits.

Investing in Private Sector Mitigation Activities

Private sector mitigation projects may occur on the basis of one or two approaches: it may be mandated by a regulation or standard, or it may be economically justified on its own merits. A building or landowner, whether a private entity or a public agency, required to conform to a mandated standard may consider the following options:

1. Request cost sharing from public agencies;
2. Dispose of the building or land either by sale or demolition;

3. Change the designated use of the building or land and change the hazard mitigation compliance requirement; or
4. Evaluate the most feasible alternatives and initiate the most cost effective hazard mitigation alternative.

The sale of a building or land triggers another set of concerns. For example, real estate disclosure laws can be developed which require sellers of real property to disclose known defects and deficiencies in the property, including earthquake weaknesses and hazards to prospective purchases. Correcting deficiencies can be expensive and time consuming, but their existence can prevent the sale of the building. Conditions of a sale regarding the deficiencies and the price of the building can be negotiated between a buyer and seller.

STAPLE/E Approach

Considering detailed benefit/cost or cost-effectiveness analysis for every possible mitigation activity could be very time consuming and may not be practical. There are some alternate approaches for conducting a quick evaluation of the proposed mitigation activities which could be used to identify those mitigation activities that merit more detailed assessment. One of those methods is the STAPLE/E approach.

Using STAPLE/E criteria, mitigation activities can be evaluated quickly by steering committees in a synthetic fashion. This set of criteria requires the committee to assess the mitigation activities based on the Social, Technical, Administrative, Political, Legal, Economic and Environmental (STAPLE/E) constraints and opportunities of implementing the particular mitigation item in your community. The second chapter in FEMA's How-To Guide "Developing the Mitigation Plan – Identifying Mitigation Actions and Implementation Strategies" as well as the "State of Oregon's Local Natural Hazard Mitigation Plan: An Evaluation Process" outline some specific considerations in analyzing each aspect. The following are suggestions for how to examine each aspect of the STAPLE/E approach from the "State of Oregon's Local Natural Hazard Mitigation Plan: An Evaluation Process."

Social: Community development staff, local non-profit organizations, or a local planning board can help answer these questions.

- Is the proposed action socially acceptable to the community?
- Are there equity issues involved that would mean that one segment of the community is treated unfairly?
- Will the action cause social disruption?

Technical: The city or county public works staff, and building department staff can help answer these questions.

- Will the proposed action work?
- Will it create more problems than it solves?
- Does it solve a problem or only a symptom?
- Is it the most useful action in light of other community goals?

Administrative: Elected officials or the city or county administrator, can help answer these questions.

- Can the community implement the action?
- Is there someone to coordinate and lead the effort?
- Is there sufficient funding, staff, and technical support available?
- Are there ongoing administrative requirements that need to be met?

Political: Consult the mayor, city council or city board of commissioners, city or county administrator, and local planning commissions to help answer these questions.

- Is the action politically acceptable?
- Is there public support both to implement and to maintain the project?

Legal: Include legal counsel, land use planners, risk managers, and city council or county planning commission members, among others, in this discussion.

- Is the community authorized to implement the proposed action? Is there a clear legal basis or precedent for this activity?
- Are there legal side effects? Could the activity be construed as a taking?
- Is the proposed action allowed by the comprehensive plan, or must the comprehensive plan be amended to allow the proposed action?
- Will the community be liable for action or lack of action?
- Will the activity be challenged?

Economic: Community economic development staff, civil engineers, building department staff, and the assessor's office can help answer these questions.

- What are the costs and benefits of this action?
- Do the benefits exceed the costs?
- Are initial, maintenance, and administrative costs taken into account?
- Has funding been secured for the proposed action? If not, what are the potential funding sources (public, non-profit, and private?)
- How will this action affect the fiscal capability of the community?
- What burden will this action place on the tax base or local economy?
- What are the budget and revenue effects of this activity?
- Does the action contribute to other community goals, such as capital improvements or economic development?
- What benefits will the action provide? (This can include dollar amount of damages prevented, number of homes protected, credit under the CRS, potential for funding under the HMGP or the FMA program, etc.)

Environmental: Watershed councils, environmental groups, land use planners and natural resource managers can help answer these questions.

- How will the action impact the environment?
- Will the action need environmental regulatory approvals?

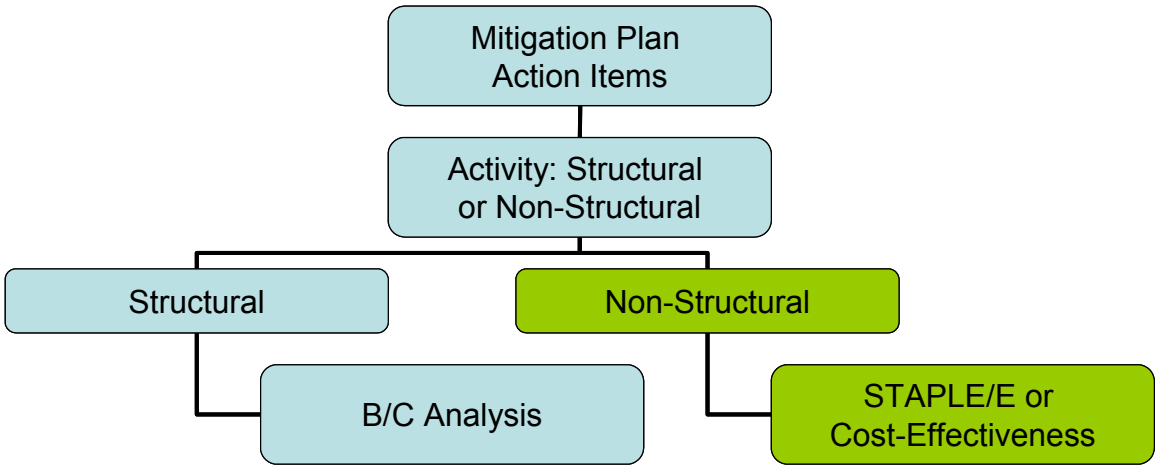
- Will it meet local and state regulatory requirements?
- Are endangered or threatened species likely to be affected?

The STAPLE/E approach is helpful for doing a quick analysis of mitigation projects. Most projects that seek federal funding and others often require more detailed benefit/cost analyses.

When to use the Various Approaches

It is important to realize that various funding sources require different types of economic analyses. The following figure is to serve as a guideline for when to use the various approaches.

Figure C.1: Economic Analysis Flowchart



Source: Oregon Partnership for Disaster Resilience. 2005.

Implementing the Approaches

Benefit/cost analysis, cost-effectiveness analysis, and the STAPLE/E are important tools in evaluating whether or not to implement a mitigation activity. A framework for evaluating mitigation activities is outlined below. This framework should be used in further analyzing the feasibility of prioritized mitigation activities.

1. Identify the Activities

Activities for reducing risk from natural hazards can include structural projects to enhance disaster resistance, education and outreach, and acquisition or demolition of exposed properties, among others. Different mitigation projects can assist in minimizing risk to natural hazards, but do so at varying economic costs.

2. Calculate the Costs and Benefits

Choosing economic criteria is essential to systematically calculating costs and benefits of mitigation projects and selecting the most appropriate activities. Potential economic criteria to evaluate alternatives include:

- ***Determine the project cost***. This may include initial project development costs, and repair and operating costs of maintaining projects over time.
- ***Estimate the benefits***. Projecting the benefits, or cash flow resulting from a project can be difficult. Expected future returns from the mitigation effort depend on the correct specification of the risk and the effectiveness of the project, which may not be well known. Expected future costs depend on the physical durability and potential economic obsolescence of the investment. This is difficult to project. These considerations will also provide guidance in selecting an appropriate salvage value. Future tax structures and rates must be projected. Financing alternatives must be researched, and they may include retained earnings, bond and stock issues, and commercial loans.
- ***Consider costs and benefits to society and the environment***. These are not easily measured, but can be assessed through a variety of economic tools including existence value or contingent value theories. These theories provide quantitative data on the value people attribute to physical or social environments. Even without hard data, however, impacts of structural projects to the physical environment or to society should be considered when implementing mitigation projects.
- ***Determine the correct discount rate***. Determination of the discount rate can just be the risk-free cost of capital, but it may include the decision maker's time preference and also a risk premium. Including inflation should also be considered.

3. Analyze and Rank the Activities

Once costs and benefits have been quantified, economic analysis tools can rank the possible mitigation activities. Two methods for determining the best activities given varying costs and benefits include net present value and internal rate of return.

- ***Net present value***. Net present value is the value of the expected future returns of an investment minus the value of the expected future cost expressed in today's dollars. If the net present value is greater than the projected costs, the project may be determined feasible for implementation. Selecting the discount rate, and identifying the present and future costs and benefits of the project calculates the net present value of projects.
- ***Internal rate of return***. Using the internal rate of return method to evaluate mitigation projects provides the interest rate equivalent to the dollar returns expected from the project. Once the rate has been calculated, it can be compared to rates earned by investing in alternative projects. Projects may be feasible to implement when the internal rate of return is greater than the total costs of the project. Once the mitigation projects are ranked on the basis of economic criteria, decision-makers can consider other factors, such as risk, project effectiveness, and economic, environmental, and social returns in choosing the appropriate project for implementation.

Economic Returns of Natural Hazard Mitigation

The estimation of economic returns, which accrue to building or land owners as a result of natural hazard mitigation, is difficult. Owners evaluating the economic feasibility of

mitigation should consider reductions in physical damages and financial losses. A partial list follows:

- Building damages avoided
- Content damages avoided
- Inventory damages avoided
- Rental income losses avoided
- Relocation and disruption expenses avoided
- Proprietor's income losses avoided

These parameters can be estimated using observed prices, costs, and engineering data. The difficult part is to correctly determine the effectiveness of the hazard mitigation project and the resulting reduction in damages and losses. Equally as difficult is assessing the probability that an event will occur. The damages and losses should only include those that will be borne by the owner. The salvage value of the investment can be important in determining economic feasibility. Salvage value becomes more important as the time horizon of the owner declines. This is important because most businesses depreciate assets over a period of time.

Additional Costs from Natural Hazards

Property owners should also assess changes in a broader set of factors that can change as a result of a large natural disaster. These are usually termed "indirect" effects, but they can have a very direct effect on the economic value of the owner's building or land. They can be positive or negative, and include changes in the following:

- Commodity and resource prices
- Availability of resource supplies
- Commodity and resource demand changes
- Building and land values
- Capital availability and interest rates
- Availability of labor
- Economic structure
- Infrastructure
- Regional exports and imports
- Local, state, and national regulations and policies
- Insurance availability and rates

Changes in the resources and industries listed above are more difficult to estimate and require models that are structured to estimate total economic impacts. Total economic impacts are the sum of direct and indirect economic impacts. Total economic impact models are usually not combined with economic feasibility models. Many models exist to estimate total economic impacts of changes in an economy. Decision makers should understand the total economic impacts of natural disasters in order to calculate the benefits

of a mitigation activity. This suggests that understanding the local economy is an important first step in being able to understand the potential impacts of a disaster, and the benefits of mitigation activities.

Additional Considerations

Conducting an economic analysis for potential mitigation activities can assist decision-makers in choosing the most appropriate strategy for their community to reduce risk and prevent loss from natural hazards. Economic analysis can also save time and resources from being spent on inappropriate or unfeasible projects. Several resources and models are listed on the following page that can assist in conducting an economic analysis for natural hazard mitigation activities.

Benefit/cost analysis is complicated, and the numbers may divert attention from other important issues. It is important to consider the qualitative factors of a project associated with mitigation that cannot be evaluated economically. There are alternative approaches to implementing mitigation projects. With this in mind, opportunity rises to develop strategies that integrate natural hazard mitigation with projects related to watersheds, environmental planning, community economic development, and small business development, among others. Incorporating natural hazard mitigation with other community projects can increase the viability of project implementation.

Resources

CUREe Kajima Project, *Methodologies for Evaluating the Socio-Economic Consequences of Large Earthquakes*, Task 7.2 Economic Impact Analysis, Prepared by University of California, Berkeley Team, Robert A. Olson, VSP Associates, Team Leader; John M. Eidinger, G&E Engineering Systems; Kenneth A. Goettel, Goettel and Associates, Inc.; and Gerald L. Horner, Hazard Mitigation Economics Inc., 1997

Federal Emergency Management Agency, *Benefit/Cost Analysis of Hazard Mitigation* Projects, Riverine Flood, Version 1.05, Hazard Mitigation Economics, Inc., 1996

Federal Emergency Management Agency, *Report on the Costs and Benefits of Natural Hazard Mitigation*. Publication 331, 1996.

Goettel & Horner Inc., *Earthquake Risk Analysis Volume III: The Economic Feasibility of Seismic Rehabilitation of Buildings in the City of Portland*, Submitted to the Bureau of Buildings, City of Portland, August 30, 1995.

Goettel & Horner Inc., *Benefit/Cost Analysis of Hazard Mitigation Projects* Volume V, Earthquakes, Prepared for FEMA's Hazard Mitigation Branch, Ocbober 25, 1995.

Horner, Gerald, *Benefit/Cost Methodologies for Use in Evaluating the Cost Effectiveness of Proposed Hazard Mitigation Measures*, Robert Olsen Associates, Prepared for Oregon Military Department – Office of Emergency Management, July 1999.

Interagency Hazards Mitigation Team, *State Hazard Mitigation Plan*, (Oregon State Police – Office of Emergency Management, 2000.)

Risk Management Solutions, Inc., *Development of a Standardized Earthquake Loss Estimation Methodology*, National Institute of Building Sciences, Volume I and II, 1994.

VSP Associates, Inc., *A Benefit/Cost Model for the Seismic Rehabilitation of Buildings*, Volumes 1 & 2, Federal Emergency management Agency, FEMA Publication Numbers 227 and 228, 1991.

VSP Associates, Inc., *Benefit/Cost Analysis of Hazard Mitigation Projects: Section 404 Hazard Mitigation Program and Section 406 Public Assistance Program, Volume 3: Seismic Hazard Mitigation Projects*, 1993.

VSP Associates, Inc., *Seismic Rehabilitation of Federal Buildings: A Benefit/Cost Model*, Volume 1, Federal Emergency Management Agency, FEMA Publication Number 255, 1994.

Appendix E:
Grant Programs and Resources

Post-Disaster Federal Programs

Hazard Mitigation Grant Program

- The Hazard Mitigation Grant Program (HMGP) provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
  http://www.fema.gov/hazard-mitigation-grant-program

Physical Disaster Loan Program

- When physical disaster loans are made to homeowners and businesses following disaster declarations by the U.S. Small Business Administration (SBA), up to 20% of the loan amount can go towards specific measures taken to protect against recurring damage in similar future disasters.
  http://www.sba.gov/category/navigation-structure/loans-grants/small-business-loans/disaster-loans

Pre-Disaster Federal Programs

Pre-Disaster Mitigation Grant Program

- The Pre-Disaster Mitigation (PDM) program provides funds to states, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.
  http://www.fema.gov/pre-disaster-mitigation-grant-program

Flood Mitigation Assistance Program

- The overall goal of the Flood Mitigation Assistance (FMA) Program is to fund cost-effective measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other National Flood Insurance Program (NFIP) insurable structures. This specifically includes:
  - Reducing the number of repetitively or substantially damaged structures and the associated flood insurance claims;
  - Encouraging long-term, comprehensive hazard mitigation planning;
  - Responding to the needs of communities participating in the NFIP to expand their mitigation activities beyond floodplain development activities; and

- Complementing other federal and state mitigation programs with similar, long-term mitigation goals.
  http://www.fema.gov/flood-mitigation-assistance-program

Detailed program and application information for federal post-disaster and pre-disaster programs can be found in the f, available at :
https://www.fema.gov/library/viewRecord.do?id=4225

For Oregon Military Department – Office of Emergency Management grant guidance on Federal Hazard Mitigation Assistance, visit:
http://www.oregon.gov/OMD/OEM/pages/all_grants.aspx - Hazard_Mitigation_Grants

OEM contact: Dennis Sigrist, dsigrist@oem.state.or.us

State Programs

Community Development Block Grant Program

- Promotes viable communities by providing: 1) decent housing; 2) quality living environments; and 3) economic opportunities, especially for low and moderate income persons. Eligible Activities Most Relevant to Hazard Mitigation include: acquisition of property for public purposes; construction/reconstruction of public infrastructure; community planning activities. Under special circumstances, CDBG funds also can be used to meet urgent community development needs arising in the last 18 months which pose immediate threats to health and welfare.
  http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs

Oregon Watershed Enhancement Board

- While OWEB's primary responsibilities are implementing projects addressing coastal salmon restoration and improving water quality statewide, these projects can sometimes also benefit efforts to reduce flood and landslide hazards. In addition, OWEB conducts watershed workshops for landowners, watershed councils, educators, and others, and conducts a biennial conference highlighting watershed efforts statewide. Funding for OWEB programs comes from the general fund, state lottery, timber tax revenues, license plate revenues, angling license fees, and other sources. OWEB awards approximately $20 million in funding annually.
  http://www.oregon.gov/OWEB/Pages/index.aspx

Federal Mitigation Programs, Activities & Initiatives

Basic & Applied Research/Development

- National Earthquake Hazard Reduction Program (NEHRP), National Science Foundation. Through broad based participation, the NEHRP attempts to mitigate the effects of earthquakes. Member agencies in NEHRP are the US Geological Survey (USGS), the National Science Foundation (NSF), the Federal Emergency Management Agency (FEMA), and the National Institute for Standards and Technology (NIST). The agencies focus on research and development in areas such as the science of earthquakes, earthquake performance of buildings and other structures, societal impacts, and emergency response and recovery.
  http://www.nehrp.gov/

- Decision, Risk, and Management Science Program, National Science Foundation. Supports scientific research directed at increasing the understanding and effectiveness of decision making by individuals, groups, organizations, and society. Disciplinary and interdisciplinary research, doctoral dissertation research, and workshops are funded in the areas of judgment and decision making; decision analysis and decision aids; risk analysis, perception, and communication; societal and public policy decision making; management science and organizational design. The program also supports small grants for exploratory research of a time-critical or high-risk, potentially transformative nature. http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=5423

Hazard ID and Mapping

- National Flood Insurance Program: Flood Mapping; FEMA. Flood insurance rate maps and flood plain management maps for all NFIP communities. http://www.fema.gov/national-flood-insurance-program-flood-hazard-mapping
- National Digital Orthophoto Program, DOI – USGS. Develops topographic quadrangles for use in mapping of flood and other hazards. http://www.ndop.gov/
- Mapping Standards Support, DOI-USGS. Expertise in mapping and digital data standards to support the National Flood Insurance Program. http://ncgmp.usgs.gov/standards.html
- Soil Survey, USDA-NRCS. Maintains soil surveys of counties or other areas to assist with farming, conservation, mitigation or related purposes. http://soils.usda.gov/survey/printed_surveys/

Project Support

- Coastal Zone Management Program, NOAA. Provides grants for planning and implementation of non-structural coastal flood and hurricane hazard mitigation projects and coastal wetlands restoration. http://coastalmanagement.noaa.gov/
- Community Development Block Grant Entitlement Communities Program, HUD. Provides grants to entitled cities and urban counties to develop viable communities (e.g., decent housing, a suitable living environment, expanded economic opportunities), principally for low- and moderate- in come persons. http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/entitlement
- National Fire Plan (DOI – USDA) Provides technical, financial, and resource guidance and support for wildland fire management across the United States. Addresses five key points: firefighting, rehabilitation, hazardous fuels reduction, community assistance, and accountability. http://www.forestsandrangelands.gov/
- Assistance to Firefighters Grant Program, FEMA. Grants are awarded to fire departments to enhance their ability to protect the public and fire service personnel from fire and related hazards. Three types of grants are available: Assistance to Firefighters Grant (AFG), Fire Prevention and Safety (FP&S), and Staffing for Adequate Fire and Emergency Response (SAFER). http://www.fema.gov/welcome-assistance-firefighters-grant-program
- Emergency Watershed Protection Program, USDA-NRCS. Provides technical and financial assistance for relief from imminent hazards in small watersheds, and to reduce vulnerability

of life and property in small watershed areas damaged by severe natural hazard events. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/landscape/ewpp

- Rural Development Assistance – Utilities, USDA. Direct and guaranteed rural economic loans and business enterprise grants to address utility issues and development needs. http://www.rurdev.usda.gov/Utilities_Programs_Grants.html
- Rural Development Assistance – Housing, USDA. Grants, loans, and technical assistance in addressing rehabilitation, health and safety needs in primarily low-income rural areas. Declaration of major disaster necessary.

  http://www.rurdev.usda.gov/HAD-HCFPGrants.html
- Public Assistance Grant Program, FEMA. The objective of the Federal Emergency Management Agency's (FEMA) Public Assistance (PA) Grant Program is to provide assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can quickly respond to and recover from major disasters or emergencies declared by the President. http://www.fema.gov/public-assistance-local-state-tribal-and-non-profit
- National Flood Insurance Program, FEMA. Makes available flood insurance to residents of communities that adopt and enforce minimum floodplain management requirements. http://www.fema.gov/national-flood-insurance-program
- HOME Investments Partnerships Program, HUD. Grants to states, local government and consortia for permanent and transitional housing (including support for property acquisition and rehabilitation) for low-income persons. http://www.hud.gov/offices/cpd/affordablehousing/programs/home/
- Disaster Recovery Initiative, HUD. Grants to fund gaps in available recovery assistance after disasters (including mitigation). http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment/programs/dri
- Emergency Management Performance Grants, FEMA. Helps state and local governments to sustain and enhance their all-hazards emergency management programs and to fund some hazard mitigation work. http://www.fema.gov/fy-2012-emergency-management-performance-grants-program
- Partners for Fish and Wildlife, DOI – FWS. Financial and technical assistance to private landowners interested in pursuing restoration projects affecting wetlands and riparian habitats. http://www.fws.gov/partners/
- North American Wetland Conservation Fund, DOI-FWS. Cost-share grants to stimulate public/private partnerships for the protection, restoration, and management of wetland habitats. http://www.fws.gov/birdhabitat/Grants/index.shtm
- Federal Land Transfer / Federal Land to Parks Program, DOI-NPS. Identifies, assesses, and transfers available Federal real property for acquisition for State and local parks and recreation, such as open space. http://www.nps.gov/ncrc/programs/flp/index.htm
- Wetlands Reserve program, USDA-NCRS. Financial and technical assistance to protect and restore wetlands through easements and restoration agreements. http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/easements/wetlands

- Secure Rural Schools and Community Self-Determination Act of 2000, US Forest Service. Reauthorized for FY2012, it was originally enacted in 2000 to provide five years of transitional assistance to rural counties affected by the decline in revenue from timber harvests on federal lands. Funds have been used for improvements to public schools, roads, and stewardship projects. Money is also available for maintaining infrastructure, improving the health of watersheds and ecosystems, protecting communities, and strengthening local economies. http://www.fs.usda.gov/pts/

Appendix F: Regional Household Preparedness Survey

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Pre-Disaster Mitigation Program

Household Natural Hazards Preparedness Survey and Focus Group Report

Final Report for:

Northeast Oregon Hazard Awareness & Reduction Team

Baker County, Oregon
Grant County, Oregon
Union County, Oregon
Wallowa County, Oregon

Prepared by:

Oregon Natural Hazards Workgroup

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Executive Summary

Introduction

The *Partners for Disaster Resistance and Resilience: Oregon Showcase State Program* was established in 2000 to provide a more coordinated approach to addressing risks from natural hazards in Oregon. This Program strives to reduce deaths, injuries, property damage, economic losses and human suffering caused by natural disasters. The Program provides a comprehensive framework for government and the private sector to prepare for and minimize risk and impact of natural hazards. Specifically, the mission of the Showcase State Program is to: *Prevent injuries and deaths, protect public and private property and create a disaster-ready statewide economy through public and private partnerships.*

The Federal Emergency Management Agency (FEMA) published Interim Rule 44 CFR Part 201 in February 2002, requiring all states and communities to develop natural hazard mitigation plans by November 2003. These planning and mitigation requirements for states and communities are being accomplished through the Pre-Disaster Mitigation Program (PDM). Oregon Natural Hazards Workgroup (ONHW) at the University of Oregon, as the coordinator of the *Partners for Disaster Resistance and Resilience: Oregon Showcase State Program*, is working with Oregon Emergency Management (OEM) and the PDM Program to assist local governments with their natural hazard mitigation planning efforts.

Citizen involvement is a key component in the natural hazard mitigation planning process. The Disaster Mitigation Act of 2000[1] requires citizen involvement in the natural hazard mitigation planning process.

As part of the PDM Program, ONHW is assisting the Northeast Oregon Hazard Awareness and Response Team (NE Oregon), comprised of Baker, Grant, Union and Wallowa Counties, with the citizen involvement components of the natural hazard mitigation planning process. A survey was administered to 1,500 households in NE Oregon. ONHW received 264 survey responses yielding a 18% response rate. The primary goal of the survey was to gauge the overall perception of natural disasters and determine a baseline level of loss reduction activity for residents of each community.

[1] National Archives and Records Administration. 2002. Federal Emergency Management Agency 44 CFR Parts 201 and 206 Hazard Mitigation Planning and Hazard Mitigation Grant Program; Interim Final Rule in Federal Register.

Key Findings

Characteristics of Survey Respondents

The survey included a number of questions intended to identify the demographic characteristics of survey respondents:

- The respondents were 54.6% male and 45.4% female.
- The median age of survey respondents is 55.0 years of age.
- About 76% percent of survey respondents have had some college or trade school, or have a college or postgraduate degree. This is higher than the 50.4% of NE Oregon residents who, according to the 2000 U.S. Census, have had some college or trade school, or have an associate, bachelor or postgraduate degree.
- Seventy-six percent of the respondents have lived in Oregon more than 20 years.
- Eighty-six percent of the respondents are homeowners.

The results indicate respondents were older, better educated and more likely to be homeowners than NE Oregon residents as a whole. Thus, the results under-represent younger households and renters.

Perception of Risk

The survey asked a series of questions about hazards respondents have experienced and their level of concern about natural hazards in NE Oregon:

- Approximately 29% of respondents experienced a natural hazard event in the past five years or since living in the community they currently reside in.
- The top three natural hazard events experienced by those respondents were windstorm (22.0%), drought (11.0%), and wildfire (9.5%).
- Drought and wildfire ranked first as the hazards respondents are the most concerned about, followed by household fire and windstorm.

Information Distribution

The survey asked respondents a series of questions on effective information sources and outreach methods:

- Respondents indicated that utility companies and insurance companies or agents are the most trustworthy sources of information about making homes and families more disaster resistant, followed by the American Red Cross and universities or research institutions.
- The best method for survey respondents to receive information on how to make their homes and families more disaster resistant is by television news.

Results from this section reveal the need for raised awareness about the risks of natural hazards, while also identifying effective public outreach methods.

Level of Preparedness

The survey included a series of questions about household natural hazard preparedness activities in NE Oregon:

- Only 34.6% of respondents have a household emergency plan while 44.8% have a disaster supply kit.
- Approximately 45% of respondents have attended meetings or received written information on natural disasters or emergency preparedness.
- Thirty-four percent of respondents said they were willing to spend 2-3 hours per year on preparing themselves and their households for a natural disaster or emergency event. Twenty percent were willing to spend 4-7 hours, 13.9% would spend 8-15 hours, and 9.4% said they were willing to spend 16+ hours.
- About 78% of the respondents don't have insurance coverage for flood events, and 73% don't have insurance coverage for earthquakes.

Natural Hazard Risk Reduction

The survey asked respondents to provide information about their risk reduction activities:

- About 40% of the respondents did consider the possible occurrence of a natural hazard when they bought or moved into their current home.
- Twenty-six percent indicated they would be willing to spend more money on a home that had disaster-resistant features, although 44.4% indicated they did not know whether or not they would be willing to spend more money on disaster-resistant features.
- The most common nonstructural modification made by survey respondents to make their home more disaster resistant was fitting gas appliances with flexible connections (13.6%).
- Fifty-eight percent of respondents indicated that they have not made any structural modifications to their home.
- Fifty-eight of the respondents indicated that tax breaks or incentives are the most attractive incentives to provoke them to take additional steps to protect their families and homes from disaster.

These results indicate few households have made substantial efforts to prepare their homes for a disaster, but potential for increased risk reduction activity does exist.

Community Natural Hazard Preparedness

The survey asked questions to determine respondents' priorities for planning for natural hazards and what types of strategies to reduce the community's risk the respondents would support.

- Protecting critical facilities, according to respondents, is the most important priority in planning for natural hazards, followed by protecting and reducing damage to utilities, and protecting private property.
- Eighty-six percent of the respondents strongly agree or agree that they support improving the disaster preparedness of local schools, while 76% said they strongly agree or agree that they support steps to safeguard the local economy following a disaster event.

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Chapter 1
Introduction

Background

The *Partners for Disaster Resistance and Resilience: Oregon Showcase State Program* was established in 2000 to provide a more coordinated approach to addressing risks from natural hazards in Oregon. Establishing disaster safety as a public value is a shared objective among the partners involved with the Program. This Program strives to reduce deaths, injuries, property damage, economic losses and human suffering caused by natural disasters. The next flood, earthquake or wildfire cannot be avoided. However, we can make a comprehensive and concentrated effort to reduce the effects of these natural forces on our economic, social and environmental stability. The Program provides a comprehensive framework for government and the private sector to prepare for and minimize risk and impact of natural hazards. Specifically, the mission of the Showcase State Program is to: *Prevent injuries and deaths, protect public and private property and create a disaster-ready statewide economy through public and private partnerships.*

The Federal Emergency Management Agency (FEMA) published Interim Rule 44 CFR Part 201 in February 2002, requiring all states and communities to develop natural hazard mitigation plans by November 2003. These planning and mitigation requirements for states and communities are being accomplished through the Pre-Disaster Mitigation Program (PDM). Oregon Natural Hazards Workgroup (ONHW) at the University of Oregon, as the coordinator of the *Partners for Disaster Resistance and Resilience: Oregon Showcase State Program*, is working with Oregon Emergency Management (OEM) and the PDM Program to assist local governments with their natural hazard mitigation planning efforts. Five Oregon communities are participating in the 2002-2003 PDM Program. The communities are Clackamas County, Douglas County, City of Hillsboro, Tillamook County and a four-county region in Northeast Oregon comprised of Baker, Grant, Union and Wallowa Counties.

Citizen involvement is a key component in the natural hazard mitigation planning process. Citizens have the opportunity to voice their ideas, interests and concerns about the impact of natural disasters on their communities. To that end, the Disaster Mitigation Act of 2000[2]

[2] National Archives and Records Administration. 2002. Federal Emergency Management Agency 44 CFR Parts 201 and 206 Hazard Mitigation Planning and Hazard Mitigation Grant Program; Interim Final Rule in Federal Register.

requires citizen involvement in the natural hazard mitigation planning process. It states:

> An open public involvement process is essential to the development of an effective plan. In order to develop a more comprehensive approach to reducing the effects of natural disasters, the planning process shall include:
>
> 1. An opportunity for the public to comment on the plan during the drafting stage and prior to plan approval.
> 2. An opportunity for neighboring communities, local and regional agencies involved in hazard mitigation activities, and agencies that have the authority to regulate development, as well as businesses, academia and other private and non-profit interests to be involved in the planning process.

The benefits of citizen involvement, according to Bierle[3], include the following: 1) educate and inform public; 2) incorporate public values into decision making; 3) improve substantially the quality of decisions; 4) increase trust in institutions; 5) reduce conflict; and 6) ensure cost effectiveness.

The survey helps the Northeast Oregon Hazard Awareness and Reduction Team (NE Oregon), comprised of Baker, Grant, Union and Wallowa Counties, realize Bierle's five benefits of citizen involvement in the natural hazard mitigation planning process. As part of the PDM Program, ONHW is assisting NE Oregon with the citizen involvement components of the natural hazard mitigation planning process. A survey was administered to 1,500 households in NE Oregon. A focus group was planned but was cancelled due to lack of participation. Please see the *Methodology* section for more information on this issue.

Methodology

Survey

To conduct the household survey, ONHW adapted the eight page survey administered statewide in 2002 to better understand the perceptions of risk to natural hazards held by citizens, as well as the level of preparedness and types of risk reduction activities in which citizens have engaged. (See Appendix A) The primary goal of the survey was to gauge the overall perception of natural disasters and determine a baseline level of loss reduction activity for residents in the community. ONHW adapted the statewide survey to include questions about citizens' support for community planning goals and implementation strategies.

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[3] Bierle, T. 1999. "Using social goals to evaluate public participation in environmental decisions." *Policy Studies Review*. 16(3/4) ,75-103.

The survey was sent to 1500 households in NE Oregon. The households were randomly selected based on zip codes using a sample list provided by Qwest. The mailing contained a cover letter, the survey instrument, a focus group interest form, a postage-paid return envelope, and educational flyer with preparedness tips for earthquake, fire and flood. Completed surveys and focus group interest forms were returned to ONHW. A thank-you/reminder postcard was sent approximately one and one half weeks after the first mailing. A second mailing was sent to households who did not respond to the first mailing approximately three weeks later. ONHW received 264 valid responses, for a 18% response rate.

Focus Group

ONHW began the process of developing the focus group methodology by reviewing the household preparedness survey instrument along with preliminary results to determine what kind of information could be gathered through the focus group process. Several key themes came out of the survey, including: household risk perception, household preparedness, willingness to reduce risk and citizen priorities for community-level risk reduction. We were going to further explore these themes in a focus group conducted in NE Oregon. The household survey provided baseline data on these themes, and the focus group would have provided more qualitative data. However, as previously stated, the focus group was not conducted due to lack of participation.

Determining how participants would be recruited was an important step in the focus group planning process. Participants for the focus group were selected from the respondents of the household risk perception survey. Focus group interest forms were inserted in the survey. Respondents could choose to complete the interest form and return it with their survey, indicating their willingness to participate in a future focus group.

An over-recruitment strategy was used to invite participants to the focus groups. To get six to eight participants, twelve to fifteen should be invited. However, all survey respondents who returned the focus group interest form and were living within a 20-minute drive of the focus group location were invited. Fifteen survey respondents were invited to attend the focus group. Only one invitee responded that he would attend the focus group. Therefore, the focus group was cancelled.

Limitations

Survey

The study identifies key issues about how members of the NE Oregon communities perceive their risk to natural hazards, providing a snapshot of those perceptions at a single point in time. As such, survey responses may reflect external issues, such as heightened concern about terrorism and the current state of the economy. This study was not intended to be representative of the perceptions of all residents, and cannot be generalized to the public.

Another limitation of the study's methodology is potential non-response bias from the mailed survey. If one were to assume that the sample was perfectly random and that there was no response bias, then the survey would have a margin of error of ±6% at the 95% confidence level. In other words, if the survey were conducted 100 times, one could expect the results to be within ±6% of those presented in this report.

A challenge is that the survey was not tailored to each community in which it was implemented and natural hazards are not evenly dispersed throughout the state. For example, the survey asked respondents about their level of concern about coastal erosion. Coastal erosion is only an issue in coastal areas of the state. Not surprisingly, the level of concern for coastal erosion is highest in coastal communities and is less significant for those who do not live there. Thus, coastal erosion is a specific concern for respondents who live near this hazard that they are susceptible to every day, just as those who live in the floodplain or near a volcanic hazard may have increased awareness of those hazards.

Organization of Report

The remainder of this report is organized as follows:

Chapter 2: This chapter describes the characteristics of survey respondents.

Chapter 3: This chapter creates a profile of survey respondents and identifies:

- The hazards experienced;
- General level of concern over natural hazards risk;
- Types of natural hazards present in NE Oregon;
- Respondent perceptions of threats posed by natural hazards;
- Perceptions of the effectiveness of various education and outreach material in raising natural hazard awareness; and
- Preferred avenues for information dissemination.

Chapter 4: This chapter provides an overview of household level natural hazard preparedness activities in NE Oregon.

Chapter 5: This chapter describes the types of structural and nonstructural measures that are being implemented by survey respondents, and the types of resources or programs that might increase risk reduction activities.

Chapter 6: This chapter describes citizens' priorities for planning for natural hazards and the community-wide strategies respondents support.

Appendix A, Survey Results: This Appendix includes the results from the Household Natural Hazards Preparedness Survey, as well as the transcript of the open-ended questions and comments.

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Chapter 2
Characteristics of Survey Respondents

Demographic questions provide a statistical overview of the characteristics of the respondents. This section of the survey asked respondents about their age and gender, their level of education, and how long they have lived in Oregon. The survey also included questions regarding respondents' present housing.

Age and Gender

Men accounted for 54.6% of survey respondents. The median age of survey respondents was 55.0 years of age. Whereas, the median age of NE Oregon residents, according to the U.S. Census[4], is 40.7. Table 1 compares the ages of survey respondents to the 2000 U.S. Census. This shows that most of the age categories were over-represented by the survey respondents.

Table 1. Percentage of NE Oregon Population and Survey Respondents in Each Age Classification (persons 25 and over)

Age Category	NE Oregon	Percent of Respondents
20-24	4.5%	0.8%
25-34	9.0%	9.5%
35-44	14.3%	14.2%
45-54	16.1%	25.3%
55-59	6.1%	14.2%
60-64	5.4%	10.7%
65-74	8.9%	14.2%
75-84	6.0%	8.7%
85 & over	2.4%	2.4%

Source: U.S. Census Bureau: www.census.gov (2000) and Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

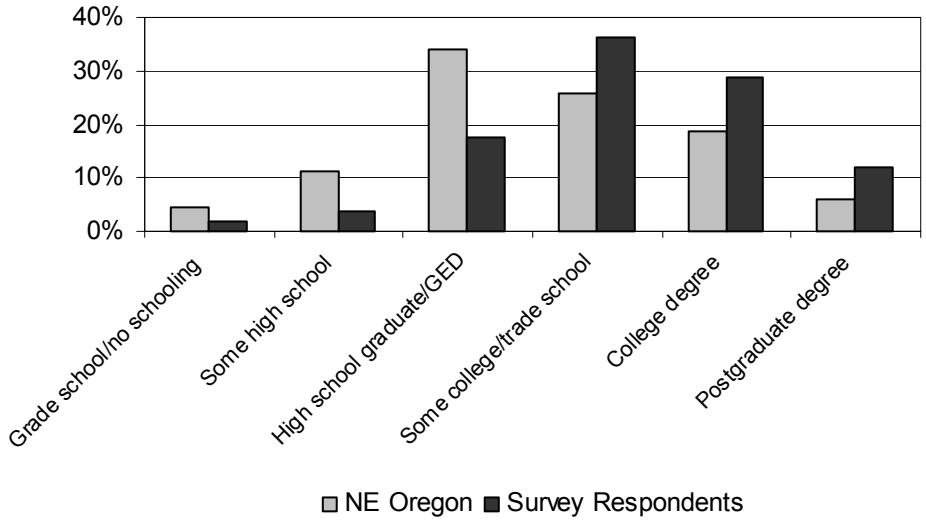
Level of Education

In general, survey respondents were relatively well educated. Figure 1 compares the level of education of survey respondents with the 2000

[4] U.S. Census data presented in this report is an average of data from each of the four counties represented in the Northeast Oregon Hazard Awareness and Response Team.

U.S. Census. Over 76% of survey respondents have had some college or trade school, or have a college or postgraduate degree. Whereas, 50.4% of NE Oregon residents, according to the 2000 U.S. Census, have had some college or trade school, or have an associate, bachelor or postgraduate degree. Therefore, survey respondents were more likely to have completed a higher educational level than the overall population of NE Oregon.

Figure 1. Level of Education of NE Oregon Population and Survey Respondents

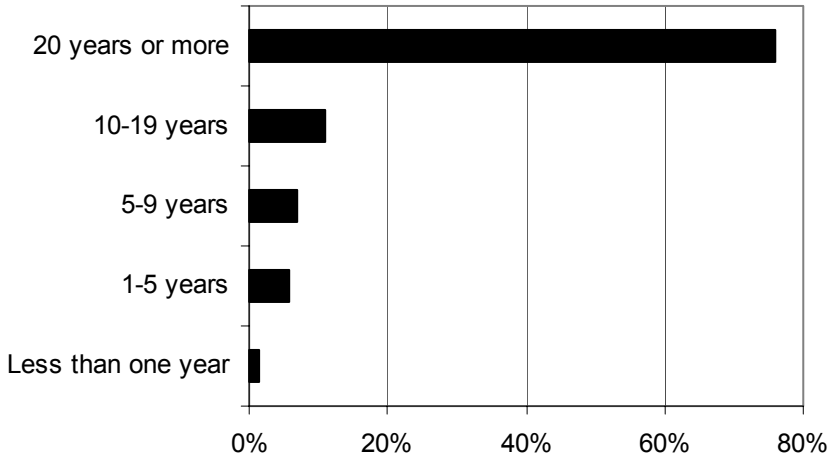


Source: U.S. Census Bureau: www.census.gov (2000) and Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Oregon Residency

Seventy-six percent of survey respondents have lived in Oregon for 20 years or more (see Figure 2). Respondents who have lived in Oregon for fewer than 20 years have most commonly moved from Washington (9.3%), California (6.3%) and Idaho (3.0%).

Figure 2. Length of Time Survey Respondents Have Lived in Oregon



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Housing Characteristics

Homeownership is an important variable in education and outreach programs. Knowledge of the percentage of homeowners in a community can help target the programs. Additionally, homeowners might be more willing to invest time and money in making their homes more disaster resistance. Table 2 compares the percentage of homeowners from the survey and the U.S. Census. Over 86% of survey respondents are homeowners, compared to the 70.5% as reported by the U.S. Census. The survey sample over represents the number of homeowners and considerably under represents the number of renters.

Table 2. Percentage of NE Oregon Population and Survey Respondents Who Own or Rent Their Home

Occupied housing units	NE Oregon	Percent of Respondents
Owner-occupied housing units	70.5%	86.2%
Renter-occupied housing units	29.5%	13.8%

Source: U.S. Census Bureau: www.census.gov (2000) and Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Table 3 shows survey respondents' housing type by tenure (whether the dwelling is rented or owned). Approximately 73% of respondents own a single-family home and five percent rent a single-family home. Thirteen percent of respondents own a manufactured home. Less than one percent of respondents rent an apartment of 3 to 4 units, while about one percent rent a manufactured home.

Table 3. Survey Respondents' Housing Characteristics by Type and Tenure

Type of Dwelling	Own	Rent	Total
Single-family	71.7%	9.2%	80.9%
Duplex	0.8%	1.2%	2.0%
Apartment 3-4 units	0.0%	0.0%	0.0%
Apartment 5 or more units	0.0%	2.4%	2.4%
Condominium/Townhouse	0.0%	0.0%	0.0%
Manufactured Home	11.6%	0.8%	12.4%
Other	1.6%	0.8%	2.4%
Total	85.7%	14.3%	100.0%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Chapter 3
Perception of Risk

It is helpful to understand community members' experiences and perceptions of risk to natural hazards to make informed decisions about natural hazard risk reduction activities. The survey asked respondents for information regarding their personal experiences with natural disasters and their level of concern for specific hazards in NE Oregon. The primary objective of these questions was to create a "natural hazard profile" of respondents to better understand how NE Oregon residents perceive natural hazards.

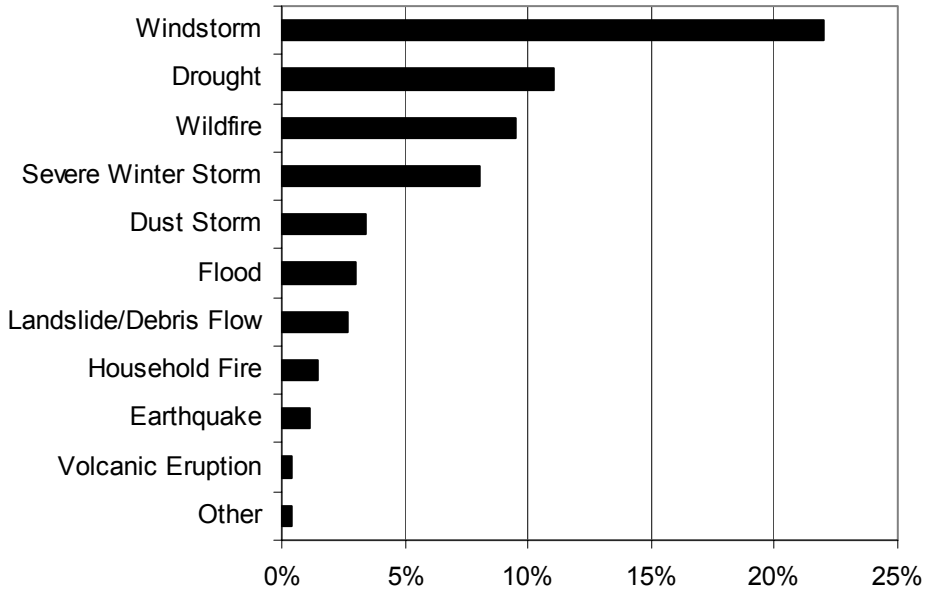
To understand the effectiveness of current outreach activities regarding home and family safety, the survey asked respondents about the types of information they receive on how to make their home and family safer. By identifying communication tools that have been effectively used in the past, local government agencies and organizations can continue to make use of or augment the use of these outreach materials.

General Level of Concern

The survey results indicate that 29.1% of the respondents or someone in their household has personally experienced natural disasters in the past five years or since they have lived in the community in which they currently reside.

Of those respondents who have experienced a natural disaster in the last five years, 22.0% have experienced a windstorm. Approximately 11% have experienced a drought, and about 10% have experienced a wildfire. Figure 3 shows the most frequently experienced disasters in NE Oregon.

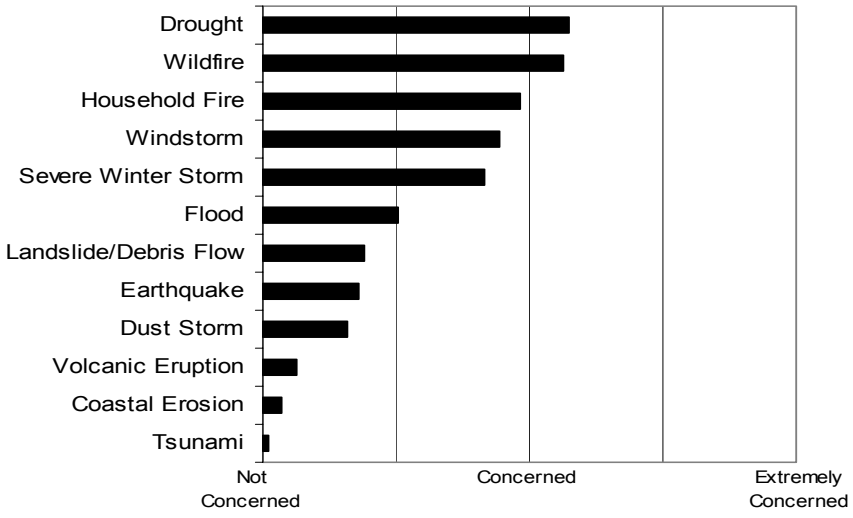
Figure 3. Percent of Survey Respondents Who Have Experienced Natural Disasters in NE Oregon



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

The survey asked respondents to rank their personal level of concern for specific natural disasters affecting their community. Figure 4 shows the general level of concern about natural hazards in NE Oregon.

Figure 4. Survey Respondents' General Level of Concern about Natural Hazards in NE Oregon



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Results show that respondents are most concerned about drought and Wildfire. The respondents are least concerned about coastal erosion and tsunamis. See Table 4.

Table 4. Survey Respondents' Level of Concern About Natural Hazards in NE Oregon

Hazard Type	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	26.2%	19.3%	25.8%	15.2%	13.5%
Dust Storm	1.3%	4.4%	14.1%	17.6%	62.6%
Earthquake	0.4%	2.7%	14.7%	32.6%	49.6%
Flood	1.3%	5.7%	26.1%	27.8%	39.1%
Landslide/Debris Flow	2.2%	3.6%	15.2%	25.6%	53.4%
Wild	24.9%	20.3%	26.2%	13.5%	15.2%
Household Fire	12.9%	13.8%	36.7%	26.3%	10.4%
Tsunami	0.0%	0.0%	0.9%	2.3%	96.7%
Volcanic Eruption	0.0%	1.8%	2.7%	14.7%	80.9%
Wind Storm	7.5%	15.9%	38.1%	24.3%	14.2%
Coastal Erosion	0.5%	0.5%	2.7%	5.0%	91.4%
Severe Winter Storm	7.1%	13.8%	37.1%	22.1%	20.0%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

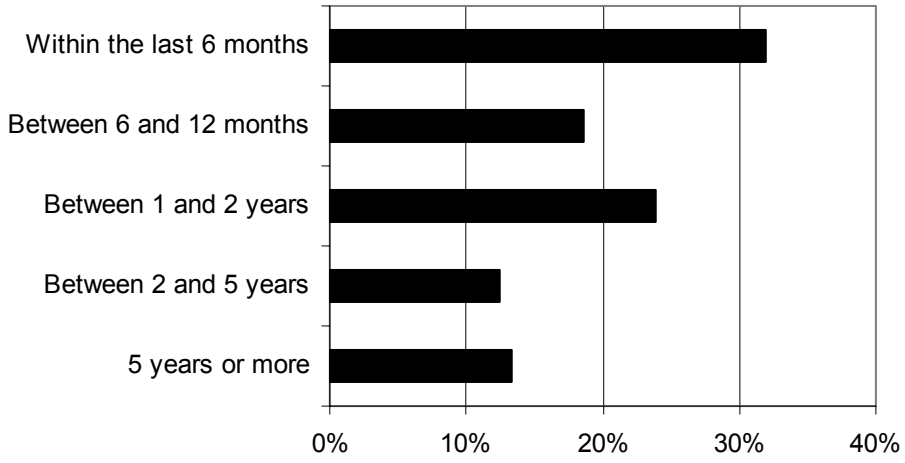
Information Distribution

One of the objectives of the survey was to assess the amount and effectiveness of outreach activities focusing on natural hazards. The survey asked a series of questions on information and outreach.

Recent information and sources

Almost 45% of respondents indicated that they have received information regarding home and family safety at some time in the past. Of those who have received information, 31.9% of the respondents received the information within the last six months. Approximately 19% received information six months to one year ago (see Figure 5). This suggests that, while outreach is occurring, it is reaching fewer than half of the households in NE Oregon, and that many of the households have not received any information in over a year.

Figure 5. Survey Respondents' History of Receiving Information on Family and Home Safety



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Of the respondents who received information on natural hazard preparedness, about 14% received it from the news media. About 10% received information from utility companies or insurance agents and companies, and nine percent received it from a utility company. Over 7% of respondents weren't sure where they received information from.

Preferred Sources and Formats of Information

To develop and implement effective outreach and education activities, it is important to understand the mechanisms for information dissemination. Approximately 41% of respondents consider the utility companies to be a trustworthy source of information for making their households and homes safer from natural disasters. Another trustworthy source for respondents is an insurance agent or company (35.6%). Table 5 shows the sources respondents trust the most for providing this information.

Table 5. Survey Respondents' Most Trusted Sources of Information on Household Preparedness

Source	Percent of Respondents
Utility company	41.3%
Insurance agent or company	35.6%
American Red Cross	33.7%
University or research institution	32.2%
Government agency	31.4%
News media	19.3%
Not sure	17.4%
Other non-profit organization	15.2%
Other	6.8%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

When asked what the most effective way is to receive information, respondents indicated the top three sources are: 1) Television news (56.1%); 2) Newspaper stories (54.5%); and 3) Mail (46.6%). Table 6 shows the effectiveness ratings of all the ways to disseminate information presented in the survey.

Table 6. Survey Respondents' Rating of Various Information Sources in Terms of Outreach Effectiveness

Source	Percent of Respondents
Television news	56.1%
Newspaper stories	54.5%
Mail	46.6%
Fact sheet/Brochure	39.4%
Radio news	36.4%
Fire Department/Rescue	27.7%
Public workshops/meetings	20.1%
University or research institution	16.7%
Schools	15.5%
Internet	15.2%
Television ads	12.1%
Newspaper ads	11.0%
Magazine	10.2%
Books	8.7%
Radio ads	6.8%
Outdoor advertisements	5.3%
Chamber of Commerce	5.3%
Other	2.3%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

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Chapter 4
Level of Preparedness

Households can do many things to prepare for a natural disaster or emergency. What someone has easily accessible or has been trained to do when a disaster strikes can make a difference in his/her comfort and safety in the hours and days following a natural disaster or emergency. Basic services, such as electricity, gas, water and telephones, may be cut off, or there may be an immediate evacuation. The survey asked respondents to provide information that could help inform policy makers about preparedness activities that are taking place at the household level in NE Oregon.

Types of Household Preparedness Activities

Approximately 55% of the respondents have talked with members of their households about what to do in the case of a natural disaster or emergency. Forty-five percent of the respondents have prepared a "Disaster Supply Kit." Thirty-five percent have attended meetings or received written information on natural disasters or emergency preparedness. Table 7 summarizes what activities respondents indicate they are doing to be prepared for natural disasters.

Table 7. Survey Respondents' Household Disaster Preparedness Activities

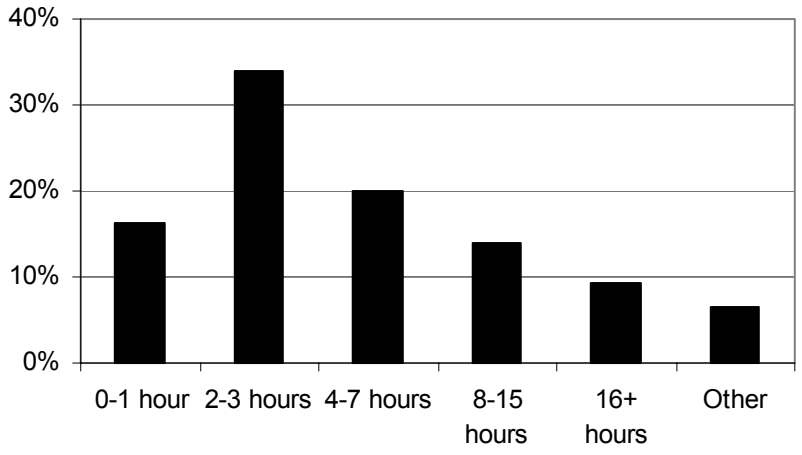
Preparedness Activity	Have Done	Plan To Do	Not Done	Unable To Do
Attended meetings or received written information on natural disasters or emergency preparedness?	35.4%	5.5%	55.1%	3.9%
Talked with members in your household about what to do in case of a natural disaster or emergency?	54.7%	11.4%	30.3%	3.5%
Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the event of a disaster?	34.6%	20.9%	41.3%	3.1%
Prepared a "Disaster Supply Kit" (Stored extra food, water, batteries, or other emergency supplies)?	44.8%	18.1%	36.7%	0.4%
In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	43.5%	5.1%	48.2%	3.2%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Willingness to Participate in Reduction Activities

Understanding how much time per year respondents are willing to spend on preparing themselves and their households for a natural disaster or emergency event can help a community target educational efforts. Thirty-four percent of the respondents said they would be willing to spend two to three hours per year, and 20.0% said they would be willing to spend four to seven hours per year on preparedness activities. About six percent of the respondents said they are willing to do whatever it takes to make their households better prepared for a natural disaster or emergency event.

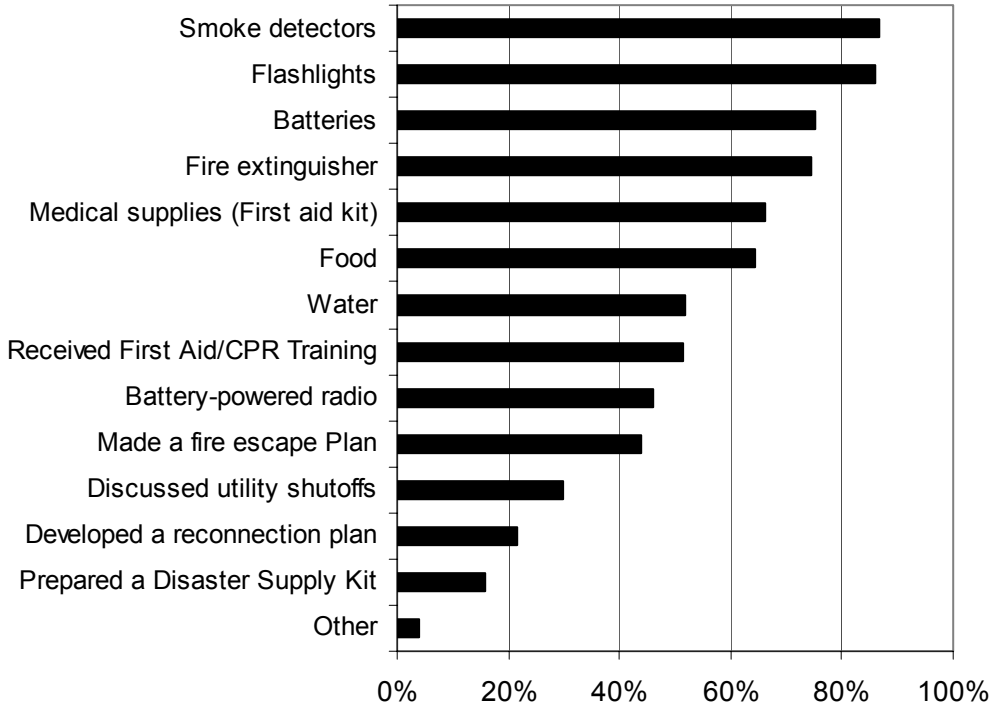
Figure 6. Time Per Year Survey Respondents Are Willing to Spend on Preparedness Activities



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Figure 7 illustrates the steps respondents have taken to be better prepared for a natural disaster or emergency event. Over 80% of the respondents have flashlights and smoke detectors, and over 60% have batteries, fire extinguisher, and medical supplies in their homes. Other common items were food, battery-powered radio, and water. Those steps specific to disaster response and recovery ranked low on the list of steps respondents have taken to be prepared for a natural disaster or emergency event. Only about 16% of the respondents have prepared a disaster supply kit. Twenty-two percent have developed a reconnection plan, and 29.9% percent have discussed utility shutoffs.

Figure 7. Preparedness Steps Taken by Survey Respondents



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Property and Financial Recovery

The need to have adequate provisions for financial and property recovery when natural disasters do occur is a necessary component of natural hazard preparedness. Twenty-two percent of the respondents indicated they have flood insurance. Approximately 67% of those who don't have flood insurance indicated the reason is because their home is not located in the floodplain. Approximately nine percent feel it is not necessary. Seventeen percent of respondents said they do have earthquake insurance. The top two reasons given by those who don't have earthquake insurance were that they never considered it (35.3%) or that it is not necessary (34.8%).

Table 8. Survey Respondents' Reasons For Not Having Disaster Insurance

Flood Insurance	Percent of Respondents	Earthquake Insurance	Percent of Respondents
Not located in the floodplain	67.4%	Never Considered	35.3%
Not Necessary	8.9%	Not Necessary	34.8%
Too Expensive	8.4%	Not Familiar	11.2%
Not Familiar	6.3%	Too Expensive	7.0%
Never Considered	5.3%	Not Available	5.9%
Other	2.6%	Other	3.2%
Deductibles	1.1%	Deductibles	2.7%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Chapter 5
Natural Hazard Risk Reduction

This chapter provides information on the long-term risk reduction activities NE Oregon residents have already taken or are willing to take. This chapter also explores how much respondents are willing to spend in order to reduce risks, and it explores the types of incentives that would motivate the respondents to take risk reduction steps.

Home and Life Safety

Only 39.6% of the respondents considered the possible occurrence of a natural hazard when they bought or moved into their current homes. Twenty-six percent of the respondents indicated they would be willing to spend more money on a home that had disaster-resistant features, while 44.4% said they did not know whether or not they would be willing to.

Fifty-seven percent of respondents indicated they are willing to make their home more resistant to natural disasters. Table 9 illustrates how much respondents are willing to spend to better protect their homes from natural disasters.

Table 9. Amount Survey Respondents Are Willing to Spend

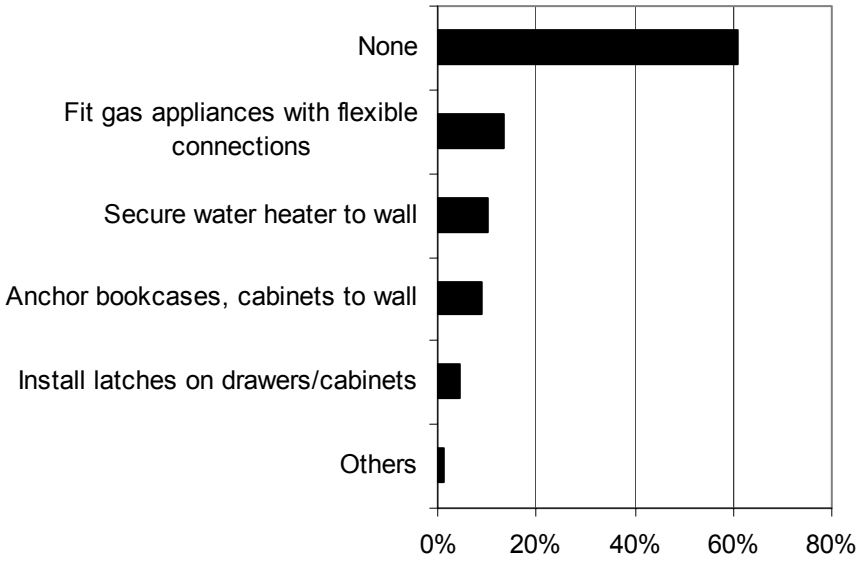
Amount	Percent of Respondents
Less than $100	4.5%
$100-$499	12.3%
$500-$999	8.4%
$1000-$2499	11.6%
$2500-$4999	1.9%
$5000 and above	2.6%
Nothing	1.3%
Don't Know	44.5%
What ever it takes	10.3%
Other	2.6%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Nonstructural and Structural Home Modifications

While 66.0% of respondents said they have not completed any nonstructural modifications in their homes to prepare for earthquakes, Figure 8 shows that some respondents have taken such steps as securing water heaters to the wall and fitting gas appliances with flexible connectors.

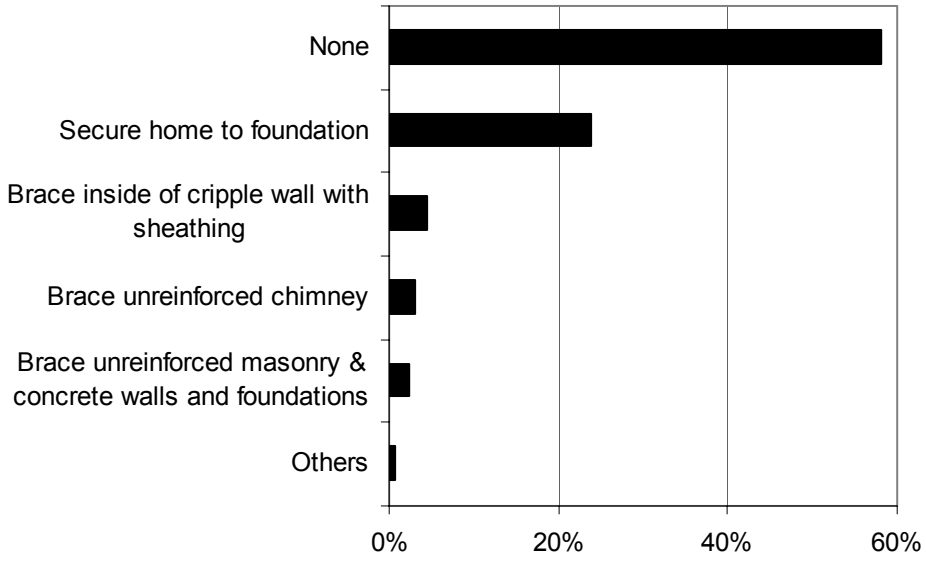
Figure 8. Nonstructural Modifications Survey Respondents Have Made to Their Homes



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Respondents reported making some structural modifications to make their homes more resistant to earthquakes. However, 58.0% of the respondents have not completed any structural modifications. Figure 9 indicates that the most common step taken is securing the home to the foundation.

Figure 9. Structural Modifications Survey Respondents' Have Made to Their Homes



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Incentives

Approximately 58% of the respondents indicated that tax breaks or incentives would motivate them to take additional steps to better protect their homes from natural disasters. Fifty-six percent also indicated that insurance discounts would be a motivator (See Table 10).

Table 10. Survey Respondents' Preferred Incentives for Protecting Homes

Incentive	Percent of Respondents
Tax break or incentive	58.0%
Insurance discount	55.7%
Low interest rate loan	28.0%
Mortgage discount	25.4%
None	18.9%
Lower new home construction costs	13.3%
Other	5.3%

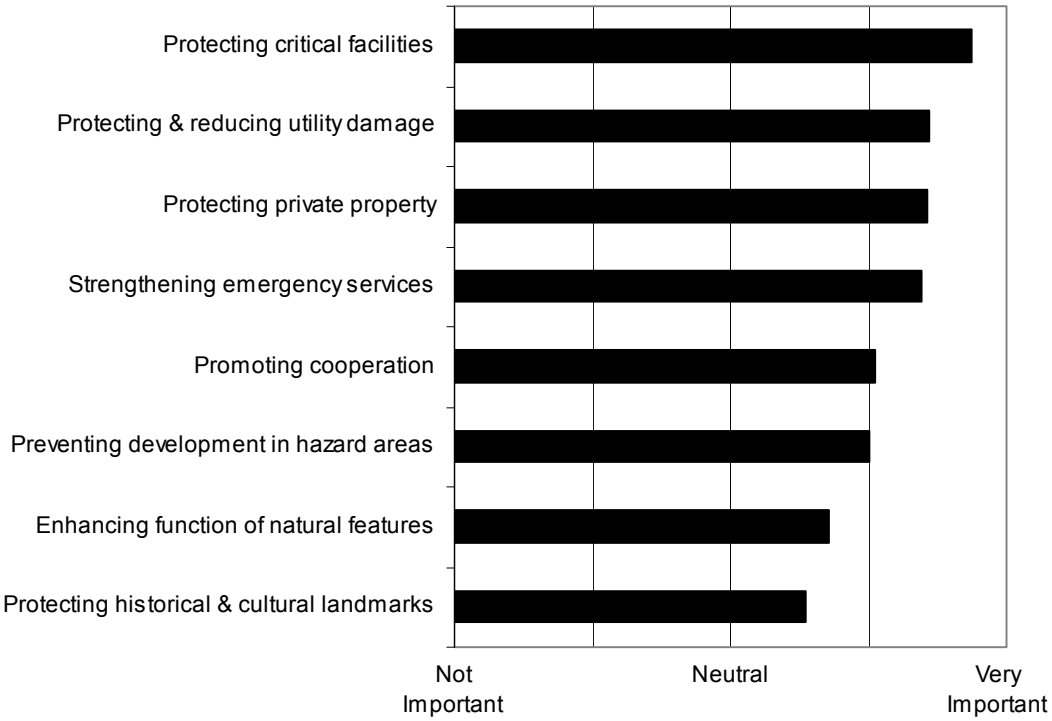
Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

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Chapter 6
Community Natural Hazard Preparedness

To assist those preparing the communities' natural hazard mitigation plans, three questions were added to those asked in the statewide survey in 2002. These questions could help NE Oregon determine citizens' priorities for planning for natural hazards and what types of strategies to reduce the communities' risk the citizens will support. Plan goals describe the overall direction that can be taken to minimize the impacts of natural hazards. The strategies are specific activities that reduce risk to natural hazards. Figure 10 illustrates generally how important respondents feel each goal statement is.

Figure 10. Survey Respondents' General Level of Importance for Goal Statements



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

As shown in Table 11, 95.3% of respondents indicated that it is very important or somewhat important for the community to protect critical facilities. About 91% indicated that it is very important or somewhat important to protect and reduce damage to utilities.

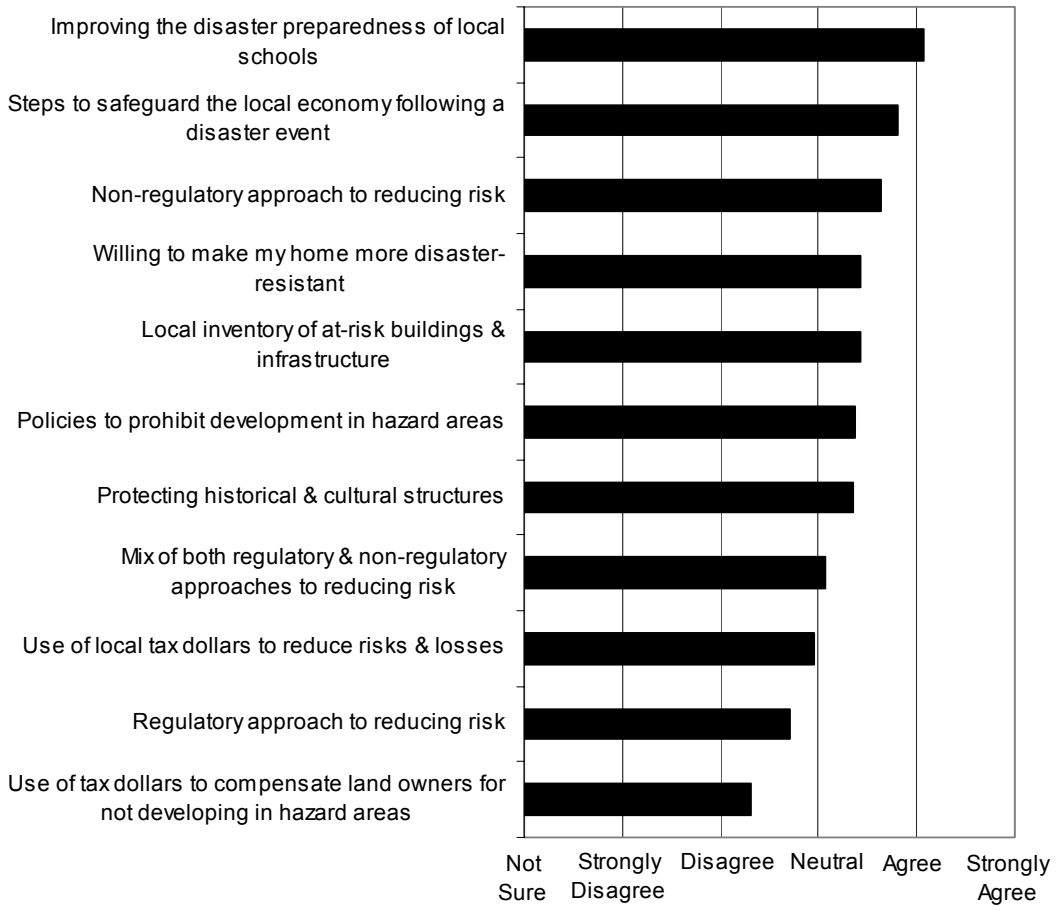
Table 11. Survey Respondents' Goal Prioritization

Statements	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
Protecting private property	59.4%	29.3%	7.8%	0.8%	2.7%
Protecting critical facilities	81.6%	13.7%	3.1%	0.8%	0.8%
Preventing development in hazard areas	41.7%	26.2%	25.8%	2.8%	3.6%
Enhancing the function of natural features	27.4%	31.3%	29.8%	7.5%	4.0%
Protecting historical and cultural landmarks	17.1%	40.2%	27.1%	10.4%	5.2%
Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	37.7%	37.3%	19.4%	3.6%	2.0%
Protecting and reducing utility damage	56.1%	34.5%	7.8%	0.4%	1.2%
Strengthening emergency services	54.5%	34.6%	7.8%	1.6%	1.6%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

There are a number of activities a community can undertake to reduce the risk from natural hazards. These activities can be both regulatory and non-regulatory. Figure 11 shows respondents' general level of agreement regarding the community-wide strategies included in the survey.

Figure 11. Survey Respondents' General Level of Agreement Regarding Community-wide Strategies



Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Table 12 illustrates that 86.4% of the respondents strongly agree or agree that they support improving the disaster preparedness of local schools. Seventy-six percent said they strongly agree or agree that they support steps to safeguard the local economy following a disaster event, while 64.8% strongly agree or agree that they support a non-regulatory approach to reducing risk.

Table 12. Survey Respondents' Agreement Regarding Community-wide Strategies

Strategies	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Sure
I support a regulatory approach to reducing risk	5.2%	24.9%	27.7%	22.9%	16.9%	2.4%
I support a non-regulatory approach to reducing risk	17.4%	47.4%	24.3%	6.5%	1.6%	2.8%
I support a mix of both regulatory and non-regulatory approaches to reducing risk	11.1%	32.8%	26.1%	15.4%	10.7%	4.0%
I support policies to prohibit development in areas subject ot natural hazards	21.5%	31.3%	25.8%	10.5%	6.6%	4.3%
I support the use of tax dollars (federal and/or local) to compensate land owners for not developing in areas subject to natural hazards	5.1%	14.5%	19.9%	32.8%	23.0%	4.7%
I support the use of local tax dollars to reduce risks and losses from natural disasters	3.9%	37.0%	29.1%	14.6%	11.4%	3.9%
I support protecting historical and cultural structures	9.3%	42.6%	32.6%	8.9%	3.5%	3.1%
I would be willing to make my home more disaster-resistant	9.4%	49.6%	28.3%	5.1%	1.2%	6.3%
I support steps to safeguard the local economy following a disaster event	16.7%	59.3%	17.8%	2.3%	1.9%	1.9%
I support improving the disaster preparedness of local schools	26.5%	59.9%	10.5%	1.6%	1.2%	0.4%
I support a local inventory of at-risk buildings and infrastructure	9.4%	44.7%	33.3%	5.9%	3.9%	2.7%

Source: Household Natural Hazards Preparedness Survey, Oregon Natural Hazards Workgroup, (January 2003)

Appendix A
Survey Instrument

This appendix includes a copy of the Household Natural Hazards Preparedness Survey. The survey instrument included here shows the results of the survey, in terms of responses to each category as a percent of total responses to each question. Many questions included the response category "Other," in which the respondents were encouraged to write in their own responses. The results of these "Other" responses are included after the survey in a series of tables. The final portion of the appendix is the transcription of open-ended comments solicited in Question 17 and at the end of the survey.

The appendix includes the following items:

Survey questions with results .... A-2 to A-9

Tables for "Other" responses .....A10 to A13

Open-ended comments to Question 17.....A14-A15

Open-ended comments from end of the survey.....A16-A19

Household Natural Hazards Preparedness Questionnaire

This questionnaire is designed to help gauge household preparedness for disasters, and knowledge of tools and techniques that assist in reducing risk and loss from natural hazards. The questionnaire should be completed by an adult, preferably the homeowner or head of household. The information you provide about your needs for disaster preparedness could help improve public/private coordination of preparedness and risk reduction activities within your community. We ask that you please take a few minutes to complete this questionnaire.

Your returned survey indicates your willingness to take part in the study. Your participation in this study is voluntary. If you have questions regarding your rights as a research participant, please contact the Office of Human Subjects Compliance, Riverfront Research Park, Suite 106, University of Oregon, Eugene, OR 97403-5219, or call (541) 346-2510. All individual survey responses are strictly confidential, and are for research purposes only.

NATURAL HAZARD INFORMATION

1. In the past five years, or since you have lived in the community you currently reside in, have you or someone in your household experienced a natural disaster such as an earthquake, severe windstorm, flood, wildfire, or other type of natural disaster?

   29.1% Yes
   70.9% No (***IF NO Skip to Question 2***)

   1.1. If ("YES") which of these natural disasters have you or someone in your household experienced? (***Please check all that apply***)

11.0%	Drought	1.5%	Household Fire
3.4%	Dust Storm	22.0%	Windstorm
1.1%	Earthquake	0.4%	Volcanic Eruption
3.0%	Flood	8.0%	Severe Winter Storm
2.7%	Landslide / Debris Flow	0.4%	Other Not applicable
9.5%	Wildfire		

2. How concerned are you about the following natural disasters affecting your community?
   (*Check the corresponding box for each hazard)*

Natural Disaster	Extremely Concerned	Very Concerned	Concerned	Somewhat Concerned	Not Concerned
Drought	26.2%	19.3%	25.8%	15.2%	13.5%
Dust Storm	1.3%	4.4%	14.1%	17.6%	62.6%
Earthquake	0.4%	2.7%	14.7%	32.6%	49.6%
Flood	1.3%	5.7%	26.1%	27.8%	39.1%
Landslide / Debris Flow	2.2%	3.6%	15.2%	25.6%	53.4%
Wildfire	24.9%	20.3%	26.2%	13.5%	15.2%
Household Fire	12.9%	13.8%	36.7%	26.3%	10.4%
Tsunami	0.0%	0.0%	0.9%	2.3%	96.7%
Volcanic Eruption	0.0%	1.8%	2.7%	14.7%	80.9%
Wind Storm	7.5%	15.9%	38.1%	24.3%	14.2%
Coastal Erosion	0.5%	0.5%	2.7%	5.0%	91.4%
Severe Winter Storm	7.1%	13.8%	37.1%	22.1%	22.0%

3. Have you ever received information about how to make your household and home safer from natural disasters?

44.9% Yes
55.1% No (***IF NO Skip to Question 4***)

3.1. If "YES", how recently?

31.9%	Within the last 6 months		
18.6%	Between 6 and 12 months	12.4%	Between 2 and 5 years
23.9%	Between 1 and 2 years	13.3%	5 years or more

3.2. From whom did you **last** receive information about how to make your household and home safer from natural disasters? (***Please check only one***)

13.6%	News media	4.5%	American Red Cross
10.6%	Government agency	1.9%	Other non-profit organization
10.2%	Insurance agent or company	7.6%	Not sure
9.1%	Utility company	3.8%	Other: See Table 1
2.7%	University or research institution		

4. Who would you most trust to provide you with information about how to make your household and home safer from natural disasters? **(*Please check all that apply*)**

19.3%	News media	33.7%	American Red Cross
31.4%	Government agency	15.2%	Other non-profit organization
35.6%	Insurance agent or company	17.4%	Not sure
41.3%	Utility company	6.8%	Other: See Table 2
32.2%	University or research institution		

5. What is the most effective way for you to receive information about how to make your household and home safer from natural disasters? **(*Please check all that apply*)**

Newspapers:
54.5% Newspaper stories
11.0% Newspaper ads
Television:
56.1% Television news
12.1% Television ads
Radio:
36.4% Radio news
6.8% Radio ads

Other methods:
15.5% Schools
5.3% Outdoor advertisements (billboards, etc.)
8.7% Books
46.6% Mail
27.7% Fire Department/Rescue
15.2% Internet
39.4% Fact sheet/brochure
5.3% Chamber of Commerce
20.1% Public workshops/meetings
10.2% Magazine
16.7% University or research institution
2.3% Other: See Table 3

PREPAREDNESS ACTIVITIES IN YOUR HOUSEHOLD

Households can do many things to prepare for a natural disaster or emergency. What you have on hand or are trained to do when a disaster strikes can make a big difference in your comfort and safety in the hours and days following a natural disaster or emergency. Basic services, such as electricity, gas, water and telephones, may be cut off, or you may have to evacuate at a moment's notice. The following questions focus on your household's preparedness for disaster events.

6. In the following list, please check those activities that you have done in your household, plan to do in the near future, have not done, or are unable to do. **(*Please check one answer for each preparedness activity*)**

In your household, have you or someone in your household:	Have Done	Plan To Do	Not Done	Unable To Do
A. Attended meetings or received written information on natural disasters or emergency preparedness?	35.4%	5.5%	55.1%	3.9%
B. Talked with members in your household about what to do in case of a natural disaster or emergency?	54.7%	11.4%	30.3%	3.5%
C. Developed a "Household/Family Emergency Plan" in order to decide what everyone would do in the in event of a disaster?	34.6%	20.9%	41.3%	3.1%
D. Prepared a "Disaster Supply Kit" (Stored extra food, water, batteries, or other emergency supplies)?	44.8%	18.1%	36.7%	0.4%
E. In the last year, has anyone in your household been trained in First Aid or Cardio-Pulmonary Resuscitation (CPR)?	43.5%	5.1%	48.2%	3.2%

7. Building a disaster supply kit, receiving First Aid training and developing a household/family emergency plan are all inexpensive activities that require a personal time commitment. How much time (per year) are you willing to spend on preparing yourself/household for a natural disaster or emergency event? ***(Check only one)***

16.3%	0-1 hour	13.9%	8-15 hours
33.9%	2-3 hours	9.4%	16+ hours
20.0%	4-7 hours	6.5%	Other: See Table 4

8. What steps, if any, have you or someone in your household taken to prepare for a natural disaster? ***(Check all that apply)***

Have stored:

64.4%	Food	15.9%	Prepared a Disaster Supply Kit
51.9%	Water	51.5%	Received First Aid/CPR Training
86.0%	Flashlight(s)	43.9%	Made a fire escape plan
75.0%	Batteries	21.6%	Developed a reconnection plan: Where to go and who to call
46.2%	Battery-powered radio		
66.3%	Medical supplies (First aid kit)	29.2%	Discussed utility shutoffs
74.6%	Fire extinguisher	3.8%	Other: See Table 5
86.7%	Smoke detector on each level of the house		

9. Does your household have insurance coverage for flood events?
   - 21.6% Yes (***If you answered YES skip to Question 10***)
   - 78.4% No

   9.1. **If "NO",** what is the main reason your household does not have insurance for flood events? **(*Please check only one*)**

67.4%	Not located in the floodplain	1.1%	Deductibles too high/not worth it
8.4%	Too expensive	6.3%	Not familiar with it/don't know about it
8.9%	Not necessary		
5.3%	Never considered it	2.6%	Other: See Table 6

10. Does your household have insurance coverage for earthquake events?
    - 17.4% Yes (***If you answered YES skip to Question 11)***
    - 82.6% No

    10.1. **If "NO",** what is the main reason your household does not have earthquake insurance? **(*Please check only one)***

7.0%	Too expensive	2.7%	Deductibles too high/not worth it
5.9%	Not available	11.2%	Not familiar with it/ don't know about it
34.8%	Not necessary		
35.3%	Never considered it	3.2%	Other: See Table 7

NATURAL HAZARD RISK REDUCTION

Risk reduction activities are those actions you can take to protect your home from natural hazard events, such as earthquakes, floods or wildfires. You can do nonstructural modifications or retrofits to protect your home's contents against damage, often at minimal cost. You can also conduct structural retrofits to strengthen your home's structure or skeleton, although modifications to a structure tend to be quite involved and generally require the expertise of a registered design professional (engineer, architect or building contractor).

11. Did you consider the possible occurrence of a natural hazard when you bought/moved into your current home?
    - 39.6% Yes
    - 60.4% No

12. Would you be willing to spend more money on a home that had features that made it more disaster resistant?
    - 26.4% Yes
    - 29.1% No
    - 44.4% Don't Know

13. Would you be willing to make your home more resistant to natural disasters?
    - 57.1% Yes
    - 42.9% No (***If you answered No skip to Question 14)***

    13.1. How much are you willing to spend to better protect your home from natural disasters? ***(Check only one)***

4.5%	Less than $100	2.6%	$5000 and above
12.3%	$100 - $499	1.3%	Nothing
8.4%	$500 - $999	44.5%	Don't know
11.6%	$1000 - $2499	10.3%	What ever it takes
1.9%	$2500 - $4999	2.6%	Other: See Table 8

Question 14 includes nonstructural and structural modifications that make your home more resistant to earthquakes. There are many measures that can be taken for other natural hazards, such as wildfires and floods.

14. What nonstructural or structural modifications for earthquakes have you made to your home? ***(Please check all that apply)***

14a. Nonstructural		***14b. Structural:***	
9.1%	Anchor bookcases, cabinets to wall	23.9%	Secure home to foundation
10.2%	Secure water heater to wall	4.5%	Brace inside of cripple wall with sheathing
4.5%	Install latches on drawers/cabinets	3.0%	Brace unreinforced chimney
13.6%	Fit gas appliances with flexible connections	2.3%	Brace unreinforced masonry & concrete walls and foundations
1.1%	Other: See Table 9	0.8%	Other: See Table 10
61.0%	None	58.0%	None

15. Which of the following incentives, if any, would motivate you to take additional steps to better protect your home from a natural disaster? (***Check all that apply***.)

55.7%	Insurance discount	58.0%	Tax break or incentive
28.0%	Low interest rate loan	18.9%	None
13.3%	Lower new home construction costs	5.3%	Other: See Table 11
25.4%	Mortgage discount		

COMMUNITY NATURAL HAZARD PREPAREDNESS

16. Natural hazards can have a significant impact on a community, but planning for these events can help lessen the impacts. The following statements will help determine citizen priorities for planning for natural hazards. Please tell us how important each one is to you.

Statements	Very Important	Somewhat Important	Neutral	Not Very Important	Not Important
A. Protecting private property	59.4 %	29.3%	7.8%	0.8%	2.7%
B. Protecting critical facilities (e.g. transportation networks, hospitals, fire stations)	81.6%	13.7%	3.1%	0.8%	0.8%
C. Preventing development in hazard areas	41.7%	26.2%	25.8%	2.8%	3.6%
D. Enhancing the function of natural features (e.g. streams, wetlands)	27.4%	31.3%	29.8%	7.5%	4.0%
E. Protecting historical and cultural landmarks	17.1%	40.2%	27.1%	10.4%	5.2%
F. Promoting cooperation among public agencies, citizens, non-profit organizations, and businesses	37.7%	37.3%	19.4%	3.6%	2.0%
G. Protecting and reducing damage to utilities	56.1%	34.5%	7.8%	0.4%	1.2%
H. Strengthening emergency services (e.g.- police, fire, ambulance)	54.5%	34.6%	7.8%	1.6%	1.6%

17. Are there any other issues regarding the reduction of risk and loss associated with natural disasters that you feel are important?

See section with transcribed responses

18. A number of activities can reduce your community's risk from natural hazards. These activities can be both regulatory and non-regulatory. An example of a regulatory activity would be a policy that limits or prohibits development in a known hazard area such as a floodplain. An example of a non-regulatory activity would be to develop a public education program to demonstrate steps citizens can take to make their homes safer from natural hazards. **Please check the box that best represents your opinion of the following strategies to reduce the risk and loss associated with natural disasters.**

Community-wide Strategies	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree	Not Sure
A. I support a regulatory approach to reducing risk	5.2%	24.9%	27.7%	22.9%	16.9%	2.4%
B. I support a non-regulatory approach to reducing risk	17.4%	47.4%	24.3%	6.5%	1.6%	2.8%
C. I support a mix of both regulatory and non-regulatory approaches to reducing risk	11.1%	32.8%	26.1%	15.4%	10.7%	4.0%
D. I support policies to prohibit development in areas subject to natural hazards	21.5%	31.3%	25.8%	10.5%	6.6%	4.3%
E. I support the use of tax dollars (federal and/or local) to compensate land owners for not developing in areas subject to natural hazards	5.1%	14.5%	19.9%	32.8%	23.0%	4.7%
F. I support the use of local tax dollars to reduce risks and losses from natural disasters	3.9%	37.0%	29.1%	14.6%	11.4%	3.9%
G. I support protecting historical and cultural structures	9.3%	42.6%	32.6%	8.9%	3.5%	3.1%
H. I would be willing to make my home more disaster-resistant	9.4%	49.6%	28.3%	5.1%	1.2%	6.3%
I. I support steps to safeguard the local economy following a disaster event	16.7%	59.3%	17.8%	2.3%	1.9%	1.9%
J. I support improving the disaster preparedness of local schools	26.5%	59.9%	10.5%	1.6%	1.2%	.4%
K. I support a local inventory of at-risk buildings and infrastructure.	9.4%	44.7%	33.3%	5.9%	3.9%	2.7%

GENERAL HOUSEHOLD INFORMATION

19. Please indicate your age: median age: 55.0

20. Gender:
    - 54.6% Male
    - 45.4% Female

21. Please indicate your level of education:

1.9%	Grade school/no schooling	28.6%	College degree
3.8%	Some high school	11.8%	Postgraduate degree
17.6%	High school graduate/GED	0.8%	Other: See Table 12
36.3%	Some college/trade school		

22. Zip code: See SPSS Output

23. County: Baker 26.3%; Grant 13.0%; Union 44.7%; Wallowa 14.1%

24. How long have you lived in Oregon?

0.4%	Less than one year	11.0%	10-19 years
5.7%	1-5 years	76.1%	20 years or more
6.8%	5-9 years		

25. If you have lived in Oregon for less than 20 years, in what state did you live before you moved to Oregon?
    - 76.4% Not Applicable
    - 6.3% California
    - 3.0% Idaho
    - 9.3% Washington
    - 5.1% Other: See Table 13

26. Do you have access to the Internet?
    - 70.6% Yes
    - 29.4% No

27. Do you own or rent your home?
    - 86.2% Own
    - 13.8% Rent

28. Do you rent/own a:
    - 80.2% Single-family home
    - 2.0% Duplex
    - 0.0% Apartment (3-4 units in structure)
    - 2.4% Apartment (5 or more units in structure)
    - 0.0% Condominium / townhouse
    - 13.0% Manufactured home
    - 2.4% Other See Table 14

Please feel free to provide any additional comments in the space provided:

See section with transcribed comments

THANK YOU VERY MUCH FOR PROVIDING THIS INFORMATION

The Oregon Natural Hazards Workgroup at the University of Oregon's Community Service Center prepared this survey. Implementation of this survey is made possible by funding from Oregon Emergency Management and the Public Entity Risk Institute.

For more information, please contact Oregon Natural Hazards Workgroup at 1209 University of Oregon, Eugene, OR 97403-1209, call (541) 346-3653, or visit www.OregonShowcase.org

“Other” Responses

Table 1: Q3.2 Received Information From: (Other Category: n=13)

Response	Percent of Respondents
Church	1.1%
Personal research	1.1%
School	0.8%
Housing	0.8%
Community Groups	0.4%
Family & Friends	0.4%
Our mailing	0.4%

Table 2: Q4 Most Trusted Sources of Information: (Other Category: n=19)

Response	Percent of Respondents
Church	1.9%
Local Emergency Services	1.9%
Personal Research	1.5%
Friends & Family	0.4%
None	0.4%
FEMA	0.4%
Combination of above	0.4%
Small Woodlands Assoc	0.4%

Table 3: Q5 Most Effective Way to Receive Information (Other Category: n=6)

Response	Percent of Respondents
Personal research	0.8%
Friends & Family	0.4%
Employer	0.4%
Red Cross	0.4%
Home/Property inventory	0.4%

Table 4: Q7 Amount of Time Willing to Spend on Preparedness (Other Category: n=25)

Response	Percent of Respondents
What ever it takes	5.7%
None/No Time	1.5%
Plan once/done	0.8%
Multiple days	0.4%
Not sure	0.4%
Common sense	0.4%
Job trained	0.4%

Table 5: Q8 Steps Taken to Prepare for a Natural Disaster (Other Category: n=13)

Response	Percent of Respondents
Woodstove	1.5%
Arrangements for pets	1.1%
Camping gear	0.8%
Cleared debris around house	0.4%
Communication devices	0.4%
common sense	0.4%
Self sufficiency	0.4%

Table 6: Q9 Flood Insurance Coverage for Household (Other Category: n=8)

Response	Percent of Respondents
Rental Property	1.9%
Not sure	0.4%
Plan to do so	0.4%
Not eligible	0.4%

Table 7: Q10 Earthquake Insurance for Household (Other Category: n=9)

Response	Percent of Respondents
Not sure	3.4%
Rental property	2.3%
Don't consider our area at risk	0.8%

Table 8: Q13.1 Consideration of a Possible Natural Hazard Occurrence (Other Category: n=2)

Response	Percent of Respondents
Depends	0.4%
Fixed income	0.4%

Table 9: Q14a Nonstructural Modifications for Earthquakes (Other Category: n=2)

Response	Percent of Respondents
Do not know	0.4%
Add a foundation	0.4%

Table 10: Q14b Structural Modifications for Earthquakes (Other Category: n=4)

Response	Percent of Respondents
Do not know	0.4%
Roof System Bracing	0.4%
NA - rental property	0.4%
House built far beyond code requirements	0.4%

Table 11: Q15 Incentives to Motivate Additional Steps (Other Category: n=12)

Response	Percent of Respondents
Daily reports	4.5%
If a natural disaster happens nearby	1.5%
Grants	0.8%
Higher income	0.8%
Personal safety	0.4%
Any offset of cost	0.4%
Information/Knowledge	0.4%

Table 12: Q21 Level of Education (Other Category: n=2)

Response	Percent of Respondents
OJT	0.4%
Home study	0.4%

Table 13: Q25 State Lived in Before Moving to Oregon (Other Category: n=12)

Response	Percent of Respondents
Alaska	0.4%
Arkansas	0.4%
Colorado	0.8%
Montana	0.4%
New York	0.4%
Rhode Island	0.4%
South Dakota	0.8%
Utah	0.4%
International	0.8%

Table 14: Q28 Rent/Own (Other Category: n=5)

Response	Percent of Respondents
Farm/Ranch	1.1%
Lifetime occupancy on place sold	0.4%
Apartment in house	0.4%

Household Natural Hazard Preparedness Survey Comments from Question 17

Rural fire issues – not addressed properly. Loss of utilities
Utility companies make a lot of money in our area. They need to take care of disaster preparedness themselves without an increase in rates.
Keeping people out of privately owned lands and forested property.
If those who believe others are responsible for their lack of foresight, ignorance and stupidity fall victim to a natural disaster their loss is their own fault. They should suffer and recover on their own. We in Eastern Oregon, don't need dependent pro-government liberal bleeding heart Western Oregonians who know nothing about what we live with everyday getting in the way of our survival.
My home in WA. Flooded as a result of poor land management, wetlands were filled for businesses to build on land they could purchase cheaply. Expensive homes were built on hillsides resulting in loss of foliage that prevented run-off water. Land development must be carefully monitored to prevent this. Slides, flash floods, earthquakes, volcanic. Monument city fire department does not have OHSA approved firemans protection gear. P.P.E they have is very old. With trucks over 26,000 GVW being routed through Monument (Hwy 19 bridge). New drivers not aware of the curves, bad corners, on coming big Rigs. Our volunteer department is at a very big risk.
Getting environmentalists out of controlling forest management.
No.
Railroad derailment in center of town: NB: tank can rupture causing fire and/or massive spread of toxic fumes.
Make the Forest Service clean up the forest and reduce fire potential. Change the policy of let it burn.
Our national forests need to be logged a thinned to reduce chances of major wildfires.
Wallowa Lake Dame Repair.
Leaders in wildfire suppression must have broad experience and use good judgement.
General alert warning prior to risk.
Terrorist attack and activity.
1. Developing a healthy forest to prevent wildfires. 2. protection from hazardous material from Hanford. 3. Being better informed of public preparation plan for disasters.
Why do we keep re-building homes flooded out in flood plains? When you build in the hills, you take the risk of losing your place. I watched thousands of acres burn to the treeline and above on the Boise front a few years ago as all resources went to "save" homes built way up in the foothills. That was a risk the owners should assume and provide for. You would be surprised how few zoning laws would be needed if people had to assume their own risk.
During any crisis, communication is a necessity – think of using the huge number of already trained and experienced "HAM" radio operators such as the "Oregon Emergency Net" which trains every night at a frequency of 3890 MHZ covering all of Oregon and adjoining state. Need more info? Call me, _____ XXX-XXX-XXXX.

Blankets stored, w/p covers, emergency flares, candles, proper water shut offs.
One first has to know what the real risks are in this area.
Maintaining utilities for public welfare should have as much or more priority as those listed in previous question. Water – sewer - natural gas – electricity.
Homeowners in forest zones choose some degree of risk with their choice of structures and land management. I think it is ok that this is a personal choice as opposed to regulation. I also think that State Forestry is a help but no responsible to save private property. Some property owners could use some advice.
I feel in wildfire protection we should be more protective by 1, harvesting old fuels, 2, using are natural resources more/renewable resources both in grazing and forest management.
Be informational in approach – not regulatory.
Yes – lobby the United States Forest Service to manage public lands by removing dead and diseased timber. It is called logging.
Much of it involves common sense.
Education! Many people believe they will never be in danger.
Clean up the forest and less wilderness or clean up.
Personal responsibility.
Small towns need to have cooperation of schools and businesses so citizen can go check to see where they may be needed.
The Campbell street rail road crossing does not allow us to get to the hospital in the event of an emergency. Also blocked off on 17th St. I hate the trains being able to do this.
72 hr. kit for every family member.
Do not allow people to build in flood plains or in forest land. Do not insure for flood loss.
We have wood heat in case electricity. Power is off.
Neighbors helping neighbors.
Money or lack of it.
I believe in a true disaster of our community, very few individuals understand that we are as individuals are and will be responsible for ourselves. There will be priorities of need for the community that will supercede these needs.

Household Natural Hazards Preparedness Survey Open-ended Comments

Cooperative efforts are a good thing. Regulatory policies and laws are not always a good thing. The damage done to the very people who are the caretakers of the earth – farmers, cattlemen, etc – the damage to them by extreme environmentalists and policy makers who make their living sitting behind a desk or just being professional rabble-rousers – this is the thing, the disaster to fear the most. How do we protect the people and industry that feeds the world? This is a natural hazard situation if there ever was one! A hazard to our food supply.
We watch “victims” of natural disasters suffer and pity them for their ignorance and dependence upon a system of government that cannot protect mankind from his own folly. Build your house upon a rock and both figuratively and physically. If you suffer a disaster pick up and go on. Build better next time. If you die in the disaster your worries are over. Go help someone who built a house on the beach, or water soaked hillside, or timbered mountain in Western Oregon but stay out of the business of folks in Eastern Oregon. We suffer enough from your interference. We can take care of ourselves and could do better if Eastern Oregon was a state of it’s own. You don’t live here – you don’t have a clue!
We are too often already over – regulated. Whatever happened to personal sense of responsibility? We are members of a small farming community in N.E. OR and far too many regulations that affect us have come from voters who live in an entirely different area (W. OR) with entirely different needs and concerns. We are farmers and intensely involved in taking care of our land and the water and the air and waterways (Riparian zones). When city voters from W. OR choose to regulate the use of our land and water (ie … no animal use of non-manure spread on land 100 feet either side of any waterway), this takes away a HUGE chunk of ground for us with a mere 100 acres to work with. We own and care for this land because it is our choice, because it is the right thing to do, because God has given us this great blessing to care for. Sometimes, too many regulations impede our doing the best we can.
I think the state or federal government should let communities know if the are in an earthquake area or not. That is common sence. I am a wildland firefighter with 12 years under my belt. I get sick and tired of people moving into the timber lands and wonder why there house burned down.
With the Umatilla Chemical Depot getting ready to start up. And the trucks loaded with these materials to be treated coming through all of our towns and cities I am extremely concerned that this is not even on your Questionnaire. I hope your team is made aware that the people who would be putting their lives on the line are not properly geared-up for some of these risks that we are getting ready to face. I feel this truly is a NE Oregon threat that the state, DOD, DOE needs to address more to our counties. Find more funding so that all communities have their Emergency Service prepared just to monitor an accident at Umatilla Depot (air currents flow) overturned truck in Canyon City/Monument Area. State puts to much responsibility and coverage to the Heppner Response Team. Even the National Guard cannot be counted on to help with them being deployed out of state or country helping with our global commitments. I truly hope we can get help. Thanks.
The UPRR runs thru the middle of this little (pop 500) town of ~ 200 homes. Derailments are rarer now than 30 years ago; But, they occur every so often (about every 10-15 yrs) a ruptured chlorine tank car could – on a still winter night – probably kill about ½ the town. (I am a former chief of town’s Vol Fire dept; so, I’ve thought a bit about such “worst case” stuff.) ps – I’d rather deal with a ruptured propane car.
Don’t spend tax money or regulations. Use common sense and if you lose your home its

your responsibility, not the government.
When we built our home 20 yrs ago we exceeded the building regulations with materials, insulation, etc. Home is sound, warm, 2 different sources of heat in case of “power” loss. We’ve withstood 103 MPh winds with no damage, are away from streams, no flood danger. The area is kept green surrounding home, so no fire damage expected. Thanks for making us aware of dangers. Water supply, in case of nuclear fallout would be my major concern, water coming from lake would naturally be contaminated, and of no use.
You simply cannot keep bailing out people who build in floodplains or out in the hills. When people do that, they have to assume the risk. Us for disaster preparedness, make sure the medical and rescue infrastructure is in place and that police/fire/hospital people are planning together. People have a lot of resiliency. There are limited dollars. We are all going to go out of this world dead. Keep this in minds.
I sincerely hope that my tax dollars are not being used to fund this questionnaire, or the activities of your group. Our state is in such bad shape, that spending of tax dollars for this kind of worthless information would be criminal! If you are funded by tax dollars, please take the necessary steps to dissolve this workgroup.
Property owners should be made aware of natural hazards. If they wish to develop an area with natural hazards they should do it at their own risk. $ we don’t need more government babysitting us – we don’t need more regulations. We don’t need gov’t compensation for our stupid actions. If gov’t wants to “regulate” and it “cost” the landowner. Then the gov’t should compensate the property owner.
I think high risk areas should be widely known, and I feel that if people still want to build in them and then they get wiped out in a natural disaster; then absolutely No federal money should be used to bail them out.
I question the necessity/intelligence of this questionnaire. People who are concerned about things like tsunamis in Eastern Oregon can only be described as paranoid. If they are really concerned, they should move to a place they think is safer. When you think about it, Oregon is one of the safest places around. No hurricanes, tornados, few floods, few wildfires near densely settled areas, only one volcanic eruption lately. In short, people should use their common sense and not rely on governmental intervention/ regulation to protect them.
I believe man-made hazards pose a greater risk!
I feel that much empasis in this survey is being placed on Fire – Police – Hospitals – as emergency and critical facilities. Without water the fire dept and hospitals are nto able to do their mission. Not enough emphasis on public works facilities, e.g. water/sewer, or electrical and natural gas facilities. In time of need these may be the most important for the common good.
People ought to be able to build their homes on their private property – where ever they wish – but just don’t make it the state’s problem if something happens to it. People should be accountable for their own decisions and preparedness. Common sense goes a long way! Government doesn’t need to have a say in everything. If you are prepared… you shall not fear.
Concerning questions 4&5. I am very knowledgeable of what could or should be done concerning wildfire and house fires. I also fully understand the risk involved with living in a forest and how my personal choice of land management affects my degree of risk and the degree of risk for my neighbors. I really don’t have any concern for other disasters. I don’t feel like I need any more info on the subject although I still read any info I come arcoss.
The economy in my county is so poor I hesitate to promote anything that will cost the residents more money. More job- family wage – might be a good way of preventing disasters of another type – “financial”. It won’t matter how safe our area is if people can’t live here

because of lack of jobs.
Given the current economical conditions, many homeowners. (if not most homeowners) are hard pressed to provide for regular home maintenance beyond a couple hundred dollars. Historically, the high ground around a given city is high dollar value property, leaving the low ground for the average and poor. Even incentives don't work well when the economy is down.
NO REGULATION.
Any planning on your part should not involve tax increases. The most serious pending hazards we have are forest fires. Until timber management occurs – there is no way to successfully prepare. We do not need another OSHA bureau to fine people for totally rediculas reasons. Fight to reduce government and increase timber management. You asked.
Need more safety inspections on Dams to insure their structural integrity.
I am the North Powder Fire Chief. I have attended the Federal Emergency Management Fire School in Emmittsburg Maryland – for Earthquake education for teachers. I also teach school in the community. I also realize that North Powder is in a high risk area for earthquakes with at least 1 fault running through the area. I have materials from FEMA for earthquake education K-12. At the present time the general population does Not understand the earthquake risk we have in Eastern Oregon.
I do not agree with selling so much power to Ca. that we don't have enough, and our rates increase. We pay too much now. I think our energy and water rates are a disaster that no one could get ready for.
Need to make sure handicapped (my husband is deaf/blind) and elderly our not left out or taken for granted.
We need fewer government agencies. More property ownership rights protected – less government interference in our lives. Fewer surveys that are a waste of tax payers money.
I feel that the main responsibility to be prepared for household disaster falls to the individual – not the taxpayers. If a party chooses to live in a flood plain, that is a risk they assume. Today's public attitude of absolute safety is a "pipe-dream" – and is economically unattainable. My main disaster concern , "drought" is not addressed in this survey – sometimes you just have to accept mother nature for what she is!
The only natural disaster here in Austin-B is a forest fire. There is pasture land between us and the timber, we have tin roofs, we pray. Before the BLM and etc could get here, we would have to remove ourselves. We do have a plan, including a neighbor lady with senility and elderly. The population here is 4. We are 17 miles from Lawn. 6 homes are owned by out of towners. Here during summer and hunting seasons. We all pay so much a year (59.00). For protection, but don't think they will do structural protection. (private land) We do hope the upper part of the Middle Fork of the John Day River never burns, but with the downed, diseased wood, it is a prime area for fire. But no one listens.
Have a nice day!
Identifying hazard areas could become political and based on poor information causing excessive expensive in non critical areas. Cost is almost always a consideration in most hazard reduction circumstances. There are already mandatory hazard reduction programs in some Oregon counties causing very high cost to rural residences with minimal reductions in real or imagined hazard.
A lot of seniors are living on SS. Money is scarce. We live 3 blocks from La Grande City limits. We feel the area is one of the safest in the state. The Grande Ronde Valley is completely surrounded by mountains that haven't burned in our lifetimes, if ever. I know of

one tornado a few years ago that touched down on the roof of a lumber yard and that was all. We do worry about wildfires but we do have the bombers as the airport which would help with that. All of your ideas are good but with the state so desperately in need of money now doesn't seem to be the time to take on any expensive things. We don't take a paper or have a computer (don't even want one). My husband just has peripheral vision and cannot help much. Thanks for trying to help.
The area we reside in is not prone to earthquakes. Of more concern is wildfire (forest environment) and 100 yr flood event (proximity to River).
For a stat that is cutting social welfare programs, state police, etc., this is a waste of my tax dollar!
The bottom line is… having money to just get by right now.
I have been involved with Red Cross Disaster Preparedness. I keep our family supplied food wise adequately. Water will be a big concern. My husband is CPR trainer. I could do it (CPR), I believe if everyone could keep themselves feed and watered for a minimum of a week, we could get thru most disasters. Know basic first aide, apply common sense, have your immediate family and surrounding family know your plan. Do not expect or depend on anybody but ourselves. We have to many people who know and expect the government agencies to step in but priorities for the most should be first.
Due to the location of Wallowa County on the map, plus the location of my own home within the county, I, personally am not as concerned about many of the mentioned natural disasters as I would be if I lived some where else. A home fire is my main concern and feel that we have taken necessary precaution and are as prepared for that as one can be. Power outages would be next concern and again we are prepared for this. Many situations need to be taken care of individually by common sense and prayer with a relationship with God and not government agencies.